Attachment 1 – Council Resolutions List

Council Resolutions List

It was seen to be more efficient to give Council each separate change in the Major Amendment in sections for ease of reading for Council and the wider public.

Below is a list of all resolutions passed through Council.

Number	Meeting Date	Resolution Number	Amendments	Resolution
1	23/08/2017	2017/08/23.09	LOCAL HERITAGE REGISTER – ADDITION AND REMOVAL OF ITEMS	Council resolves to: a) Add Mt Coolon State School to the Local Heritage Register; b) Remove St James Uniting Church Bowen from the Local Heritage Register; c) Remove Proserpine Plumbing from the Local Heritage Register; d) Notify the owners of the above properties and submitters whom lodged a submission during the consultation period; and e) Amend the WRC Planning Scheme 2017 heritage overlay to reflect the additions/removals
2	11/10/2017	2017/10/11.11	WHITSUNDAY REGIONAL COUNCIL PLANNING SCHEME 2017 FIRST AMENDMENT	Council resolves to make a Major Amendment to the Whitsunday Regional Council Planning Scheme 2017.
3	31/01/2018	2018/01/31.18	PLANNING SCHEME FIRST AMENDMENT PACKAGE, PROPOSED ZONE AMENDMENTS PART 1	Council resolves to amend the zone of following lots: Lot 1 RP727724 from Rural Zone to Medium Impact Industry Zone; Lot 7 SP144396 from Low Density Residential Zone to Major Centre Zone; Lot 959 SP194473 from Low Density Residential Zone to Local Centre Zone; Lot 2 SP265771 from Low Density Residential Zone to Community Facilities Zone; Lot 401 - 405 W9363; and 501 - 508 W9363 from Open Space zone to Low Density Residential Zone; Lot 10 SP296624 from District Centre Zone to Low Density Residential Zone; and resolves to decline zone amendment requests for the following lots:

				Lot 18 A8597 from Low Density Residential Zone to Mixed Use Zone; Lot 48 SP243724 from Industry Investigation Zone to Community Facilities Zone; Lot 3 RP716248 from Low Impact Industry Zone to Community Facilities Zone; Lot 20 SP157782 from Low Density Residential Zone to Low-Medium Density Residential Zone; Lot 19 SP124856 and Lots 1-5 SP121140 from Mixed Use Zone to Mixed Use Zone in 28m (8 Storey) Building Height Precinct Zone; Lot 90 SP253581 from Rural Zone to Low Density Residential Zone; Lot 12 RP745336 from Rural Zone to Rural Residential Zone; Lot 1 RP705173 from Rural Zone to Neighbourhood Centre Zone; Lot 1 SP 265771 from Low Impact Industry Zone to Low Density Residential Zone;
4	14/03/2018	2018/03/14.12	PLANNING SCHEME 1ST AMENDMENT PACKAGE, PROPOSED ZONE AMENDMENTS PART 2	"Council resolves to amend the zone or overlay of the following lots: Lot 37 RP852644, Lot 1 SP106395, Lot 0 SP106395, Lot 2 SP106395, Lot 3 SP106395, Lot 43 RP715295, Lot 44 RP715295 from Low-medium Residential Zone to Local Centre Zone; Lot 5 RP738979 from Rural Zone to split zone, Rural and Rural Residential Zone Lot 8 SP274029 from Rural Zone to split zone, Rural and Rural Residential Zone Lot 8 SP277860, Lot 9 SP277860, Lot 10 SP248739, Lot 11 SP277860, Lot 12 SP277860, Lot 13 SP277860, Lot 14 SP277860 from Rural Zone to Rural Residential Zone Lot 200 SP260203, Lot 201 SP256297 - Remove Agricultural Land Overlay; and resolves to decline zone or overlay amendment requests for the following lots:

				Lot 100 SP219994 from Rural Residential Zone to Tourist Accommodation Zone Lot 40 HR110 from Rural Zone to Rural Residential Zone Lot 203 SP201439 from Rural Zone to Emerging Communities Zone and remove Agricultural Land and Flood Overlay"
5	14/03/2018	2018/03/14.13	PLANNING SCHEME 1ST AMENDMENT PACKAGE – PROPOSED ZONE AMENDMENTS – PART 3	Council resolves to amend the zone of the following lots: Lot 40 RP726947 from Mixed Use Zone to Community Facilities Zone; Lot 14 SP 225070 from Low-medium residential Zone to Community Facilities Zone; Lot 22 SP204655 from Rural to Medium Impact Industry Zone; Lot 1 SP230520, Lot 2 SP230520 from Rural Zone to Low Density Residential Zone; Administrative Amendments Lot 20 SP167810, Lot 21 SP167810, Lot 25 SP167810, Lot 0 SP167803 from Recreation and Open Space Zone to Low Density Residential Zone; Lot 994 SP1677803, Lot 995 SP167803, Lot 43 SP201430 from Low Density Residential Zone to Recreation and Open Space Zone; Lot 314 SP208346, Lot 194 SP225392, Lot 310 and Lot 311 SP 166677, Lot 312, Lot 402 and Lot 403 on SP276373, Lot 402 SP 253589, Lot 403 SP112942 from Low Density Residential Zone to Recreation and Open Space Zone; Lot 172 and Lot 175 SP20141, Lot 52 RP 725317 from Rural Zone to Rural Residential Zone; Lot 125 SP211527 from Rural Zone to emerging Communities Zone; Lot 26, Lot 27 and Lot 29 RP729560 from Rural Zone to Community Facilities Zone; Lot 1 MPH40854, Lot 4, Lot 5 and Lot 6 MPH20118 from Environment and Conservation to Rural Residential Zone; Lot 1 MP31017, Lot 1 MPH30560, Lot 6 MPH30560,

				Lot 1 MPH33280, Lot 18 MPH20118, Lot 1 MPH30750, Lot 1 MPH30751, Lot 3 MPH40481, Lot 1 MPH40481 from no zoning to Rural Residential Zone; Lot 1 MPH20114, Lot 7 D8842, Lot 8 MPH30938, Lot 19 MPH20114, Lot 1 MPH20118, Lot 12 MPH20117, Lot 20 MPH20114, Lot 2, Lot 3, Lot 14 and Lot 15 MPH20118, Lot 16, Lot 17 and Lot 18 MPH34406, Lot 13 MPH40481, Lot 16, Lot 17, Lot 29, Lot 30, Lot 31 and Lot 32 MPH20114 from Rural Zone to Rural Residential Zone; and resolves to decline zone or overlay amendment requests for the following lots: Lot 1 SP138974 from Rural zone to Rural Residential Zone; Lot 1 SP282838, Lot 2 SP28238 and Lot 3 SP282838 from Rural Zone to Rural Residential Zone
6	24/4/2018	2018/04/24.16	BOWEN LOCAL PLAN	Council resolves to refer the Bowen Local Plan for inclusion in the first amendment to the Whitsunday Regional Council Planning Scheme which will include future public consultation.
7	29/05/2018	2018/05/29.09	CLASS 10A BUILDINGS IN URBAN RESIDENTIAL AREAS	Council resolves to include provisions in the first amendment to the Whitsunday Planning Scheme, 2017 to achieve the following: In the Low Density Residential zone, the Low-medium Density Residential Zone, the Mixed-use Zone and Tourism Zone: 1. Class 10a buildings will require a code assessable development application if they exceed the following areas and dimensions: a) a maximum combined floor area equivalent to 9% of the site area, or 72 square metres, whichever is the least; b) a length of 12 metres in one plane; c) a length-to-width ratio of 2:1; d) a height of 5.5 metres, measured to the apex of the roof. 2. Additional design provisions to

				minimise the bulk of steel shed construction dwellings including requirements relating to minimum roof pitch, width of eaves, maximum area of blank walls, visual separation of upper and lower levels and external building colours. Council further resolves to issue no further Temporary Home permits in terms of Local Law No.1 for occupation of Class 10a structures in the Low Density Residential zone, the Low-medium Density Residential Zone, the Mixed-use Zone and Tourism Zone, with effect from 1 September 2018.
8	12/09/2018	2018/09/12.10	BIODIVERSITY, WATERWAYS AND WETLANDS CODE – WHITSUNDAY PLANNING SCHEME 2017 1ST AMENDMENT PACKAGE	Council resolves to replace the Environmental Significance Overlay code and the Waterways and wetlands overlay code with the Biodiversity, Waterways and Wetlands Overlay Code in the Whitsunday Planning Scheme 2017 first amendment package, including any associated administrative amendments.
9	12/09/2018	2018/09/12.11	HEALTHY WATERS CODE – WHITSUNDAY PLANNING SCHEME 2017 1ST AMENDMENT PACKAGE	Council resolves to include the Healthy Waters Code in the Whitsunday Planning Scheme 2017 first amendment package, including any associated administrative amendments.
10	10/10/2018	2018/10/10.10	TRADE WASTE AMENDMENT PACKAGE FOR INCLUSION IN PLANNING SCHEME	Council resolves to include the Trade Waste requirements in the Whitsunday Planning Scheme 2017 major amendment package, including any associated administrative amendments.
11	30/01/2019	2019/01/30.09	RECONFIGURING A LOT CODE	Council resolves to amend the Reconfiguring a Lot code and include in the Whitsunday Planning Scheme 2017 major amendment package, with following changes: a) new requirements for creation of rear lots; b) lowering the levels of assessment within Communities Facilities Zone, Environmental Management and conservation Zone, Recreation and Open Space Zone; c) lowering the

				levels of assessment for boundary realignments and access easements; and d) any associated administrative amendments.
12	13/02/2019	2019/02/13.05	PLANNING SCHEME MAJOR AMENDMENT PACKAGE - PROPOSED ZONE AMENDMENTS - PART 4	Council resolves to amend the zone or overlay of the following lots: 1-13 SP172252 14 SP253594 (Beacons Road) Amend to Low density residential from Low-medium density residential; 2 SP276378 (Hinschen Street) Amend to Low Density Residential Zone from Low impact industry zone; Lot 2 SP265771 (Hinschen Street) Amend zone to Community facilities from Low density residential; Various Proserpine Remove bushfire overlay in urban areas; 26RP726990 27RP726990 13RP841834 (Shute Harbour Road) Amend to Local Centre from Neighbourhood Centre; and 22 SP165633 (Mt Whitsunday Drive) Amend to Low density residential from Rural zone. 6RP738287 (Conway Road) Amend to Rural residential zone from Rural zone; and 51RP864671 (Banksia Court) Amend to Low impact industry zone from Low-medium density residential. Furthermore, that a report be brought back to Council regarding; 62 SP211518 (Botanica Drive) Amend to Tourist accommodation zone from Emerging Communities 62 SP211518 (Botanica Drive) Amend to Rural residential from Emerging communities 1SP184782 (Railway Road) Amend to Mixed use zone from Low density residential zone.
13	27/02/2019	2019/02/27.11	ZONE AMENDMENT REQUEST - LOT 62	Council resolve to: a) decline Lot 62 SP211518 at Botanica Drive zone amendment request for Tourist accommodation zone,

			SP211518 AT BOTANICA DRIVE	from Emerging Community zone; and b) amend Lot 62 SP211518 at Botanica Drive to Rural residential zone from Emerging community zone.
14	10/04/2019	2019/04/10.08	PLANNING SCHEME MAJOR AMENDMENT PACKAGE - PROPOSED ZONE AMENDMENTS - PART 5	Council resolve to amend the zone of the following lots: All marina wet leases within the Region Amend zones to Community facilities from 'no' zoning 1SP184782 2SP184782 Amend zones to Mixed use zone from Low density residential zone 0 – 22 SP248487 Amend zones to Low-medium residential from Recreation and open space And resolves to decline the zone amendments requests for the following lots: 102 and 103 SP232115 Amend zone to Low density residential from Low-medium density residential 51 SP299945 Amend zone to Low density residential from Rural residential 60 SP300010 Amend Low density residential from Rural residential
15	10/04/2019	2019/04/10.09	WHITSUNDAY PLANNING SCHEME BUSHFIRE OVERLAY AMENDMENTS	Council adopt amendments to the Whitsunday Planning Scheme 2017 Bushfire overlay for inclusion in the Planning Scheme Major amendment package.
16	08/05/2019	2019/05/08.13	PLANNING SCHEME AMENDMENT - STRATEGIC FRAMEWORK BUNDLE	Council include the amended Strategic Framework and associated Definitions in the Whitsunday Planning Scheme 2017 major amendment package, including any associated administrative amendments.
17	08/05/2019	2019/05/08.14	PLANNING SCHEME AMENDMENT - DWELLING HOUSE AND DUAL OCCUPANCY CODE	Council adopt amendments to the Whitsunday Planning Scheme 2017 Dual occupancy code and Dwelling house code, for inclusion in the Planning Scheme Major amendment package.
18	08/05/2019	2019/05/08.15	PLANNING SCHEME AMENDMENT -	Council adopt the amendments from the Scenic Amenity Study 2017 for inclusion in the Planning

			SCENIC AMENITY AMENDMENTS	Scheme Major amendment package.
19	08/05/2019	2019/05/08.16	PLANNING SCHEME AMENDMENT - RENEWABLE ENERGY CODE	Council adopt the proposed amendments for Renewable energy facilities in the Whitsunday Planning Scheme 2017, for inclusion in the Planning Scheme Major amendment package.
20	12/06/2019	2019/06/12.30	FLOOD LEVELS 2100	Council adopt the 2100 flood level (plus 300m freeboard) as the Defined Flood Event for the Town of Whitsunday Flood area, from the Town of Whitsunday Drainage Study, and to allow for the immediate distribution of these levels for use in the building and development industry, and to the public where requested.
21	12/06/2019	2019/06/12.31	WHITSUNDAY LANDSLIDE STUDY 2019	Council receive the Whitsunday Landslide Study 2019 and adopt proposed amendments for inclusion in the Major amendment to the Whitsunday Planning Scheme 2017, including any associated administrative amendments.
22	10/07/2019	2019/07/10.10	PLANNING SCHEME MAJOR AMENDMENT - ACID SULPHATE SOIL MAPPING REPORT	Council adopt the proposed Acid sulphate soil amendments for inclusion in the Major amendment to the Whitsunday Planning Scheme 2017, including any associated administrative amendments.
23	13/08/2019	2019/08/13.16	WHITSUNDAY PLANNING SCHEME 2017 - ZONE AMENDMENTS - COUNCIL OWNED LAND	Council resolve to amend the zones of the following lots: 990SP274030 - Amend zone to Environmental Management and Conservation from Rural Residential 157HR687 - Amend zone to Recreation and Open Space from Major Centre 200RP847467, 67RP723513, 501SP199109, 305SP225377 - Amend zone to Recreation and Open Space from Low Density Residential
24	13/08/2019	2019/08/13.23	WHITSUNDAY PLANNING SCHEME 2017 -	Council resolves to adopt proposed amendments to the Coastal overlay code and

			MAJOR AMENDMENT PACKAGE - COASTAL OVERLAY CODE AND MAPPING	mapping, including any necessary administrative amendments, for inclusion within the next Major amendment to the Whitsunday Planning Scheme 2017.
25	13/08/2019	2019/08/13.24	WHITSUNDAY PLANNING SCHEME 2017 - MAJOR AMENDMENT PACKAGE - FLOOD OVERLAY CODE & MAPPING	Council resolves to: a) include the amended Flood Overlay Code and revised Mapping in the Whitsunday Planning Scheme 2017 major amendment package; b) distribute Council's most up to date and accurate flood data for public use within each Local Study area; and c) include any associated administrative amendments.
26	28/08/2019	2019/08/28.12	WHITSUNDAY REGIONAL COUNCIL PLANNING SCHEME MAJOR AMENDMENT - DNRME ZONE AMENDMENTS	Council resolves to: a) make zone amendments in accordance with Attachments 1 and 2 as part of the next Major Amendment to the Whitsunday Planning Scheme 2017, including any necessary administrative amendments; b) inform DNRME of Council's resolution; and c) authorise Council Officers to begin negotiations with DNRME on the Lots identified in Attachment 3.
27	25/09/2019	2019/09/25.10	PLANNING SCHEME AMENDMENT - BUILDING HEIGHTS OVERLAY	Council adopt the proposed amendment to building height impact assessment triggers in the Whitsunday Planning Scheme 2017, including the proposed Building heights overlay code, overlay map and any associated administrative amendments
28	09/10/2019	2019/10/09.11	WHITSUNDAY PLANNING SCHEME 2017 MAJOR AMENDMENT - CLASS 10A LEVEL OF ASSESSMENT	That Council resolves to include provisions in the Major Amendment to the Whitsunday Planning Scheme 2017, including any necessary administrative amendments, to achieve the following: In the Low Density Residential Zone, Low-medium Density Residential Zone, Mixed-use Zone and Tourism Zone that Class 10a buildings will require an Impact assessable development application, if they exceed the following: 1. a combined floor area equivalent to 9% of the site

				area or 72 square metres, whichever is the least; 2. a length of 12 metres in one plane; or 3. a length-to-width ratio of 2:1. Reason for Change Due to recent concerns, raising the level of assessment in the Planning Scheme from Code to Impact assessment is recommended, ensuring neighbours have a legal right to make a submission and appeal the approval of large sheds that inappropriately impact upon them. The height control for sheds was approved by Council at its meeting on 25 September 2019. Council now needs to control the scale and bulk of sheds.
29	09/10/2019	2019/10/09.12	PLANNING SCHEME AMENDMENTS - SHORT-TERM ACCOMMODATION, PARTY HOUSES, HOME BASED BUSINESS AND RURAL TOURISM	That Council adopt proposed amendments to Rural tourism, Short-term accommodation, Party houses and Home-based business in the Whitsunday Planning Scheme 2017, for inclusion in the Planning Scheme Major amendment package, including any associated administrative changes.
30	27/05/2020	2020/05/27.15	PLANNING SCHEME AMENDMENTS - MICROBREWERIES AND COFFEE ROASTING	That Council adopt the proposed Planning Scheme amendments to support microbreweries and coffee roasting uses, including any necessary administrative amendments, for inclusion within the next major amendment to the Whitsunday Planning Scheme 2017.
31	09/09/2020	2020/09/09.05	BOWEN LOCAL PLAN	That Council receive the amended Bowen Local Plan for inclusion in the Major Amendment to the Whitsunday Planning Scheme 2017, including any necessary administrative amendments.
32	09/09/2020	2020/09/09.06	PLANNING SCHEME MAJOR AMENDMENT PACKAGE - PROPOSED ZONE AMENDMENTS - PART 6	That Council receive the zone amendments as recommended in Attachment 1, 2 and 3 for inclusion within the next major amendment to the Whitsunday Planning Scheme 2017, including any necessary administrative amendments.

33	14/10/2020	2020/10/14.12	AMENDMENTS TO PART 5 OF THE WHITSUNDAY PLANNING SCHEME 2017 - TABLES OF ASSESSMENT AND SUBSEQUENT CODE AMENDMENTS	That Council adopt the amendments outlined in attachment 1 for inclusion in the Major Amendment to the Whitsunday Planning Scheme 2017, including any necessary administrative amendments, to reduce red tape and to make application processing more efficient.
34	10/11/2020	2020/11/10.05	PLANNING SCHEME MAJOR AMENDMENT PACKAGE - LANDSCAPING WORK DEFINITION AND OPERATIONAL WORKS TABLE OF ASSESSMENT	That Council adopt the amendments for inclusion in the Major Amendment to the Whitsunday Planning Scheme 2017, including any necessary administrative amendments.
35	25/11/2020	2020/11/25.14	AMENDMENTS TO PART 5 OF THE WHITSUNDAY PLANNING SCHEME 2017 - OVERLAYS TABLES OF ASSESSMENT AND SUBSEQUENT CODE AMENDMENTS	That Council adopt amendments to the Tables of Assessment – Overlays (as per attachment 1), for inclusion in the Major Amendment to the Whitsunday Planning Scheme 2017, including any necessary administrative amendments.
36	09/12/2020	2020/12/09.23	WHITSUNDAY PLANNING SCHEME MAJOR AMENDMENT - AIRLIE BEACH LOCAL PLAN	That Council approve the inclusion of the Airlie Beach Local Plan and Building Height overlay amendments in the Major Amendment to the Whitsunday Planning Scheme 2017, including any necessary administrative amendments and that the overlay amendments include the following wording: The character of Airlie Beach, which includes its vital, small town scale, tropical climate, pedestrian neighbourhoods, compact Main Street form, blue views to the sea and green views to Airlie Hill, visually penetrable buildings and heights and lush landscape elements, is maintained.
37	10/02/2021	2021/02/10.07	ADVERTISING DEVICES CODE	That Council adopt the amendments to the Advertising Devices Code for inclusion in the Major amendment to the

				Whitsunday Planning Scheme 2017, including any associated administrative amendments and further amendments identified in Addendum 1.
38	10/02/2021	2021/02/10.08	WASTE MANAGEMENT PROVISIONS	That Council adopt the proposed waste management amendments for inclusion in the Major amendment to the Whitsunday Planning Scheme 2017, including any associated administrative amendments.
39	10/03/2021	2021/03/10.19	ZONING AMENDMENTS ROUND 7	That Council resolves to: (a) amend the zones of the following lots: i. Lot 105 W9361 Davidson Road Wilson Beach from Recreation and Open Space to Low Density Residential, ii. Lot 106 W9361 Davidson Road Wilson Beach from Low Density Residential to Recreation and Open Space, iii. Lot 311 W9361 Hall Drive Wilson Beach from Recreation and Open Space to Low Density Residential, iv. Lot 103 SP303770 Shingley Drive Airlie Beach to set the zone as Mixed Use, v. Lot 3 SP265779 Shingley Drive Airlie Beach to set the zone as Mixed Use, vi. Lot 2 SP265779 Shingley Drive Airlie Beach to set the zone has Mixed Use, and (b) decline the request to rezone the following lot due to the lack of need for further Rural Residential development and the likely negative impact on existing infrastructure: i. Lot 1 RP722068 Forestry Road Brandy Creek from Rural to Rural Residential (c) Adopt the zone amendments in (a) for inclusion within the next major amendment to the Whitsunday Planning Scheme 2017, including any necessary administrative amendments.
40	10/03/2021	2021.03/10.18	STORM SURGE AMENDMENTS	That Council adopt the revised Storm tide and Permanent inundation mapping for

				use in: a) Climate Change Hazard Assessment; b) Development assessment; c) the Planning Scheme Major Amendment Coastal Overlay; and d) Council's online Flood and Storm tide portal, which provides automated levels of inundation on a premise
41	10/03/2021	2021/03/10.16	HERITAGE AMENDMENTS	That Council resolve to undertake the following actions within the upcoming Planning Scheme Major Amendment: (a) remove Hook Island Underwater Observatory, the Proserpine War Memorial and the Palace Hotel from the Local Heritage Register; (b) notify the owners of the above properties of the removal of the local heritage places during the Public Consultation of the Major Amendment package to the Whitsunday Planning Scheme; (c) follow the QLD Heritage Act 1992 process for removal of items from the Local Heritage Register; (d) amend the Planning Scheme Heritage Overlay Mapping to reflect the removals; and (e) amend the Heritage Overlay Code, for inclusion within the next major amendment to the Whitsunday Planning Scheme 2017, including any necessary administrative amendments.
42	24/03/2021		MINOR MEMOS	That Council adopt the minor amendments list for inclusion into the Major Amendment to the Whitsunday Planning Scheme, including any necessary administrative amendments.
43	24/03/2021		DRIVEWAYS	That Council resolves to include the amendments to the 'Operational Works Table of Assessment' for a Driveway in the Whitsunday Planning Scheme 2017 Major Amendment, including any

				associated administrative amendments.

Attachment 2 – Draft Proposed Major Amendment Whitsunday Planning Scheme V4.0

Whitsunday Regional Council Planning Scheme

July 2017
Version 4.0
<Insert new artwork here>

Citation and commencement

This Planning Scheme may be cited as the *Whitsunday Regional Council Planning Scheme 2017.*

A notice was published in the Government Gazette No. 58 on 30 June, 2017 for the Planning Scheme for the Whitsunday Regional Council.

The commencement date for the Planning Scheme was 3 July, 2017.

Amendments to the Planning Scheme are included at Appendix 2.

Community statement

The Whitsunday region is a local government area located in North Queensland, approximately 1,000km north of Brisbane and 600km south of Cairns. In March 2008, Whitsunday Regional Council was formed by the amalgamation of Bowen and Whitsunday Shires. The region is a key pillar in Queensland's economy, rich in tourism, agriculture, mining and construction.

From country to coast, the Whitsunday region supports a diverse range of lifestyles that incorporates the regions key economic sectors and tropical natural environment. Major towns Collinsville, Bowen, Proserpine and Airlie Beach each have their own identity that Council seeks to develop and diversify to build a successful, stronger and more resilient region over the next 20 years. The region is spoilt for opportunity by growing links to the Asian tourist market and development of economic catalysts such as Whitsunday International Airport, Airlie Beach developments and the development of the Abbot Point Growth Gateway Project boosting regional exports. The ongoing management of the regions pristine natural environments, fertile soils and water supplies will maintain strong agricultural production in the region.

Whitsunday Regional Council seeks to accommodate these opportunities through the enhancement of existing infrastructure, developing liveable communities and encouraging innovative practices that improve efficiency and sustainability. The region is anticipated to grow by over 20,000 people up to 2036 with over 9,000 more jobs being created. This growth will be accommodated in a compact urban form to reduce impacts on the regions pristine natural environments and fertile agricultural lands. Population growth will be focused around existing centres, encouraging new modern developments that enhance the local community, build a sense of place and develop vibrant liveable communities that are attractive to permanent residents and tourists alike. Development will supplement the special opportunities afforded to the Whitsunday Region in order to maximise the growth in Tourism, Agriculture, Mining and Construction sectors.

In 2036, the Whitsundays will have a thriving economy in a diverse range of sectors that offer resiliency to the region and capitalise on the areas' privileged location alongside tropical paradise, beautiful hinterlands, fertile soils and resource rich geology. The region will attract new families, cultures and millions of visitors who flock to experience the unique Whitsunday lifestyle. Whilst the region will grow and develop, the Whitsunday lifestyle unique to each township will remain.

Editor's note—The Community statement is extrinsic material to the planning scheme.

Strategic vision

The Whitsundays strategic vision is reflected in the *Whitsunday Regional Council Planning Scheme 2017*, which shows how we will effectively manage growth and land use in the region. This Planning Scheme is the planning framework that focuses upon capitalising upon the regions' opportunities in a sustainable manner using the following guiding principles identified within the strategic framework:

- liveable communities and housing;
- economic growth;
- environment and heritage;
- safety and resilience to hazards; and
- infrastructure;

The *Whitsunday Regional Council Planning Scheme 2017* and its strategic intent will guide growth in the region whilst maintaining a high quality of life for Whitsunday residents.

Editor's note—The Strategic vision is extrinsic material to the planning scheme.

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Part 1 About the Planning Scheme

1.1 Introduction

(1) The Whitsunday Regional Council Planning Scheme 2017 (Planning Scheme) has been prepared in accordance with the *Sustainable Planning Act 2009* (the SP Act) as a framework for managing development in a way that advances the purpose of the SP Act.

(2) The Planning Scheme was amended for alignment with the *Planning Act 2016* (the Act) by the Minister's rules under section 293 of the Act on July 3 2017.

(3) In seeking to achieve this purpose, the Planning Scheme sets out Whitsunday Regional Council's (WRC) intention for the future development in the Planning Scheme area, over the next 20 years to 2036.

(4) The Planning Scheme seeks to advance state and regional policies through more detailed local responses, taking into account the local context.

(5) While the Planning Scheme has been prepared with a 20 year horizon, it will be reviewed periodically in accordance with the Act to ensure that it responds appropriately to the changes in the community at a local, regional and state level.

(6) The Planning Scheme applies to the Planning Scheme area of WRC including all premises, roads, internal waterways and local government tidal areas and interrelates with the surrounding local government areas illustrated in **Schedule 2** (Mapping) Overview map - WRC - 01 (Local government Planning Scheme area and context).

Editor's note—State legislation may state that the Planning Scheme does not apply to certain areas, e.g. strategic port land where there is a land use plan only to the extent of any inconsistency. In accordance with the provisions of section 26 of the *Sustainable Ports Development Act 2015* a port overlay for a master planned area prevails over the Planning Scheme, to the extent of any inconsistency.

1.2 Planning Scheme components

(1) The Planning Scheme comprises the following components:

(a) about the Planning Scheme

(b) State Planning Provisions

(c) the Strategic framework

(d) the Local government infrastructure plan

(e) Tables of assessment

(f) the following zones and where applicable, zone precincts specified in Table 1.2.1 (Zones and zone precincts) below:

Table 1.2.1 Zone and zone precincts

Zone and zone precincts
Residential zones category
(a) Low density residential zone (b) Low-medium density residential zone (c) Tourist accommodation zone
Centre zones category
(a) Major centre zone code (b) District centre zone code (c) Local centre zone code (d) Neighbourhood centre zone code
Industry zones category
(a) Low impact industry zone code (b) Medium impact industry zone code (c) High impact industry zone code (d) Special industry zone code (e) Waterfront industry zone code (f) Industry investigation zone code
Recreation zones category
(a) Recreation and open space zone code
Environmental zones category
(a) Environmental management and conservation zone code
Other zones category
(a) Community facilities zone code (b) Emerging community zone code (c) Mixed use zone code (d) Rural zone code (e) Rural residential zone code

(g) the Local plans specified in Table 1.2.2 (Local plans) below:

Table 1.2.2 Local plans

Local plans
(a) Airlie Beach local plan (b) Bowen local plan ~~(a)~~(c) Hamilton Island local plan

(h) the Overlays specified in Table 1.2.3 (Overlays) below:

Table 1.2.3 Overlays

Overlays
(a) Acid sulfate soils overlay code (b) Agricultural land overlay code (c) Airport environs overlay code (d) Biodiversity, waterways and wetlands overlay code (e) Building heights overlay code ~~(d)~~(f) Bushfire hazard overlay code ~~(e)~~(g) Coastal hazard~~protection~~ overlay code ~~(f) Environmental significance overlay code~~ ~~(g)~~(h) Extractive resources overlay code ~~(h)~~(i) Flood hazard overlay code ~~(i)~~(j) Heritage overlay code ~~(j)~~(k) Infrastructure overlay code ~~(k)~~(l) Landslide hazard overlay code ~~(l) Waterway and wetlands overlay code~~

(i) the Development codes specified in Table 1.2.4 (Development codes) below:

Table 1.2.4 Development codes

Development codes
Relevant prescribed codes as specified in the Schedules of the *Planning Regulation 2017*
(a) Community residence code (b) Forestry for wood production code (c) Reconfiguring a lot (subdividing one into two lots) and associated operational works code
Use codes
(a) Business activities code (b) Caretaker's accommodation code (c) Child care centre code (d) Dual occupancy code (e) Dwelling house code (f) Extractive industry code (g) Home based business code (h) Industry activities code (i) Market code ~~(j) Multi-unit uses code~~ ~~(k)~~(j) Relocatable home park and tourist park code (k) Renewable energy facilities code (l) Residential care facility and retirement facility code (m) Rural activities code ~~(m)~~(n) Rural tourism code ~~(n)~~(o) Sales office code (p) Service station code (q) Short-term accommodation and Multi-unit uses code ~~(o)~~ ~~(p)~~(r) Telecommunications code
Other development codes

(a) Advertising devices code
(b) Construction management code
(c) Excavation and filling code
~~(c)~~(d) Healthy waters code
~~(d)~~(e) Infrastructure code
~~(e)~~(f) Landscaping code
~~(f)~~(g) Reconfiguring a lot code
~~(g)~~(h) Transport and parking code

(j) Schedules and Appendices

(2) The Planning Scheme policies specified in Table 1.2.5 (Planning Scheme policies) below support the Planning Scheme:

Table 1.2.5 Planning Scheme policies

Planning Scheme policies
(a) Environmental features Planning Scheme policy (b) Heritage Planning Scheme policy (c) Landscaping Planning Scheme policy (d) Natural hazards Planning Scheme policy (e) Third party advice or comment Planning Scheme policy (f) Growth management Planning Scheme policy (g) ~~Whitsunday Regional Council~~WRC development manual Planning Scheme policy ~~(g)~~(h) Waste management policy

1.3 Interpretation

1.3.1 Definitions

(1) A term used in the Planning Scheme has the meaning assigned to that term by one of the following:

(a) the *Planning Act 2016* (the Act); or

(b) the *Planning Regulation 2017* (the Regulation); or

(c) the definitions in **Schedule 1 (Definitions)** of the Planning Scheme; or

(d) the *Acts Interpretation Act 1954*; or

(e) the ordinary meaning where that term is not defined in the Act, the Regulation, **Schedule 1 (Definitions)** of the Planning Scheme or the *Acts Interpretation Act 1954*.

(2) In the event a term has been assigned a meaning in more than one of the instruments listed in subsection 1.3.1(1), the meaning contained in the instrument highest on the list will prevail.

(3) A reference in the Planning Scheme to any act includes any regulation or instrument made under it, and where amended or replaced, if the context permits, means the amended or replaced act.

(4) A reference in the Planning Scheme to a specific resource document or standard means the latest version of the resource document or standard.

(5) A reference to a part, section, table or schedule is a reference to a part, section, table or schedule of the Planning Scheme.

Editor's note—In accordance with Section 5(2)(a) of the *Planning Regulation 2017*, the regulated requirements apply to this Planning Scheme.

1.3.2 Standard drawings, maps, notes, editor's notes and footnotes

(1) Standard drawings contained in codes or schedules are part of the Planning Scheme.

(2) Maps provide information to support the outcomes and are part of the Planning Scheme.

(3) Notes are identified by the title 'Note' and are part of the Planning Scheme.

(4) Editor's notes and footnotes are extrinsic material, as per the *Acts Interpretation Act 1954*, and are identified by the title 'Editor's note' and 'Footnote' and are provided to assist in the interpretation of the Planning Scheme; they do not have the force of law.

Note—This is an example of a note.
Editor's note—This is an example of an editor's note.
Footnote[1]—See example at bottom of page.

1.3.3 Punctuation

(1) A word followed by ';' or ', and' is considered to be 'and'.

(2) A word followed by '; or' means either or both options can apply.

1.3.4 Zones for roads, waterways and reclaimed land

(1) The following applies to a road, closed road, waterway or reclaimed land in the Planning Scheme area:

(a) if adjoined on both sides by land in the same zone—the road, waterway or reclaimed land is in the same zone as the adjoining land;

(b) if adjoined on one side by land in a zone and adjoined on the other side by land in another zone—the road, waterway or reclaimed land is in the same zone as the adjoining land when measured from a point equidistant from the adjoining boundaries;

(c) if the road, waterway or reclaimed land is adjoined on one side only by land in a zone—the entire waterway or reclaimed land is in the same zone as the adjoining land; and

(d) if the road, waterway or reclaimed land is covered by a zone, then that zone applies.

Editor's note—The boundaries of the local government area are described by the maps referred to in the *Local Government Regulation 2012*.

[1] Footnote—this is an example of a footnote.

1.4 Categories of development

(1) The categories of development under the Act are:

(a) accepted development;

Editor's note—A development approval is not required for development that is accepted development. Under section 44(6)(a) of the Act, if a categorising instrument does not apply a category of development to a particular development, the development is accepted development. Schedule 7 of the Regulation also prescribes accepted development.

(b) assessable development
   i. code assessment
   ii. impact assessment

Editor's note—A development approval is required for assessable development. Schedules 9, 10 and 12 of the Regulation also prescribe assessable development.

(c) prohibited development.

Editor's note—A development application may not be made for prohibited development. Schedule 10 of the Regulation prescribes prohibited development.

(2) The Planning Scheme states the category of development for certain types of development and specifies the category of assessment for assessable development in the Planning Scheme area in **Part 5 (Tables of assessment)**.

Editor's note—Section 43 of the Act identifies that a categorising instrument categorises development and specifies categories of assessment and may be a regulation or local categorising instrument. A local categorising instrument includes a Planning Scheme, a Temporary Local Planning Instrument or a variation approval.

1.5 Hierarchy of assessment benchmarks

(1) Where there is an inconsistency between provisions in the Planning Scheme, the following rules apply:

(a) the Strategic framework prevails over all other components to the extent of the inconsistency for impact assessment;

(b) relevant codes as specified in Schedules 6 and 10 of the Regulation prevail over all other components to the extent of the inconsistency;

(c) overlays prevail over all other components (other than the matters mentioned in (a) and (b)) to the extent of the inconsistency;

(d) local plan codes prevail over zone codes, use codes and other development codes to the extent of the inconsistency;

(e) zone codes prevail over use codes and other development codes to the extent of the inconsistency; and

(f) provisions of Part 10 (Other plans) may override any of the above.

1.6 Building work regulated under the Planning Scheme

(1) Section 17(b) of the Regulation identifies the assessment benchmarks for building work that a local planning instrument must not change the effect to the extent the building work is regulated under the building assessment provisions, unless permitted under the *Building Act 1975*.

(2) The building assessment provisions are listed in section 30 of the *Building Act 1975*.

Editor's note—The building assessment provisions are stated in section 30 of the Building Act 1975 and are assessment benchmarks for the carrying out of building assessment work or building work that is accepted development subject to any requirements (see also section 31 of the *Building Act 1975*).

(3) This Planning Scheme, through Part 5, regulates building work in accordance with sections 32 and 33 of the *Building Act 1975*.

Editor's note—The *Building Act 1975* permits Planning Schemes to:

- regulate, for the Building Code of Australia (BCA) or the Queensland Development Code (QDC), matters prescribed under a regulation under the *Building Act 1975* (section 32). These include variations to provisions contained in parts MP1.1, MP 1.2 and MP 1.3 of the QDC such as heights of buildings related to obstruction and overshadowing, siting and design of buildings to provide visual privacy and adequate sight lines, on-site parking and outdoor living spaces. It may also regulate other matters, such as designating land liable to flooding, designating land as bushfire prone areas and transport noise corridors;
- deal with an aspect of, or matter related or incidental to, building work prescribed under a regulation under section 32 of the *Building Act 1975*; and
- specify alternative boundary clearances and site cover provisions for Class 1 and 10 structures under section 33 of the *Building Act 1975*.

Refer to Schedule 9 of the Regulation to determine assessable development, the type of assessment and any referrals applying to the building work.

(4) The building assessment provisions are contained in the following parts of this Planning Scheme.

Table 1.6.1 Building assessment provisions contained in the Planning Scheme

Building assessment matter addressed in the Planning Scheme	Relevant section of the Planning Scheme
Flood hazard	
Identification of part of the Planning Scheme area as a natural hazard management area (flood).	Schedule 2 Flood hazard overlay maps
Identification of the level to which flood levels of habitable rooms of a building must be built.	Section 8.2.98 Flood hazard overlay code
Bushfire hazard	
Designation of part of the Planning Scheme area as a designated bushfire prone area for the BCA and QDC.	Schedule 2 Bushfire hazard overlay maps

Editor's note—A decision in relation to building work that is assessable development under the Planning Scheme should only be issued as a preliminary approval under section 83(b) of the *Building Act 1975*.

Editor's note—In a development application, the applicant may request preliminary approval for building work. The decision on that development application can also be taken to be a referral agency's response under section 56 of the Act, for building work assessable against the *Building Act 1975*. The decision notice must state this.

1.7 Local government administrative matters

~~(1) There are no local government administrative matters for the Planning Scheme.~~For the purpose of the Whitsunday Planning Scheme 2017, pursuant to 276(1)(c) of the Act, the whole of the Planning Scheme area is identified as a party house restriction area.

~~(2)~~(1)

Contents of Part 2

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2.3 Referral agency delegations 2:42:3
2.4 Regulated Requirements 2:42:3

Tables in Part 2

Table 2.3.1 Delegated referral agency jurisdictions

Part 2 State Planning Provisions

2.1 State Planning Policy

The Minister has identified that State Planning Policy ~~April 2016~~ July 2017 is reflected in the Planning Scheme in the following ways:

State interests in the State Planning Policy are appropriately reflected

Liveable communities and housing

- Liveable communities;
- Housing supply and diversity.

Economic growth

- Agriculture;
- Development and construction;
- Mining and extractive resources;
- Tourism.

Environment and heritage

- Biodiversity;
- Coastal environment;
- Cultural heritage;
- Water quality.

Safety and resilience to hazards

- Emissions and hazardous activities;
- Natural hazards, risk and resilience (Flood, Bushfire, Landslide, Coastal).

Infrastructure

- Energy and water supply;
- Infrastructure Integration;
- Transport infrastructure;
- Strategic airports and aviation facilities;
- Strategic Ports.

State interests in the State Planning Policy not integrated

None

State interests in the State Planning Policies not relevant to Whitsunday Regional Council

None

Editor's note–In accordance with section 8(4)(a) of the Act the State Planning Policy applies to the extent of any inconsistency.

2.2 Regional plan

The Minister has identified that the Planning Scheme, specifically the Strategic framework, appropriately advances the Mackay Isaac Whitsunday Regional Plan 2012, as it applies in the Planning Scheme area.

2.3 Referral agency delegations

Schedule 10 of the Regulation identifies referral agencies for certain aspects of development. The following referral agencies have delegated the following referral agency jurisdictions to Whitsunday Regional Council:

Table 2.3.1 Delegated referral agency jurisdictions

Column 1 **Application involving**	**Column 2** **Referral agency and type**	**Column 3** **Referral jurisdiction**
There are no delegated referral agency jurisdictions for the Planning Scheme		

Editor's note - For the above listed referral agency delegations, the applicant is not required to refer the application to the referral agency listed under Schedule 10 of the Regulation because the local government will undertake this assessment role.

2.4 Regulated requirements

The Minister has identified that the regulated requirements prescribed in the Planning Regulation 2017 dated 1 September 2017 are appropriately reflected in full in the Planning Scheme.

Editor's note – Section 16(3) of the Act states that the contents prescribed by the Regulation apply instead of a local planning instrument, to the extent of any inconsistency.

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Maps in Part 3

Strategic framework map ~~– SFM – 01:05 (Strategic framework map)~~

Part 3 Strategic framework

3.1 Preliminary

(1) The Strategic framework sets the policy direction for the Planning Scheme and forms the basis for ensuring appropriate development occurs in the Planning Scheme area for the life of the Planning Scheme.

(2) Mapping for the Strategic framework is included in Schedule 2 (Mapping).

(3) For the purpose of describing the policy direction for the Planning Scheme, the Strategic framework is structured in the following way:

(a) the Strategic intent;

(b) the following five themes that collectively represent the policy intent of the Planning Scheme:

(i) Liveable communities and housing;

(ii) Economic growth;

(iii) Environment and heritage;

(iv) Safety and resilience to hazards; and

(v) Infrastructure;

(c) the Strategic outcome proposed for development in the Planning Scheme area for each theme; and

(d) the Land use strategies for achieving these outcomes.

(4) Although each theme has its own section, the Strategic framework in its entirety represents the policy intent of the Planning Scheme. Zones organise the Planning Scheme area in a way that facilitates the location of preferred or acceptable land uses.

3.2 Strategic intent

(1) In 2036 and beyond, the Whitsundays is a prosperous, liveable and sustainable region where people live, work, play and invest. The region, extending over 23,862 square kilometres, will be built on the integration of the unique attributes and competitive advantages of Airlie Beach, Bowen, Collinsville, Proserpine and their surrounds as shown in Strategic framework map - SFM - 01:05 (Strategic framework maps).

(2) The Region's major townships and communities have a strong and proud social identity, being sustainable and well supported through the provision of a variety of affordable housing and lifestyle options and appropriate community and utility infrastructure. Risks to the community (including life and property) from hazardous activities and natural hazards are appropriately mitigated or avoided, ensuring disaster management response capabilities and capacities are supported.

(3) The major townships of the Region operate as a network of centres, each maintaining relatively strong levels of growth supported by the ongoing strengthening and development of the key economic sectors of agriculture, mining and tourism and associated development and construction activities. The strength of these industry sectors will continue to be supported by maintaining and protecting the resources and values upon which these sectors rely, promoting business innovation and increasing accessibility to robust road, rail, port and aviation facilities.

(4) The promotion and protection of the Region's cultural heritage and unique aquatic, coastal and inland environmental values continues as developmental and environmental pressures increase cumulatively. All matters of ecological, environmental and scenic value (including key urban gateways, views and vistas) are valued and preserved, ensuring the health and resilience of the regions overall biodiversity.

3.2.1 Liveable communities and housing

3.2.1.1 Strategic outcome

(1) The life-enriching (educational, health, cultural and recreational) capacities and resilience of the community and community infrastructure are enhanced or restored for present and future generations in a way which supports the region's settlement pattern and hierarchy of centres.

3.2.1.2 Land use strategies

(1) The settlement pattern of the Region ensures that urban uses are primarily located within the established urban areas of Airlie Beach, Bowen, Collinsville and Proserpine with greater densities focused around higher order Centre zones of each township and major public transport corridors. New residential expansion will occur in Cannon Valley (to the west of Airlie Beach), Mount Bramston and Mount Gordon (to the south of Bowen) and Moongunya Springs (to the north of Collinsville).

(2) Limited Accommodation activities and low order Community and convenience Business activities are located within the settlements of Brisk Bay, Conway Beach, Dingo Beach, Gumlu, Guthalungra, Hideaway Bay, Shutehaven, Merinda, Mt Coolon and Wilson Beach.

(3) The community of each major urban area will be supported by a hierarchy of centres. The highest order, Major centres are provided at Paluma Road/Galbraith Avenue (Cannonvale), Herbert Street (Bowen) and Main Street (Proserpine). Communities of the Region are further serviced by a series of lower order, smaller scale centres. Business activities are only located outside of centres if they cannot be practically

located within nominated centres due to their nature, scale, effects or necessary relationship to other activities or particular features, resources or infrastructure.

(4) Primary and/or secondary schools are co-located with existing facilities in Bowen, Cannonvale, Collinsville, Gumlu, Hamilton Island, Hayman Island and Proserpine, with new facilities in Cannon Valley and Mount Gordon and higher order educational facilities, such as a secondary boarding school and a tertiary educational facility located within the established urban area of Proserpine.

(5) A regionally significant health facility is located in Proserpine with supporting health facilities in Airlie Beach, Bowen, Cannonvale, Collinsville and Hamilton Island.

(6) Urban uses are only located away from identified urban areas if they cannot be practically located within the existing settlement pattern due to their nature, scale, effects or necessary relationship to other activities or particular features, resources or infrastructure.

(7) Rural residential areas will continue to occur on the fringes of urban areas and will generally not expand into adjacent rural areas.

(8) Non-resident workers accommodation is only utilised for the workforce associated with the construction phase of a project. This form of accommodation activity is not to be utilised for workers associated with the operational phase of a project. Accommodation activities for an operational workforce are to be integrated into existing urban areas.

3.2.2 Economic growth

3.2.2.1 Strategic outcome

(1) The economic resilience, wealth creating and employment generating capacities of the Region's key sectors are protected and enhanced for present and future generations.

3.2.2.2 Land use strategies

(1) Agricultural land (including stock routes) and existing Rural activities are protected and diversified with Rural activities being intensified in areas to the west of Collinsville, along the Bowen River, west and south-west of Proserpine and between Gumlu and Bowen. Land based marine aquaculture is promoted within Aquaculture Development Areas and protected from incompatible development. The long-term viability of this agricultural land is enhanced through sustainable land management practices, the use of new technology and the improvement and expansion of supporting infrastructure, such as water storage and irrigation infrastructure.

(2) Rural activities are located outside the existing and proposed urban and environmental areas with only Business and Industry activities that support or supplement the primary Rural activity being located within rural areas. Development in rural areas does not create unacceptable biosecurity risks, such as the spread of pest and weed species, to current or future potential agriculture within our Region.

~~(2)~~(3) The integrity and functionality of the mining and extractive resource industry, including within the Abbot Point and Galilee Basin State Development Areas, are maintained and protected to reduce potential conflict with incompatible uses.

~~(3)~~(4) Major industrial expansion is appropriately accommodated where the scale, intensity and nature of the Industry activity can be adequately supported. New expansion will predominantly occur within the Abbot Point State Development Area, around the Delta

intersection, between Collinsville and the mines to the south, east of Proserpine and within the vicinity of the Whitsunday Coast Airport.

~~(4)~~(5) Bulk loading and supporting multi-commodity port facilities are established at the Port of Abbot Point. High impact industry is primarily located adjacent to Port of Abbot Point within the Abbot Point State Development Area, particularly where Industry activities value-add to commodities being exported or imported through the Port of Abbot Point.

~~(5)~~(6) Marine industry servicing the fishing and recreational boating fleet of Central and North Queensland is primarily located within the Bowen Boat Harbour with limited facilities of a smaller nature and scale located at ~~Abel Point~~Coral Sea Marina and Port of Airlie. A public passenger ferry facility servicing the Whitsunday Islands is primarily located at the Port of Airlie with supplementary facilities at ~~Abel Point~~Coral Sea Marina and Shute Harbour. Commercial vessels supporting the tourism industry predominately operate from Coral Sea Marina and Port of Airlie, with opportunity for expansion within Shute Harbour. A freight (barge) facility servicing the Whitsunday Islands is primarily located at Shute Harbour.

~~(6)~~(7) Tourism ~~accommodation and ancillary Business activities~~ development ~~are primarily~~ is located within the established island resorts ~~at~~ on Daydream, Hayman, Hook, Long, Dent and South Molle Islands. A new major regional function facility is located within Airlie Beach. New or expanded tourist accommodation and ancillary Business activities are located at Airlie Beach, Bowen Front Beach, Bowen Marina, Funnel Bay, Hamilton Island, Horseshoe Bay, Murray Bay, Rose Bay, Stone Island and Shute Harbour with ~~limited n~~Nature-based tourism at the northernmost point of Cape Gloucester, Lake Proserpine surrounds and in rural areas where appropriate. Tourism development is~~. A major regional function facility is located adjacent to the Airlie Beach Main Street and Esplanade area. Tourism accommodation and related activities are~~ only located away from these areas if their nature, scale and effects are ~~small~~ minor and they have a necessary relationship to other activities or ~~particular natural features~~areas of high natural amenity. Tourism development supports drive tourism routes and focuses tourism support and services in existing towns to provide economic diversity, choice and enhanced visitor experience.

3.2.3 Environment and heritage

3.2.3.1 Strategic outcome

(1) ~~The~~ The cultural heritage of the Region, including the Ngaro, Gia, Juru, Jangga, Birriah peoples and early European settlements, is preserved and treasured. Ecological systems, including air, soil, water, flora and fauna habitats are conserved or enhanced through development to ensure sustainability for future generations. ~~cultural heritage and life-supporting capacities of air, ecosystems, soil and water are conserved, enhanced or restored for present and future generations and biological resilience is protected.~~

3.2.3.2 Land use strategies

(1) The key ecological values of the Great Barrier Reef, Brigalow Belt, Central Queensland Coast and Einasleigh Uplands and the fauna and flora they support are protected. The protection of key endangered species such as the Black-throated Finch (White-rumped subspecies), Leatherback Turtle, Loggerhead Turtle, Olive Ridley Turtle and Proserpine Rock-wallaby and the habitat on which they rely continues to be enhanced as development and environmental pressures increase.

(2) The core landscape values within the Region are protected and, if practical, enhanced. The core landscape values include the urban gateways to Airlie Beach, Bowen, Collinsville, Proserpine and the Whitsunday Coast Airport, as well as the significant visual backdrops as viewed from major scenic routes of the Bowen

Development Road, Bruce Highway, Lascelles Avenue, Shute Harbour Road and the boating routes along the coastline and throughout the Whitsunday Islands.

(3) Development, within Ngaro Country around the Town of Whitsunday and Islands, Gia Country around Proserpine and Gloucester surrounds, Juru Country around Bowen and Gumlu surrounds, Jangga Country around Mount Coolon surrounds and Birriah Country around Collinsville surrounds is designed sympathetically in response to cultural traditions and protected areas and, where possible, development incorporates local Aboriginal art and storytelling.

(4) Places and objects of Aboriginal cultural significance, such as sites for story telling or other cultural activities, scarred trees, stone extraction sites, ceremonial sites, fireplaces, ochre, axe grinding grooves, rock art, fish traps, graves, old growth vegetation, including culturally significant flora and fauna, shell middens, artefact scatters and traditional foods are appropriately preserved for current and future generations to maintain important connections to Country, lore and ancestry.

~~(3)~~(5) All places of cultural significance that reflect historic traditions, culture and early settlement forms ~~Places of cultural significance~~ are appropriately preserved and promoted to enhance community identity and maintain important connections to the past for the benefit of current and future generations.

3.2.4 Safety and resilience to hazards

3.2.4.1 Strategic outcome

(1) The safety of the community, property and infrastructure is protected and enhanced for present and future generations and the community's resilience to hazards is enhanced.

3.2.4.2 Land use strategies

(1) Risks to people and property are minimised in areas within or adjacent to natural hazard areas, particularly escarpments behind Airlie Beach and Hideaway Bay (landslide); Bells Gully, Campbell Creek, Don River, and Proserpine River (flooding); and Bowen Front Beach, Cannonvale Beach, Conway Beach, Greys Bay, Rose Bay, Queens Beach, Queens Bay and Wilson Beach (coastal erosion and storm surge).

(2) Community health and safety, sensitive land uses and the natural environment are appropriately planned and managed to avoid or mitigate potential adverse impacts of emissions (air, noise and odour) and hazardous activities, whilst ensuring the long-term viability of such activities (Industry and Recreation activities).

3.2.5 Infrastructure

3.2.5.1 Strategic outcome

(1) The service-supporting capacities of infrastructure are coordinated, efficient and orderly. Infrastructure provision and operation are financially sustainable.

3.2.5.2 Land use strategies

(1) An international airport (runway and terminal), remote mine operations centre, air freight and supporting education and Industry activities are located within the vicinity of the Whitsunday Coast Airport, with a secondary regional airport (runway and terminal) at Hamilton Island. Smaller scale and supplementary facilities are provided at Bowen, Collinsville, Flametree and Mount Coolon Airports.

(2) Existing road and rail corridors are protected and operate efficiently. New road connections are established from Cannonvale to Gregory-Cannon Valley Road as a parallel network to Shute Harbour Road, from Collinsville to Proserpine and between Abbot Point State Development Area and the North-West Minerals Province. New railway connections are established from Abbot Point State Development Area to the North Bowen Basin, the Galilee Basin State Development Area and the North-West Minerals Province.

(3) Significant power generation facilities are established and expanded near Collinsville (base-load power station) and the Burdekin Falls Dam (hydro-electric) connecting to the north-south transmission lines which traverse the Region. Large scale Renewable energy facilities are promoted in rural areas around existing and future major electrical infrastructure in the Region, where they do not affect quality agricultural land for present and future productivity. Small scale renewable energy facilities are only located in rural areas where functioning as ancillary power generation to support a primary use. Existing transmission corridors are protected and new corridors are provided from the Collinsville Power Station to the Galilee Basin and the North-West Minerals Province. Gas pipeline(s) are established from gas fields in the Bowen Basin to the Collinsville Power Station and, where practical, new development aligns with existing or future linear corridors.

(4) The water resource catchments of the Bowen River Weir, Burdekin Falls Dam, Peter Faust Dam (Lake Proserpine) and the potential water resource catchments of the Andromache River and Urannah Creek are protected for future use. Water pipelines are established from Lake Dalrymple and the Burdekin River to Bowen and Abbot Point State Development Area, and from the Bowen River catchment to the Galilee Basin State Development Area.

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Part 4 Local government infrastructure plan

4.1 Preliminary

(1) This local government infrastructure plan (LGIP) has been prepared in accordance with the requirements of the *Planning Act 2016*.

(2) The purpose of the local government infrastructure plan is to:

(a) integrate infrastructure planning with the land use planning identified in the Planning Scheme;

(b) provide transparency regarding a local government's intentions for the provision of trunk infrastructure;

(c) enable a local government to estimate the cost of infrastructure provision to assist its long term financial planning;

(d) ensure that trunk infrastructure is planned and provided in an efficient and orderly manner; and

(e) provide a basis for the imposition of conditions about infrastructure on development approvals.

(3) The local government infrastructure plan:

(a) states in Section 4.2 (Planning assumptions) the assumptions about future growth and urban development including the assumptions of demand for each trunk infrastructure network;

(b) identifies in Section 4.3 (Priority infrastructure area) the prioritised area to accommodate urban growth up to 2031;

(c) states in Section 4.4 (Desired standards of service) for each trunk infrastructure network the desired standard of performance;

(d) identifies in Section 4.5 (Plans for trunk infrastructure) the existing and future trunk infrastructure for the following networks:

(i) water supply;

(ii) sewerage;

(iii) stormwater;

(iv) transport; and

(v) parks and land for community facilities.

(e) provides a list of supporting documents that assist in the interpretation of the local government infrastructure plan in the Editor's note – Extrinsic material at the end of Section 4.

4.2 Planning assumptions

(1) The planning assumptions state the assumptions about:

(a) population and employment growth; and

(b) the type, scale, location and timing of development including the demand for each trunk infrastructure network.

(2) The planning assumptions together with the desired standards of service form a basis for the planning of the trunk infrastructure networks and the determination of the priority infrastructure area.

(3) The planning assumptions have been prepared for:

(a) the base date 2016 and the following projection years to accord with future Australian Bureau of Statistics census years:

(i) mid 2021;

(ii) mid 2026;

(iii) mid 2031; and

(iv) Ultimate development.

(b) the LGIP development types in column 2 that include the uses in column 3 of Table 4.2.1; and

(c) the projection areas identified on Local government infrastructure map – PAM – 01:06 (Projection area map) in Schedule 3—Local government infrastructure plan mapping and tables.

Table 4.2.1 Relationship between LGIP development categories, LGIP development types and uses

Column 1 LGIP development category	Column 2 LGIP development type	Column 3 Uses
Residential development	Single dwellings	Caretaker's accommodation Community residence Dwelling house Dwelling unit Home-based business
	Multiple dwellings	Dual occupancy Multiple dwelling Relocatable home park Residential care facility Retirement facility Rooming accommodation Rural workers' accommodation Short-term accommodation
	Other dwellings	Nature-based tourism Non-resident workforce accommodation Resort complex Tourist park
Non-residential development	Retail	Adult store Agricultural supplies store Bulk landscape supplies Car wash

Column 1 LGIP development category	Column 2 LGIP development type	Column 3 Uses
		Food and drink outlet Garden centre Hardware and trade supplies Hotel Outdoor sales Service station Shop Shopping centre
	Commercial	Bar Brothel Club Function facility Health care services Indoor sport and recreation Nightclub entertainment facility Office Sales office Showroom Theatre Tourist attraction Veterinary services
	Community purpose	Cemetery Child care centre Community care centre Community use Crematorium Detention facility Educational establishment Emergency services Funeral parlour Hospital Landing Major sport, recreation and entertainment facility Market Motor sport facility Outdoor sport and recreation Outstation Park Place of worship
	Industry	Air services Extractive industry High impact industry Low impact industry Marine industry Medium impact industry Research and technology industry Rural industry Service industry Special Industry Warehouse
	Other	Animal husbandry Animal keeping Aquaculture Cropping Environment facility Intensive animal industry

Column 1 LGIP development category	Column 2 LGIP development type	Column 3 Uses
		Intensive horticulture Major electrical infrastructure Parking station Permanent plantation Port services Renewable energy facility Roadside stall Substation Telecommunications facility Transport depot Utility installation Wholesale nursery Winery

(4) Details of the methodology used to prepare the planning assumptions are stated in the extrinsic material.

4.2.1 Population and employment growth

(1) A summary of the assumptions about population and employment growth for the Planning Scheme area is stated in Table 4.2.1.1 Population and employment assumptions summary.

Table 4.2.1.1 Population and employment growth assumptions summary

Column 1 Description	Column 2 Assumptions				
	Base date 2016	2021	2026	2031	Ultimate development
Population	36,380	38,380	41,680	44,970	66,460
Employment	16,959	18,246	19,534	20,821	22,109

(2) Detailed assumptions about growth for each projection area and LGIP development type category are identified in the following tables in Schedule 3 Local government infrastructure plan mapping and tables:

(a) for population, Table SC3.1.1—Existing and projected population; and

(b) for employment, Table SC3.1.2—Existing and projected employees.

4.2.2 Development

(1) The developable area is represented by zones relating to urban uses excluding the Environmental zones category identified on Zone maps ZM – 01:29 and not affected by the protected areas identified on Environmental significance overlay maps ES–01:29.

(2) The planned density for future development is stated in Table SC3.1.3 in Schedule 3—Local government infrastructure plan mapping and tables.

(3) A summary of the assumptions about future residential and non-residential development for the Planning Scheme area is stated in Table 4.2.2.1 Residential dwellings and non-residential floor space assumptions summary.

Table 4.2.2.1 Residential dwellings and non-residential floor space assumptions summary

Column 1 Description	Column 2 Assumptions				
	Base date 2016	2021	2026	2031	Ultimate development
Residential dwellings	16,995	17,958	19,556	21,164	30,378
Non-residential floor space (m^2 GFA)	622,199	674,471	726,735	779,003	831,274

(4) Detailed assumptions about future development for each projection area and LGIP development type are identified in the following tables in Schedule 3 Local government infrastructure plan mapping and tables:

(a) for residential development, Table SC3.1.4; and

(b) for non-residential development, Table SC3.1.5.

4.2.3 Infrastructure demand

(1) The demand generation rate for a trunk infrastructure network is stated in Column 4 of Table SC3.1.3 in Schedule 3 Local government infrastructure plan mapping and tables.

(2) A summary of the projected infrastructure demand for each service catchment is stated in:

(a) for the water supply network, Table SC3.1.6;

(b) for the sewerage network, Table SC3.1.7;

(c) for the stormwater network, Table SC3.1.8;

(d) for the transport network Table SC3.1.9; and

(e) for the parks and land for community facilities network, Table SC3.1.10.

4.3 Priority infrastructure area

(1) The priority infrastructure area identifies the area prioritised for the provision of trunk infrastructure to service the existing and assumed future urban development up to 2031.

(2) The priority infrastructure area is identified on Local government infrastructure plan map – PAM – 01:06 (Projection area map).

4.4 Desired standards of service

(1) This section states the key standards of performance for a trunk infrastructure network.

(2) Details of the standard of service for each trunk infrastructure network is identified in the extrinsic material.

4.4.1 Water supply network

(1) Ensure drinking water complies with the National Health and Medical Research Council (NHMRC) Australian Drinking Water Guidelines and Whitsunday Regional Council's Drinking Water Quality Management Plan.

(2) Collect, store, treat and convey potable water from source to consumers in accordance with the *Water Act 2000*.

(3) Minimise non-revenue water loss.

(4) Design the water supply network in accordance with Council's adopted standards identified in the Planning Scheme, including the Equivalent Demands detailed in SC6.8 Whitsunday Regional Council development manual Planning Scheme policy, to provide:

  (a) average day consumption (AD) – 500 l/EP/day;

  (b) Mean Day max Month (MDMM) 1.5 x AD;

  (c) Peak Day (PD) 2.25 x AD;

  (d) Peak Hour (PH) 1/12 x PD;

  (e) minimum and maximum supply pressure of 220 kPa and 800 kPA at each property boundary; and

  (f) fire flow for residential (15 l/s for 2 hours), industrial and commercial (30 l/s for 4 hours) development.

(5) Design water systems to meet the requirements of the *Water Supply (Safety and Reliability) Act 2008* and Water Services Association of Australia (WSAA) guidelines.

4.4.2 Sewerage network

(1) Provide a reliable network that collects, stores, transports, treats and releases sewerage from premises.

(2) Design the sewerage network in accordance with:

(a) Council's adopted standards identified in the Planning Scheme;

(b) WSAA guidelines;

(c) the *Water Act 2000*;

(d) all Environmental Protection Agency (EPA) licence conditions;

(e) key design parameters identified in Table 4.4.2.1; and

(f) Equivalent Demands detailed in SC6.8 Whitsunday Regional Council development manual Planning Scheme policy.

Table 4.4.2.1 Key design parameters for the sewerage network

Column 1 Infrastructure item	Column 2 Design parameters
All (network)	**Average dry weather flow (ADWF)** 270l/EP/day **Peak wet weather flow (PWWF)** 5 x ADWF OR C_1 x ADWF (whichever is greater) $C_1 = 15 \times (EP)^{-0.1587}$ **Peak dry weather flow (PDWF)** C_2 x ADWF $C_2 = 4.7\ (EP)^{-0.105}$
Pump stations	Emergency storage of 4 hours @ ADWF Installed pump capacity ≥ PWWF
Gravity sewers	Air space of at least 75% of pipe diameter at design flow Slope to achieve self-cleansing velocity
Rising mains	Minimum velocity: 0.75 m/s (Preferred 1.5 m/s) Maximum velocity: 2.5 m/s
Sewerage treatment / release	Existing and future DEHP licence conditions

4.4.3 Stormwater network[1]

(1) Collect and convey stormwater flows for both major 100 year flood events and minor low flow year flood events as per the specific land use requirements from existing and future land use in a manner that protects life and does not cause nuisance or inundation of property.

(2) Design the stormwater network to comply with Council's adopted standards identified in the Planning Scheme, which generally accord with the Queensland Urban Drainage Manual or the Transport and Main Roads Road Drainage Design Manual.

(3) Design road crossing structures to provide an appropriate level of flood immunity for a 50 and 10 year flood events for major and minor roads respectively in accordance with Council's adopted standards identified in the Planning Scheme.

(4) Meet water quality objectives for receiving waters at all times.

(5) Design the water quality system to achieve the minimum reductions in mean annual loads from unmitigated development ~~identified in Table 4.4.3.1~~ in accordance with ~~Department of State Development, Infrastructure and Planning~~ State Planning Policy ~~– April 2016~~ July 2017 and WRC Stormwater Design Guideline.

~~Table 4.4.3.1 Minimum reductions in mean annual loads from unmitigated development~~

~~Column 1 Region~~	~~Column 2 Pollutant reduction (%)~~			
	~~Total suspended solids~~	~~Total Phosphorus~~	~~Total Nitrogen~~	~~Gross pollutants >5mm~~
~~Central QLD (north)[1]~~	~~75~~	~~60~~	~~40~~	~~90~~
~~Western QLD[2]~~	~~85~~	~~60~~	~~45~~	~~90~~

~~**Notes:**~~

~~1. Applies to development for urban purposes with population centres greater than 3000 persons.~~

~~2. Applies to development for urban purposes with population centres greater than 25,000 persons.~~

~~3. Excludes development that is less than 25% impervious.~~

~~4. In lieu of modelling, the default bio-retention treatment area to comply with load reduction targets for all Queensland regions is 1.5% of the contributing catchment area.~~

~~5. Regions defined by State Planning Policy mapping.~~

[1] Drainage elements that form an inherent part of road infrastructure such as culverts and bridge structures can be included with road infrastructure planning.

4.4.4 Transport network

4.4.4.1 Roads

(1) Provide a functional urban hierarchy that supports settlement patterns, commercial and economic activities, and freight movement.

(2) Design the road network to comply with the following:

(a) adopted standards identified in the Planning Scheme;

(b) AUSTROADS guides;

(c) the Department of Transport and Main Roads Interim Guide to Road Planning and Design Practice;

(d) maximum road volume to capacity ratios identified in Table 4.4.4.1.1; and

(e) maximum degree of saturation for intersections identified in Table 4.4.4.1.2.

Table 4.4.4.1.1 Maximum volume to capacity ratios for the road network

Column 1 Infrastructure item	Column 2 Design parameters	
	Residential	Non-residential
Arterial	0.8	0.8
Sub-arterial	0.8	0.8
Major collector	0.8	0.8
Arterial (state-controlled)	0.8	0.8

Table 4.4.4.1.2 Maximum degree of saturation for road intersections

Column 1 Road network item	Column 2 Maximum degree of saturation
Traffic signals	0.9
Roundabout	0.9
Priority controlled	0.8

4.4.4.2 Footpaths and cycle ways

(1) Plan cycle ways and footpaths to provide a safe, attractive and convenient network that links residential areas to major activity nodes and public transport interchanges, thereby encouraging walking and cycling as acceptable travel alternatives.

(2) Design cycle ways (including on-road cycle ways) and footpaths to comply with council's adopted standards identified in the Planning Scheme.

4.4.4.3 Public transport

(1) Ensure development accommodates the integration of public transport services.

(2) Provide bus stops including bus bays, shelters, seating and bus information systems in accordance with adopted standards identified in the Planning Scheme

4.4.5 Public parks and land for community facilities network

(1) Provide an accessible network of parks, open space, and community facilities that meets the needs of residents and visitors in accordance with the rate of provision identified in Table 4.4.5.1 and accessibility standards outlined in Table 4.4.5.2.

(2) Ensure land for public parks and community facilities has:

(a) minimum land size as identified in Table 4.4.5.3;

(b) configuration, slope, and acceptable level of flood immunity in accordance with Table 4.4.5.3 and adopted standards identified in the Planning Scheme; and

(c) embellishments to complement the type and purpose of the public park as identified in Table 4.4.5.4.

Table 4.4.5.1 Rate of land provision for public parks and community facilities

Column 1 Infrastructure item	Column 2 Rate of provision (Ha/1000 people)	
	District	Regional
Recreation park	0.5	0.8
Sport park	1.2	1.0

Table 4.4.5.2 Accessibility standards for public parks and land for community facilities

Column 1 Infrastructure item	Column 2 Accessibility standard (km)[1]	
	District	Regional
Recreation park	2	25
Sport park	5	10
Notes: 1. 90% of population should be within this distance of a facility		

Table 4.4.5.3 Size of public parks for community facilities

Column 1 Characteristic	Column 2 Recreation park		Column 3 Sports park	
	District	Regional	District	Regional
Average (desired) size (Ha)	4	13	6	18
Shape of land	Preferred square to rectangular aspect ratio no greater than 2:1		Square or rectangle to maximise playing field area	
Minimum desired flood immunity (area)	20% > Q50 10% > Q100	50%> Q50 20% > Q100	Fields and courts > Q50 Built facilities > Q100	
Minimum desired grade	Max grade 1:10 for 80% of park, 1:14 where possible	Average grade 1:20, 1:50 for kick-about areas	Max grade of 1:80 for all playing surfaces	Laser levelling to a maximum gradient of 1:100 for all playing surfaces
Road frontage	30-50% of park perimeter to have direct road frontage, preferably on a collector road		25-50% of the park perimeter to have direct road frontage	

Table 4.4.5.4 Standard facilities/embellishments for public parks

Column 1 Embellishment	Column 2 Recreation park		Column 3 Sports park	
	District	Regional	District	Regional
Playground (activity node)	X	X	X	X
Other activity nodes (half court, rebound wall, skate facility, exercise equipment, etc.)	5 - 7	13	-	-
Fencing – bollards or log and rail to prohibit car access	X	X	X	X
Shade trees clustered near activity area	X	X	X	X
Turf	X	X	X	X
Landscaped garden beds	X	X	X	X
Irrigation	X	X	X	X
Internal pathways and paving	X	X	X	X
Bicycle racks	X	X	X	X
Signage	X	X	X	X
Shade structures	X	X	X[1]	X[1]
Tap / bubbler	X	X	X	X
Bench seating	X	X	X	X
Electric barbeque	X	X	-	-
Picnic shelters	X	X	-	-
Bins	X	X	X	X
Dog off leash area	X	X	-	-
Toilets	X[2]	X	X	X
Internal roads and car parking	-	X	X	X
Public recreation centre	-	-	X	X
Spectator facilities (grandstand)	-	-	X	X
Sports fields	-	-	X	X
Sports courts	-	-	X	X

1. Shade structures should be structures teams can stand under, not shade sails.

2. Only to be provided in certain district recreation parks based on popularity, location and type of use.

4.5 Plans for trunk infrastructure

(1) The plans for trunk infrastructure identify the trunk infrastructure networks intended to service the existing and assumed future urban development at the desired standard of service up to 2031.

4.5.1 Plans for trunk infrastructure maps

(1) The existing and future trunk infrastructure networks are shown on the following maps in Schedule 3—Local government infrastructure plan mapping and tables:

(a) Local government infrastructure plan map – PFTI WN – 01:06 (Water network plans for trunk infrastructure map);

(b) Local government infrastructure plan map – PFTI SN – 01:05 (Sewerage network plans for trunk infrastructure map);

(c) Local government infrastructure plan map – PFTI SWN – 01:05 (Stormwater network plans for trunk infrastructure map);

(d) Local government infrastructure plan map – PFTI TN – 01:05 (Transport network plans for trunk infrastructure map); and

(e) Local government infrastructure plan map – PFTI PCFN – 01:06 (Parks and land for community facilities network plans for trunk infrastructure map).

(2) The State infrastructure forming part of transport trunk infrastructure network has been identified using information provided by the relevant State infrastructure supplier.

4.5.2 Schedules of works

(1) Details of the existing and future trunk infrastructure networks are identified in the electronic Excel schedule of works model which can be viewed here: http://www.whitsunday.qld.gov.au/390/Infrastructure-Planning-and-Charges

(2) The future trunk infrastructure is identified in the following tables in Schedule 3—Local government infrastructure plan mapping and tables:

(a) for the water supply network, Table SC3.2.1;

(b) for the sewerage network, Table SC3.2.2;

(c) for the stormwater network, Table SC3.2.3;

(d) for the transport network, Table SC3.2.4; and

(e) for the parks and land for community facilities network, Table SC3.2.5.

Editor's note – Extrinsic material

The below table identifies the documents that assist in the interpretation of the Local government infrastructure plan and are extrinsic material under the *Statutory Instruments Act 1992.*

List of Extrinsic material

Column 1 Title of document	Column 2 Date	Column 3 Author
Whitsunday Region Economic Analysis: Economic and Population Study	November 2013	Norling Consulting Pty Ltd
Whitsunday Regional Council Urban Growth Study	May 2014	Whitsunday Regional Council
Whitsunday Regional Council Development Manual	28 June 2016	Whitsunday Regional Council
Trunk Infrastructure Definitions	May 2017	Whitsunday Regional Council
Local Government Infrastructure Plan (LGIP) and Schedule of Works Model (SOW) explanatory notes	October 2017	Whitsunday Regional Council
LGIP Checklist	May 2017	Whitsunday Regional Council
Department of Transport and Main Roads Consultation Letter	May 2017	Department of Transport and Main Roads
Whitsunday Regional Council Priority Infrastructure Plan Water and Sewerage Network Model Updates	May 2014	Hyder Consulting
LGIP Interim Review Checklist	October 2020	Whitsunday Regional Council
Whitsunday Regional Council Sewer and Water Network Modelling	March 2020	ARCADIS
W8 Removal Justification Report	October 2020	Whitsunday Regional Council

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Part 5 Tables of assessment

5.1 Preliminary

The tables in this part identify the category of development, and the category of assessment and assessment benchmarks for assessable development in the Planning Scheme area.

5.2 Reading the tables

The tables identify the following:

(1) the category of development:

  (a) prohibited;

  (b) accepted, including accepted with requirements; and

  (c) assessable development, that requires either code or impact assessment;

(2) the category of assessment - code or impact - for assessable development in:

  (a) a zone and, where used, a precinct of a zone;

  (b) a local plan and, where used, a precinct of a local plan; and

  (c) an overlay where used;

(3) the assessment benchmarks for assessable development, including:

  (a) whether a zone code or specific provisions in the zone code apply (shown in the 'assessment benchmarks' column);

  (b) if there is a local plan, whether a local plan code or specific provisions in the local plan code apply (shown in the 'assessment benchmarks' column);

  (c) if there is an overlay;

    (i) whether an overlay code applies (shown in the tables in Section 5.10) ;or

    (ii) whether the assessment benchmarks as shown on the overlay map (noted in the 'assessment benchmarks' column) applies;

  (d) any other applicable code(s) (shown in the 'assessment benchmarks' column);

(4) any variation to the category of assessment (shown as an 'if' in the 'category of assessment' column) that applies to the development.

Note—Development will only be taken to be prohibited development under the Planning Scheme if it is identified as prohibited development in Schedule 10 of the Regulation.

Editors note—Examples of matters that can vary the category of assessment are gross floor area, height, numbers of people or precinct provisions.

5.3 Categories of development and assessment

5.3.1 Process for determining the category of development and the category of assessment for assessable development

The process for determining a category of development and category of assessment is:

(1) for a material change of use, establish the use by reference to the use definitions in Schedule 1;

(2) for all development, identify the following:

(a) the zone or zone precinct that applies to the premises, by reference to the zone map in Schedule 2;

(b) if a local plan or local plan precinct applies to the premises, by reference to the local plan map in Schedule 2 (Mapping); and

(c) if an overlay applies to the premises, by reference to the overlay map in Schedule 2 (Mapping);

(3) determine if the development is accepted development under Schedule 6 of the Regulation;

Editors note—Schedule 6 of the Regulation prescribes development that a Planning Scheme can not state is assessable development where the matters identified in the schedule are met.

(4) determine if the development is assessable development under Schedule 10 of the Regulation by reference to section 5.7 Regulated categories of development and assessment—building work and categories of assessment prescribed by the Regulation.

(5) if the development is not listed in the tables in section 5.4 Regulated categories of development and categories of assessment prescribed under Schedule 6 of the Regulation, determine the initial category of assessment by reference to the tables in:

- section 5.5 Categories of development and assessment—Material change of use
- section 5.6 Categories of development and assessment—Reconfiguring a lot
- section 5.7 Categories of development and assessment—Building work
- section 5.8 Categories of development and assessment—Operational work

(6) a precinct of a zone may change the categories of development or assessment and this will be shown in the 'category of assessment' column of the tables in sections 5.5, 5.6, 5.7 and 5.8;

(7) if a local plan applies refer to the table(s) in section 5.9 Categories of development and assessment—Local plans, to determine if the local plan changes the category of development or assessment for the zone;

(8) if a precinct of a local plan changes the category of development or assessment this is to be shown in the 'category of development and assessment' column of the table(s) in section 5.9;

(9) if an overlay applies, refer to section 5.10 Category of development and assessment—Overlays, to determine if the overlay further changes the category of development or assessment.

5.3.2 Determining the category of development and categories of assessment

(1) A material change of use is assessable development requiring impact assessment:

(a) unless the Tables of assessment state otherwise;

(b) if a use is not listed or defined; and

(c) unless otherwise prescribed in the Act or the Regulation.

(2) Reconfiguring a lot is assessable development requiring code assessment unless the Tables of assessment state otherwise or unless otherwise prescribed in the Act or the Regulation.

(3) Building work and operational work are accepted development, unless the Tables of assessment state otherwise or unless otherwise prescribed in the Act or the Regulation.

(4) Where an aspect of development is proposed on a premises included in more than one zone, local plan or overlay, the category of development or assessment ~~for that aspect is the highest category under each of the applicable~~ only relates to the part of the premises affected by that zone~~s~~, local plan~~s~~ or overlay~~ss~~.

(5) Where development is proposed on a premises partly affected by an overlay, the category of development or assessment for the overlay only relates to the part of the premises affected by the overlay.

(6) For the purposes of Schedule 6, Part 2 Material change of use section (2)(2)(d)(i) or (ii) of the Regulation, an overlay does not apply to the premises if the development meets the acceptable outcomes that form the requirements for accepted development in the relevant overlay code.

(7) If development is identified as having a different category of development or assessment under a zone than under a local plan or an overlay, the highest category of development or assessment applies as follows:

(a) accepted development subject to requirements prevails over accepted development;

(b) code assessment prevails over accepted development where subject to requirements and accepted development; and

(c) impact assessment prevails over code assessment, accepted development where subject to requirements and accepted development.

(8) Despite subsections 5.3.2(4) and (7) above, a category of assessment in a local plan overrides a category of assessment in a zone and a category of assessment in an overlay overrides a category of assessment in a zone or local plan.

(9) Provisions of Part 10 (Other plans) may override any of the above.

(10) The category of development prescribed under Schedule 6 of the Regulation overrides all other categories of development or assessment for that development under the Planning Scheme to the extent of any inconsistency.

Editor's note—Schedule 7 of the Regulation also identifies development that the State categorises as accepted development. Some development in the schedule may still be made assessable under the Planning Scheme.

(11) Despite all of the above, if development is listed as prohibited development under Schedule 10 of the Regulation, a development application cannot be made.

Note—Development is to be taken to be prohibited development under the Planning Scheme only if it is identified in Schedule 10 of the Regulation.

5.3.3 Determining the requirements for accepted development and assessment benchmarks and other matters for assessable development

(1) Accepted development does not require a development approval and is not subject to assessment benchmarks. However, certain requirements may apply to some types of development for it to be accepted development. Where nominated in the Tables of assessment, accepted development must comply with the requirements identified as acceptable outcomes in the relevant parts of the applicable code(s) as identified in the relevant column.

(2) Accepted development that does not comply with one or more of the nominated acceptable outcomes in the relevant parts of the applicable code(s) becomes code assessable development, unless otherwise specified.

(3) The following rules apply in determining assessment benchmarks for each category of development and assessment.

(4) Code assessable development:

(a) is to be assessed against all the assessment benchmarks identified in the assessment benchmarks column;

(b) that occurs as a result of development becoming code assessable pursuant to subsection 5.3.3(2), must:

(i) be assessed against the assessment benchmarks for the development application, limited to the subject matter of the required acceptable outcomes that were not complied with or were not capable of being complied with under subsection 5.3.3(2); and

(ii) comply with all required acceptable outcomes identified in subsection 5.3.3(1), other than those mentioned in subsection 5.3.3(2);

(c) that complies with:

(i) the purpose and overall outcomes of the code complies with the code; and

(ii) the performance or acceptable outcomes complies with the purpose and overall outcomes of the code;

(d) is to be assessed against any assessment benchmarks for the development identified in section 26 of the Regulation.

Editors Note—Section 27 of the Regulation identifies the matters code assessment must have regard to.

(5) Impact assessable development:

(a) is to be assessed against all identified assessment benchmarks in the assessment benchmarks column (where relevant);

(b) assessment is to have regard to the whole of the Planning Scheme, to the extent relevant; and

(c) is to be assessed against any assessment benchmarks for the development identified in section 30 of the Regulation.

Note—The first row of each table of assessment is to be checked to confirm if there are assessment benchmarks that commonly apply to general scenarios in the zone, local plan or overlay.

Editor's note—Section 31 of the Regulation identifies the matters that impact assessment must have regard to.

5.4 Regulated categories of development and categories of assessment prescribed by the Regulation

For the development specified in the 'use', 'zone' or 'development' columns, the categories of development and assessment are prescribed.

Table 5.4.1 Development under Schedules 6 of the Regulation: Material change of use

Material change of use		
Use	**Categories of assessment**	**Assessment benchmarks**
Community residence	Accepted subject to requirements Editors note—Refer to the material change of use tables for category of assessment for community residence that do not comply with the requirements for accepted development.	Editors note—requirements for community residence development that may not be made assessable under a Planning Scheme are set out in Schedule 6, Part 2 section 6 of the Regulation.

Table 5.4.2 Regulated categories of development and categories of assessment: Reconfiguring a lot

Reconfiguring a lot		
Zone	**Category of assessment**	**Assessment benchmarks**
Residential zone category or Industry zone category (other than a Rural residential zone)	Code assessment for subdivision of one lot into two lots (and associated operational work) if code assessment is required under Schedule 10, Part 12 of the Regulation	Reconfiguring a lot (subdividing one lot into two lots) and associated operational work code Editors note—Assessment benchmarks for reconfiguring a lot are set out in Schedule 12 of the Regulation.

Table 5.4.3 Regulated categories of development and categories of assessment: Building work

Table not used.

Table 5.4.4 Regulated categories of development and categories of assessment: Operational work

Operational work		
Zone	**Category of assessment**	**Assessment benchmarks**
Residential zone category or Industry zone category	Code assessment for operational work associated with reconfiguring a lot requiring code assessment under Schedule 10, Part 12 Division 2 of the Regulation	Editors note—Assessment benchmarks for reconfiguring a lot and associated operational works are set out in Schedule 12 of the Regulation.

Table 5.4.5 Regulated development: Overlays

Table not used.

5.5 Categories of development and assessment – Material change of use

The following tables identify the categories of development and assessment for development in a zone for making a material change of use.

Table 5.5.1 Community facilities zone

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Community facilities zone code Infrastructure code
Community residence	Code assessment if ~~complying with the acceptable outcomes of the applicable code(s);~~ (a) for the reuse of an existing building used for a residential purpose; and (b) involving no building work; or ~~(a)~~(c) only minor building work.	Dwelling house code Community facilities zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Residential care facility	Code assessment	Residential care facility and retirement facility code Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Retirement facility	Code assessment	Residential care facility and retirement facility code Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Healthy waters code Market code Community facilities zone code Transport and parking code

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	Code assessment	Business activities code Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Cemetery	Accepted development if undertaken by or on behalf of Council	Community facilities zone code Transport and parking code
	Otherwise code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Child care centre	Code assessment	Child care centre zone Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Crematorium	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Educational establishment	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Emergency services	Accepted development if undertaken by or on behalf of the ~~:~~ Council~~; or~~ ~~State government.~~	
	Otherwise impact assessment	The Planning Scheme

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Funeral parlour	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Health care services	Code assessment	Business activities code Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hospital	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Place of worship	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Code assessment	Business activities code Community facilities zone code Healthy waters code Landscaping code Transport and parking code
Outdoor sport and recreation	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Air services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Detention facility	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Parking station	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Substation	Code assessment	Community facilities zone code Healthy waters code Landscaping code Transport and parking code
Telecommunications facility	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Telecommunications facility code
	Otherwise code assessment	Telecommunications facility code Community facilities zone code Healthy waters code Infrastructure code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1(Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.2 District centre zone

District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code District centre zone code Infrastructure code
Dual occupancy	Code assessment	Dual occupancy code District centre zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code District centre zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code District centre zone code Infrastructure code
Multiple dwelling	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Residential care facility and retirement facility code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Short-term accommodation	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code

District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		District centre zone code Healthy waters code Transport and parking code Landscaping code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Agricultural supplies store	Code assessment if ~~:~~ ~~not exceeding a maximum building height of 12m above ground level; and~~complying with the acceptable outcome ~~complying with the acceptable outcomes of the applicable code(s).~~ AO4.1 of the Business activites code.	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Garden centre	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Market code District centre code Healthy waters code Transport and parking code
Office	Accepted development if:	Business activities code Transport and parking code

District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	(a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	
	Otherwise code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code District centre zone code Healthy waters code Infrastructure code
Service station	Code assessment	Service station code District centre code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shopping centre	Code assessment if: (a) having a maximum GLFA of 5,000m2; and (b) not exceeding a maximum building height of 12m above ground level.	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Veterinary services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code

District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Bar	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Club	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Function facility	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hotel	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Theatre	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	Code assessment for a micro-brewery or coffee roasting, only where ancillary to a Food and drink outlet.	Industry activities code District centre zone code Infrastructure code Landscaping code Transport and parking code Healthy waters code
	Otherwise impact assessment.	The Planning Scheme
Service industry	Accepted development if:	Industry activities code Transport and parking code

District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	(a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	
	Otherwise code assessment	Industry activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Child care centre	Code assessment	Child care centre zone District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Health care services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code

District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.3 Emerging community zone

Emerging community		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Emerging community zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Emerging community zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Emerging community zone code Healthy waters code Infrastructure code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme

Emerging community		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.4 Environmental management and conservation zone

Environmental management and conservation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
All Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
All Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
All Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development If: (a) located on Council owned or controlled land; and (b) undertaken by or on behalf of the Council.	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.5 High impact industry zone

High impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code High impact industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	Code assessment if: (a) having a gross floor area not exceeding 150m2; and (b) not involving a drive-through facility.	Business activities code Healthy waters code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Office	Code assessment ~~if complying with the acceptable outcomes of the applicable code(s)~~ if ancillary to an Industry activity on the premises.	Business activities code High impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Service station	Code assessment	Service station code Healthy waters code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
High impact industry	Code assessment	Industry activities code Healthy waters code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
Medium impact industry	Accepted development if complying with the acceptable outcomes of the applicable code(s) and on a premises less than 2,500m²	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Healthy waters code High impact industry zone code Infrastructure code

High impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Crematorium	Code assessment	Healthy waters code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Air services	Code assessment if: (a) the premises is used for the housing, serving, refuelling, maintenance and repair of aircraft; or (b) associated training and education facilities; or (c) aviation facilities.	Healthy waters code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Major electricity infrastructure	Code assessment	Healthy waters code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
Substation	Code assessment	Healthy waters code High impact industry zone code Landscaping code Transport and parking code
Telecommunications facility	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Telecommunications facility code
	Otherwise code assessment	Healthy waters code Telecommunications facility code High impact industry zone code Infrastructure code
Utility installation	Accepted development if undertaken by or on behalf of the Council	

High impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.6 Industry investigation zone

Industry investigation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
All Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Healthy waters code Industry investigation zone code Infrastructure code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.7 Local centre zone

Local centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Local centre zone code Infrastructure code
Dual occupancy	Code assessment	Dual occupancy code Local centre zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Local centre zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Local centre zone code Infrastructure code
Multiple dwelling	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Residential care facility and retirement facility code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Short-term accommodation	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code

Local centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Agricultural supplies store	Code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Garden centre	Code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Healthy waters code Market code Local centre zone code Transport and parking code
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code

Local centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Local centre zone code Healthy waters code Infrastructure code
Service station	Code assessment	Service station code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shopping centre	Code assessment if having a maximum GLFA of 1,500m2	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Veterinary services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme

Local centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Service industry	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Child care centre	Code assessment	Child care centre zone Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Health care services	Accepted development if involving no building work or only minor building work	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Code assessment	Business activities code Local centre zone code Healthy waters code

Local centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.8 Low density residential zone

Low density residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment if complying with the acceptable outcome AO21.2 of the Dwelling house code	Dwelling house code Low density residential zone code
	Otherwise impact assessment	The Planning Scheme
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Low density residential zone code Infrastructure code
Residential care facility	Code assessment	Residential care facility and retirement facility code Low density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Retirement facility	Code assessment	Residential care facility and retirement facility code Low density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Low density residential zone code Healthy waters code Infrastructure code
Shop	Code assessment if for ~~:~~ a corner store ~~; and complying with the acceptable outcomes of the applicable codes(s).~~	Business activities code Low density residential zone code Healthy waters code Infrastructure code Landscaping code

Low density residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Transport and parking code
	Otherwise impact assessment	The Planning Scheme
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Child care centre	Code assessment	Child care centre code Low density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Low density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above levels of assessment apply unless otherwise prescribed within the Act or the Regulation.

Table 5.5.9 Low impact industry zone

Low impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Low impact industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Agricultural supply store	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Bulk landscape supplies	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Car wash	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Food and drink outlet	Code assessment if: (a) having a GFA not exceeding 150m2; and (b) not involving a drive-through facility.	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Low impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise impact assessment	The Planning Scheme
Garden centre	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Office	Code assessment ~~if complying with the acceptable outcomes of the applicable code(s)~~	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	~~Otherwise impact assessment~~	~~The Planning Scheme~~
Outdoor sales	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Low impact industry zone code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Service station	Code assessment	Service station code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Showroom	Code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Low impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Veterinary services	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
~~Bulk landscape supplies~~	~~Accepted development if complying with the acceptable outcomes of the applicable code(s)~~	~~Industry activities code~~ ~~Transport and parking code~~
	~~Otherwise code assessment~~	~~Industry activities code~~ ~~Low impact industry zone code~~ ~~Infrastructure code~~ ~~Landscaping code~~ ~~Transport and parking code~~
Low impact industry	Accepted development if complying with the acceptable outcomes of the applicable code(s) and on a premise less than 2,500m².	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Medium impact industry	Code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Low impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Research and technology	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Service industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Warehouse	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Funeral Parlour	Code assessment	Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Low impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
Rural industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code Transport and parking code
	Otherwise code assessment	Rural activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Aquaculture	Code assessment	Rural activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Rural activities	Impact assessment	The Planning Scheme
Other activities		
Substation	Code assessment	Low impact industry zone code Infrastructure code Landscaping code Healthy waters code Transport and parking code
Telecommunications facility	Code assessment if complying with ~~the acceptable outcomes of the applicable code(s)~~AO1.1 of the Telecommunications facilities code	Telecommunications facility code Low impact industry zone code Healthy waters code Infrastructure code
	Otherwise impact assessment	The Planning Scheme
Transport depot	Code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Utility installation	Accepted development if undertaken by or on behalf of the Council	

Low impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.10 Low-medium density residential zone

Low-medium density residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Dual occupancy	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dual occupancy code
	Otherwise code assessment if complying with the acceptable outcome AO3.1 of the Dual occupancy code	Dual occupancy code Low-medium density residential zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment if complying with the acceptable outcome AO~~2~~1.2 of the Dwelling house code	Dwelling house code Low-medium density residential zone code
	Otherwise impact assessment	The Planning Scheme
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Low-medium density residential zone code Infrastructure code
Multiple dwelling	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Relocatable home park	Code assessment	Relocatable home park and tourist park code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Residential care facility and retirement facility code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code

Low-medium density residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Transport and parking code
Retirement facility	Code assessment	Residential care facility and retirement facility code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Short-term accommodation	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Tourist park	Code assessment	Relocatable home park and tourist park code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Low-medium density residential zone code Healthy waters code Infrastructure code

Low-medium density residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Shop	Code assessment if :for a ~~a~~ corner store ; ~~and complying with the acceptable outcomes of the applicable codes(s).~~	Business activities code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Child care centre	Code assessment	Child care centre zone Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		

Low-medium density residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.11 Major centre zone

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Major centre zone code Infrastructure code
Dual occupancy	Code assessment	Dual occupancy code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Major centre zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Major centre zone code Infrastructure code
Multiple dwelling	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Residential care facility and retirement facility code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Code assessment	

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Short-term accommodation		~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Agricultural supplies store	Code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Garden centre	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Transport and parking code
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code
	Otherwise impact assessable	The Planning Scheme
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Major centre zone code Healthy waters code Infrastructure code
Service station	Code assessment	Service station code Major centre code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shopping centre	Code assessment ~~if complying with the acceptable outcomes of the applicable code(s)~~	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	~~Otherwise impact assessment~~	~~The Planning Scheme~~
Veterinary services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Bar	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise ~~C~~code assessment ~~if complying with the acceptable outcomes of the applicable code(s)~~	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	~~Otherwise impact assessment~~	~~The Planning Scheme~~
Club	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise ~~C~~code assessment ~~if complying with the acceptable outcomes of the applicable code(s)~~	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	~~Otherwise impact assessment~~	~~The Planning Scheme~~
Function facility	Code assessment ~~if complying with the acceptable outcomes of the applicable code(s)~~	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	~~Otherwise impact assessment~~	~~The Planning Scheme~~
Hotel	Accepted development if:	Business activities code Transport and parking code

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	(a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	
	Otherwise ~~C~~code assessment ~~if complying with the acceptable outcomes of the applicable code(s)~~	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	~~Otherwise impact assessment~~	~~The Planning Scheme~~
Nightclub entertainment facility	Code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Theatre	Code assessment ~~if complying with the acceptable outcomes of the applicable code(s)~~	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	~~Otherwise impact assessment~~	~~The Planning Scheme~~
Tourist attraction	Impact assessment	The Planning Scheme
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	Code assessment for a micro-brewery or coffee roasting, only where ancillary to a Food and drink outlet.	Industry activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code Healthy waters code
	Otherwise impact assessment.	The Planning Scheme
Service industry	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Child care centre	Code assessment	Child care centre zone Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Educational establishment	Code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Health care services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hospital	Code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Parking station	Accepted development if undertaken by or on behalf of the Council	
	Otherwise code assessment	Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.12 Medium impact industry zone

Medium impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Medium impact industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Agricultural supply store	Accepted development if: (a) if involving no building work or only minor building work; and (b) complying with the acceptable outcomes of the applicable code(s).	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Bulk landscape supplies	Code assessment	Industry activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Car wash	Code assessment	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Food and drink outlet	Code assessment if: (a) having a gross floor area not exceeding 150m2; and (b) not involving a drive-through facility.	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme

Medium impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Garden centre	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment.	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Office	Code assessment ~~if complying with the acceptable outcomes of the applicable code(s)~~if ancillary to an Industry activity on the premises	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Outdoor sales	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business use code Transport and parking code
	Otherwise code assessment	Business use code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Service station	Code assessment	Service station code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Medium impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Showroom	Code assessment	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Veterinary services	Code assessment	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
~~Bulk landscape supplies~~	~~Code assessment~~	~~Industry activities code~~ ~~Medium impact industry zone code~~ ~~Infrastructure code~~ ~~Landscaping code~~ ~~Transport and parking code~~
Low impact industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Medium impact industry	Accepted development if complying with the acceptable outcomes of the applicable code(s) and on a premises less than 2,500m².	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Medium impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Research and technology	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Service industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Warehouse	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Crematorium	Code assessment	Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Funeral Parlour	Code assessment ~~if complying with the acceptable outcomes of the applicable code(s)~~	Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	~~Otherwise impact assessment~~	~~The Planning Scheme~~
All other Community activities	Impact assessment	The Planning Scheme

Medium impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
Rural industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code Transport and parking code
	Otherwise code assessment	Rural activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Rural activities	Impact assessment	The Planning Scheme
Other activities		
Air services	Code assessable if the premises is used for: (a) the housing, serving, refuelling, maintenance and repair of aircraft; or (b) associated training and education facilities; or (c) aviation facilities.	Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Major electricity infrastructure	Code assessment	Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Substation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Medium impact industry zone code Transport and parking code
	Otherwise code assessment	Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Telecommunications facility	Code assessment ~~if complying with the acceptable outcomes of the applicable code(s)~~if complying with AO1.1 of the Telecommunications facilities code.	Telecommunications facility code Medium impact industry zone code Healthy waters code Infrastructure code

Medium impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise impact assessment	The Planning Scheme
Transport depot	Code assessment	Industry activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Utility installation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Medium impact industry zone code Transport and parking code
	Otherwise code assessment	Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.13 Mixed use zone

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Mixed use zone code Infrastructure code
Dual occupancy	Code assessment if complying with the acceptable outcome AO3.1 of the Dual occupancy code	Dual occupancy code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment if complying with the acceptable outcome AO21.2 of the Dwelling house code	Dwelling house code Mixed use zone code
	Otherwise impact assessment	The Planning Scheme
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Mixed use zone Infrastructure code
Multiple dwelling	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	~~Multi-unit uses code~~ Residential care facility and retirement facility code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Mixed use zone code Healthy waters code

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Infrastructure code Landscaping code Transport and parking code
Short-term accommodation	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Market code Mixed use zone code Healthy waters code Transport and parking code
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Mixed use zone code

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Healthy waters code Infrastructure code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Bar	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Club	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Function facility	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Landscaping code Transport and parking code
Hotel	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Nightclub entertainment facility	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Theatre	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Tourist attraction	Impact assessment	The Planning Scheme
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	Code assessment for a micro-brewery or coffee roasting, only where ancillary to a Food and drink outlet.	Industry activities code Mixed use zone code Infrastructure code Landscaping code Transport and parking code Healthy waters code
	Otherwise impact assessment.	The Planning Scheme

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Health care services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Parking station	Code assessment	Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note— he above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.14 Neighbourhood centre zone

Neighbourhood centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Neighbourhood centre zone code Infrastructure code
Dual occupancy	Code assessment	Dual occupancy code Neighbourhood centre zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Neighbourhood centre zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Neighbourhood centre zone code Infrastructure code
Multiple dwelling	Code assessment	Multi-unit uses code Neighbourhood centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Neighbourhood centre zone code Healthy waters code

Neighbourhood centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Infrastructure code Landscaping code Transport and parking code
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Neighbourhood centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Neighbourhood centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Service industry	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Neighbourhood centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All Industry activities	Impact assessment	The Planning Scheme
Community activities		

Neighbourhood centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Child care centre	Code assessment	Child care centre zone Neighbourhood centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Neighbourhood centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.15 Recreation and open space zone

Recreation and open space		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Recreation and open space zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Market code Recreation and open space zone code Healthy waters code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	Code assessment if associated with a Recreation activity conducted on the same site	Business activities code Recreation and open space zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Function facility	Code assessment if associated with a club conducted on the same site	Business activities code Recreation and open space zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	Accepted development if undertaken by or on behalf of the Council	

Recreation and open space		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Accepted development if: (a) conducted by or on behalf of the council and does not include licensed premises; or (b) involving no building work; or (c) only minor building work.	
	Otherwise code assessment.	Business activities code Recreation and open space zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Outdoor sport and recreation	Accepted development if: (a) conducted by or on behalf of the council and does not include licensed premises; or (b) involving no building work; or (c) only minor building work.	
	Otherwise code assessment	Recreation and open space zone code Healthy waters code Infrastructure code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.16 Rural zone

Rural		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's Accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Rural zone code Infrastructure code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Rural zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Rural zone code Infrastructure code
Nature-based tourism	Code assessment	Rural tourism code Rural zone code Business activities code Healthy waters code Landscaping code Transport and parking code
Rural workers accommodation	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Rural zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Short-term accommodation	Code assessment if for Short-term accommodation (Dwelling)	Dwelling house code Short-term accommodation and multi-unit uses code Rural zone code Healthy waters code Transport and parking code
	Otherwise Impact assessment	The Planning Scheme
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Bulk landscape supplies	Code assessment	Industry activities code Rural zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Rural		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Food and drink outlet	Accepted development if: (a) ancillary to a Rural activity, Environment facility or Nature-based tourism; and (b) complying with the acceptable outcomes of the applicable code(s).	Rural tourism code Transport and parking code
	Otherwise code assessment	Rural tourism code Rural zone code Business activities code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) ancillary to a Rural activity, Environment facility or Nature-based tourism; and (b) complying with the acceptable outcomes of the applicable code(s).	Rural tourism code Transport and parking code
	Otherwise code assessment	Rural tourism code Rural zone code Business activities code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Veterinary services	Code assessment	Business activities code Rural zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
~~Bulk landscape supplies~~	~~Code assessment~~	~~Industry activities code~~ ~~Rural zone code~~ ~~Infrastructure code~~ ~~Landscaping code~~ ~~Transport and parking code~~
Low impact industry	Code assessment for a micro-brewery or coffee roasting, only where ancillary to a Food and drink outlet.	Industry activities code Rural zone code Rural tourism code Infrastructure code Landscaping code Transport and parking code Healthy waters code

Rural		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise impact assessment.	The Planning Scheme
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
Environment Facility	Code assessment	Rural tourism code Rural zone code Business activities code Infrastructure code Landscaping code Transport and parking code
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
Animal husbandry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code
	Otherwise code assessment	Rural activities code Rural zone code
Animal keeping	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural uses code
	Otherwise code assessment	Healthy waters code Rural activities code Rural zone code
Aquaculture	Code assessment	Healthy waters code Rural activities code Rural zone code
Cropping	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code Forestry for wood production code (where applicable)
	Otherwise code assessment	Healthy waters code Rural activities code Forestry for wood production code (where applicable) Rural zone code
Intensive animal industry	Code assessment if involving:	Healthy waters code

Rural		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	(a) 1,000 or less birds of poultry; or (b) 400 or less standard pig units; or (c) 150 or less standard cattle units; or (d) 1,000 or less standard sheep units.	Rural activities code Rural zone code
	Otherwise impact assessment	The Planning Scheme
Intensive horticulture	Code assessment	Healthy waters code Rural activities code Rural zone code
Roadside stall	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural uses code
	Otherwise code assessment	Healthy waters code Rural activities code Rural zone code
Rural industry	Code assessment if no part of the use area is within: (a) 250m of premises in the Rural residential zone; or (b) 500m of premises in a residential zone.	Healthy waters code Rural activities code Rural zone code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Wholesale nursery	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code Transport and parking code
	Otherwise code assessment	Healthy waters code Rural activities code Rural zone code Transport and parking code
All other Rural activities	Impact assessment	The Planning Scheme
Other activities		
Landing	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Renewable energy facility	Code assessment if for a Solar panel farm, and: (a) development footprint is less than 4ha; or (b) within 20km of a Collinsville substation, and development footprint is less than 40ha.	Renewable energy facilities code Rural zone code Infrastructure code Landscaping code Transport and parking code Healthy waters code
	Otherwise impact assessment	The Planning Scheme
Utility installation	Accepted development if undertaken by or on behalf of the Council	

Rural		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.17 Rural residential zone

Rural residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Dwelling house	Accepted development~~Self assessment~~ if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Rural residential zone code
Home based business	Accepted development~~Self assessment~~ if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Rural residential zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Sales office	Accepted development~~Self assessment~~ if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Rural residential zone code Healthy waters code Infrastructure code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	Accepted development~~Exempt~~ if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development~~Exempt~~ if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development~~Exempt~~	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
Animal husbandry	Accepted development~~Self assessment~~ if complying with the acceptable outcomes of the applicable code(s)	Rural activities code

Rural residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise code assessment	Rural activities code Rural residential zone code
Cropping	Accepted development~~Self assessment~~ if complying with the acceptable outcomes of the applicable code(s)	Rural activities code
	Otherwise code assessment	Healthy waters code Rural activities code Rural residential zone code
Roadside stall	Accepted development~~Self assessment~~ if complying with the acceptable outcomes of the applicable code(s)	Rural activities code
	Otherwise code assessment	Rural activities code Rural residential zone code
All other Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development~~Exempt~~ if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.18 Special industry zone

Special industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Special industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
All Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
High impact industry	Code assessment	Industry activities code Special industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Special industry	Code assessment	Industry activities code Special industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Major electricity infrastructure	Code assessment	Special industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Substation	Code assessment	Special industry zone code Healthy waters code

Special industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Infrastructure code Landscaping code Transport and parking code
Telecommunications facility	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Telecommunications facility code
	Otherwise code assessment	Telecommunications facility code Special industry zone code Healthy waters code Infrastructure code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.19 Tourist Accommodation zone

Tourist accommodation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment if complying with the acceptable outcomes of AO21.2 of the Dwelling house code	Dwelling house code Tourist accommodation zone code
	Otherwise impact assessment	The Planning Scheme
Relocatable home park	Code assessment	Relocatable home park and tourist park code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Resort complex	Code assessment	Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Short-term accommodation	Code assessment	~~Multi-unit uses code~~Short-term accommodation and multi-unit uses code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Tourist Park	Code assessment	Relocatable home park and tourist park code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		

Tourist accommodation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Food and drink outlet	Code assessment if complying with AO13.1 and AO13.3 of the Business activities code~~the acceptable outcomes of the applicable code(s)~~	Business activities code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Office	Code assessable if in a building consisting of both Accommodation and Business activities	Business activities code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Shop	Code assessment if complying with AO13.2 and AO13.3 of the Business activities code~~if complying with the acceptable outcomes of the applicable code(s)~~	Business activities code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme

Tourist accommodation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.20 Waterfront and marine industry zone

Waterfront and marine industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Waterfront and marine industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	Code assessment if: (a) having a gross floor area not exceeding 150m2; and (b) not involving a drive-through facility.	Business activities cod Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Outdoor sales	Code assessment if for the sale of marine vehicles and equipment	Business activities code Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Service station	Code assessment if primarily servicing marine industry and ancillary uses within the zone	Service station code Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Marine industry	Code assessment	Industry activities code Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Warehouse	Code assessment	Industry activities code Waterfront and marine industry zone code Healthy waters code

Waterfront and marine industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Infrastructure code Landscaping code Transport and parking code
Medium impact industry	Code assessment if for the processing, distribution and wholesale of seafood products	Industry activities code Waterfront and marine industry code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
Aquaculture	Code assessment	Rural activities code Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
~~Rural industry~~	~~Code assessment if for the distribution and wholesale of seafood products~~	~~Rural activities code~~ ~~Waterfront and marine industry zone code~~ ~~Infrastructure code~~ ~~Landscaping code~~ ~~Transport and parking code~~
All other Rural activities	Impact assessment	The Planning Scheme
Other activities		
Landing	Code assessment	Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Major electricity infrastructure	Code assessment	Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Waterfront and marine industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Parking station	Code assessment	Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Port services	Code assessment	Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Substation	Code assessment	Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Telecommunications facility	Code assessment ~~if complying with the acceptable outcomes of the applicable code(s)~~if complying with AO1.1 of the Telecommunications facilities code	Telecommunications facility code Waterfront and marine industry zone code Healthy waters code Infrastructure code
	Otherwise impact assessment	The Planning Scheme
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

5.6 Categories of development and assessment – Reconfiguration of a lot

The following table identifies the categories of development and assessment for reconfiguring a lot.

Table 5.6.1 Reconfiguring a lot

Reconfiguration of a lot		
Zone	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
~~Community facilities, or Environmental management and conservation, or Recreation and open space~~	~~Impact assessment~~Code assessment	~~The Planning Scheme~~
All ~~other~~ zones	~~Code assessment (where for an access easement) if compliant with the acceptable outcomes of the Reconfiguring a lot code, including the minimum lot size set out in Table 9.4.6.3.2 (Minimum lot sizes and dimensions)~~Code assessment if for a boundary realignment or creation of an access easement. ~~Otherwise impact assessment~~	Relevant zone code Reconfiguring a lot code Excavation and filling code Healthy waters code Infrastructure code Landscaping code Transport and parking code ~~The Planning Scheme~~
~~All other zones~~Residential Zones, Centre Zones, Industrial Zones, Emerging Communities Zone, Mixed Use Zone, Rural Zone and Rural Residential Zone.	Code assessment (where not for an access easement or boundary realignment) if complying with:~~Code assessment (where not for an access easement) if compliant with the minimum lot size set out in Table 9.4.6.3.2 (Minimum lot sizes and dimensions) of the Reconfiguring a lot code~~ (a) The minimum lot size and dimensions set out in Table 9.4.7.3.2 (Minimum lot sizes and dimensions) of the Reconfiguring a lot code; and ~~(a)~~(b) AO2.1 of the Reconfiguring a lot code.	Relevant zone code Reconfiguring a lot code Excavation and filling code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Community facilities, or Environmental management and conservation, or Recreation and open space	Code assessment (where not for an access easement or boundary realignment)	Relevant zone code Reconfiguring a lot code Excavation and filling code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

5.7 Categories of development and assessment – Building work

~~The following table identifies the categories of development and assessment for building work.~~

There is no building work regulated under the planning scheme in respect to zones. Building work is however regulated under 5.10 Categories of development and assessment – Overlays (Table 5.10.1) where triggering an assessment under the applicable overlays.

~~Table 5.7.1 Building work~~

~~For deletion~~~~Carrying out building work~~		
~~Precinct or Zone~~	**~~Categories of development and assessment~~**	**~~Assessment benchmarks for assessable development and requirements for accepted development~~**
~~Airlie Beach Precinct A~~	~~Impact assessment if exceeding a maximum building height of 14m above ground level~~	~~The Planning Scheme~~
~~Airlie Beach Precinct B~~	~~Impact assessment if exceeding a maximum building height of 14m above ground level~~	~~The Planning Scheme~~
~~Airlie Beach Precinct C~~	~~Impact assessment if exceeding a maximum building height of 21m above ground level~~	~~The Planning Scheme~~
~~Airlie Beach Precinct D~~	~~Impact assessment if exceeding a maximum building height of 18m above ground level~~	~~The Planning Scheme~~
~~Airlie Beach Precinct E~~	~~Impact assessment if exceeding a maximum building height of 14m above ground level~~	~~The Planning Scheme~~
~~Airlie Beach Precinct F~~	~~Impact assessment if exceeding a maximum building height of 18m above ground level~~	~~The Planning Scheme~~
~~Airlie Beach Precinct G~~	~~Impact assessment if exceeding a maximum building height of 14m above ground level~~	~~The Planning Scheme~~
~~Residential zones category~~		
~~Low density residential zone~~	~~Impact assessment if exceeding a maximum building height of:~~ ~~(a) 8.5m above ground level; or~~ ~~(b) 10m above ground level where located on slopes exceeding 15%.~~	~~The Planning Scheme~~
~~Low-medium residential density zone, if not within an Airlie Beach Precinct~~	~~Impact assessment if exceeding a maximum building height of 12m above ground level~~	~~The Planning Scheme~~
~~Tourist accommodation zone~~	~~Impact assessment if exceeding a maximum building height of:~~ ~~(a) 8.5m above ground level; or~~	~~The Planning Scheme~~

For deletionCarrying out building work		
Precinct or Zone	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	(b) 10m above ground level where located on slopes exceeding 15%.	
Centre zones category		
Major centre zone	Impact assessment if exceeding a maximum building height of 12m above ground level	The Planning Scheme
District centre zone, if not within an Airlie Beach Precinct	Impact assessment if exceeding a maximum building height of 12m above ground level	The Planning Scheme
Local centre zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level where located on slopes exceeding 15%.	The Planning Scheme
Neighbourhood centre zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level where located on slopes exceeding 15%.	The Planning Scheme
Industry zones category		
Low impact industry zone	Impact assessment if exceeding a maximum building height of 10m above ground level	The Planning Scheme
Medium impact industry zone	Impact assessment if exceeding a maximum building height of 15m above ground level	The Planning Scheme
High impact industry zone	Impact assessment if exceeding a maximum building height of 20m above ground level	The Planning Scheme
Special industry zone	Impact assessment if exceeding a maximum building height of 20m above ground level	The Planning Scheme
Waterfront industry zone	Impact assessment if exceeding a maximum building height of: (a) 20m above ground level for buildings and structures used for the manufacturing, servicing or repair of vessels; or (b) 12.5m above ground level for all other buildings and structures.	The Planning Scheme

For deletionCarrying out building work		
Precinct or Zone	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Industry investigation zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level where located on slopes exceeding 15%.	The Planning Scheme
Recreation zones category		
Recreation and open space zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level where located on slopes exceeding 15%.	The Planning Scheme
Environmental zones category		
Environmental management and conservation zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level where located on slopes exceeding 15%.	The Planning Scheme
Other zones category		
Community facilities zone, if not within an Airlie Beach Precinct	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level where located on slopes exceeding 15%.	The Planning Scheme
Emerging community zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level where located on slopes exceeding 15%.	The Planning Scheme
Mixed use zone, if not within an Airlie Beach Precinct	Impact assessment if exceeding a maximum building height of 12m above ground level	The Planning Scheme
Rural residential zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level where located on slopes exceeding 15%.	The Planning Scheme

5.8 Categories of development and assessment – Operational work

The following table identifies the categories of development and assessment for operational work.

Table 5.8.1 Operational work

Operational work		
Development	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Extracting gravel, rock, sand or soil from the place where it occurs naturally	Accepted development if undertaken by or on behalf of the Council	
Conducting a forest practice	Accepted development	
Excavating or filling that materially affects premises or their use	Accepted development if: (a) there would be a change of no greater than 1m in the level of any part of the site; and (b) less than 100m^3 of material is imported to or removed from the site.	Excavation and filling code
	Otherwise code assessment	Construction management code Excavation and filling code Healthy waters code
All operational works involving landscaping work where associated with the Reconfiguring of a lot or Material change of use	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Construction management code Landscaping code
	Otherwise code assessment	
All operational works involving landscaping work where not associated with the Reconfiguring of a lot or Material change of use; and on land owned, or to be owned, by Council.	~~Code assessment~~Accepted development if undertaken by or on behalf of the Council.	Construction management code Landscaping code
	Otherwise code assessment	
Operational works involving engineering work	Accepted development if: (a) undertaken by or on behalf of the Council; or (b) if involving parking or vehicular access that complies with the acceptable outcomes applicable codes.	Construction management code Excavation and filling code Healthy waters code Transport and parking code

Operational work		
Development	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise Code assessment	Construction management code Excavation and filling code Healthy waters code Infrastructure code Transport and parking code
Placing an advertising device on a premise	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Advertising devices code
	Otherwise code assessment	Advertising devices code Construction management code
Prescribed tidal works	Code assessment	Construction management code Excavation and filling code Healthy waters code
Construction of a non-tidal artificial waterway	Code assessment	Construction Management code
Undertaking roadworks on a local government road	Accepted development if undertaken by or on behalf of the Council	
	Otherwise code assessment	Construction management code Excavation and filling code Healthy waters code Transport and parking code
Undertaking roadwork's on a local government road for a driveway	Accepted development ~~if complying with the acceptable outcomes of the applicable code(s)~~	~~Excavation and filling code~~ ~~Transport and parking code~~
	~~Otherwise code assessment~~	~~Construction management code~~ ~~Excavation and filling code~~ ~~Transport and parking code~~

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

5.9 Categories of development and assessment – Local plans

5.9.1 Airlie Beach local plan categories of development and assessment

The following tables identifies the categories of development and assessment for development in the local plan.

Table 5.9.1.1 Airlie Beach local plan - Community facilities zone

Airlie Beach local plan - Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Airlie Beach local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Educational establishment	No change	Airlie Beach local plan code
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	No change	Airlie Beach local plan code
Outdoor sport and recreation	No change	Airlie Beach local plan code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Parking station	No change	Airlie Beach local plan code
Telecommunications facility	No change	Airlie Beach local plan code (where code assessable)
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		

Airlie Beach local plan - Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.9.1.2 Airlie Beach local plan - District centre zone

Airlie Beach local plan - District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	
Home based business	No change	Airlie Beach local plan code (where code assessment)
Rooming accommodation	No change	Airlie Beach local plan code
Short-term accommodation	No change	Airlie Beach local plan code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	No change	Airlie Beach local plan code (where code assessment)
Market	No change	Airlie Beach local plan code (where code assessment)
Office	No change	Airlie Beach local plan code (where code assessment)
Sales office	No change	Airlie Beach local plan code (where code assessment)
Shop	No change	Airlie Beach local plan code (where code assessment)
Shopping centre	No change	Airlie Beach local plan code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Bar	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise no change	Airlie Beach local plan code
Club	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise no change	Airlie Beach local plan code
Function facility	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or	Business activities code Transport and parking code

Airlie Beach local plan - District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	(c) only minor building work.	
	Otherwise no change	Airlie Beach local plan code
Hotel	No change	Airlie Beach local plan code
Nightclub entertainment facility	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	District centre zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Theatre	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise no change	Airlie Beach local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	No change	Airlie Beach local plan code
Service industry	No change	Airlie Beach local plan code (where code assessment)
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Emergency services	No change	
Health care services	No change	Airlie Beach local plan code (where code assessment)
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	No change	Airlie Beach local plan code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	No change	
Parking station	Code assessment	District centre zone code Airlie Beach local plan code

Airlie Beach local plan - District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above levels of assessment apply unless otherwise prescribed within the Act or the Regulation.

Table 5.9.1.3 Airlie Beach local plan – Mixed use zone

Airlie Beach local plan - Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	
Home based business	No change	Airlie Beach local plan code (where code assessment)
Multiple dwelling	No change	Airlie Beach local plan code
Rooming accommodation	No change	Airlie Beach local plan code
Short-term accommodation	No change	Airlie Beach local plan code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	No change	Airlie Beach local plan code (where code assessment)
Market	No change	Airlie Beach local plan code (where code assessment)
Office	No change	Airlie Beach local plan code (where code assessment)
Sales office	No change	Airlie Beach local plan code (where code assessment)
Shop	No change	Airlie Beach local plan code (where code assessment)
Shopping centre	Code assessment	Business activities code Mixed use zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Bar	No change	Airlie Beach local plan code (where code assessment)
Club	No change	Airlie Beach local plan code (where code assessment)
Function facility	No change	Airlie Beach local plan code (where code assessment)
Hotel	No change	Airlie Beach local plan code (where code assessment)
Nightclub entertainment facility	No change	Airlie Beach local plan code (where code assessment)
Theatre	No change	Airlie Beach local plan code (where code assessment)
Tourist attraction	Code assessment	Mixed use zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Airlie Beach local plan - Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	No change	Airlie Beach local plan code
Service industry	Code assessment	Industry activities code Mixed use zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Child care centre	Code assessment	Child care centre code Mixed use zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	No change	
Educational establishment	Code assessment	Mixed use zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Emergency services	No change	
Health care services	No change	Airlie Beach local plan code (where code assessment)
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	No change	Airlie Beach local plan code
Outdoor sport and recreation	Code assessment	Business activities code Mixed use zone code Airlie Beach local plan code Healthy Waters code Infrastructure code Landscaping code Transport and parking code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Parking station	No change	Airlie Beach local plan code
Landing	Code assessment	Mixed use zone code Airlie Beach local plan code

Airlie Beach local plan - Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Healthy waters code Infrastructure code Landscaping code Transport and parking code
Port services	Code assessment	Mixed use zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.9.1.4 Airlie Beach local plan – Recreation and open space zone

Airlie Beach local plan – Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
All uses	No change	

Editor's note—The above levels of assessment apply unless otherwise prescribed within the Act or the Regulation.

5.9.2 Bowen local plan categories of development and assessment

The following tables identifies the categories of development and assessment for development in the local plan.

Table 5.9.2.1 Bowen local plan - Precinct A – Community facilities zone

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
Residential care facility	No change	Bowen local plan code
Retirement facility	No change	Bowen local plan code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Market	No change	Bowen local plan code (where code assessable)
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Bowen local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Child care centre	No change	Bowen local plan code
Community care centre	No change	Bowen local plan code
Community use	No change	Bowen local plan code
Educational establishment	No change	Bowen local plan code
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Environment facility	Code assessment	Business activities code Mixed use zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Indoor sport and recreation	No change	Bowen local plan code
Outdoor sport and recreation	No change	Bowen local plan code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Air services	No change	
Parking station	No change	Bowen local plan code
Telecommunications facility	No change	Bowen local plan code (where code assessable)
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1(Definitions)	Impact assessment	The Planning Scheme

Table 5.9.2.2 Bowen local plan - Precinct A – Mixed use zone

Mixed use zone		
Use	**Categories of development and assessment**	**Assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
Home based business	No change	Bowen local plan code (where code assessable)
Multiple dwelling	No change	Bowen local plan code
Residential care facility	No change	Bowen local plan code Residential care facility and retirement facility code
Retirement facility	Code assessment	Multi-unit uses code Mixed use zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	No change	Bowen local plan code
Short-term accommodation	No change	Bowen local plan code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	No change	Bowen local plan code (where code assessable)
Market	No change	Bowen local plan code (where code assessable)
Office	No change	Bowen local plan code (where code assessable)
Sales office	No change	Bowen local plan code (where code assessable)
Shop	No change	Bowen local plan code (where code assessable)
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Bar	No change	Bowen local plan code (where code assessable)
Club	No change	Bowen local plan code (where code assessable)
Function facility	No change	Bowen local plan code (where code assessable)
Hotel	No change	Bowen local plan code (where code assessable)
Nightclub entertainment facility	No change	Bowen local plan code (where code assessable)
Theatre	No change	Bowen local plan code (where code assessable)
Tourist attraction	Code Assessment	Business activities code Mixed use zone code Bowen local plan code

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	No change	Bowen local plan code
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Emergency services	No change	
Health care services	Code assessment: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Mixed use zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Environment facility	Code assessment	Business activities code Mixed use zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Indoor sport and recreation	No change	Bowen local plan code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Parking station	No change	Bowen local plan code
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Table 5.9.2.3 Bowen local plan - Precinct A - Recreation and open space zone

Recreation and open space		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Market	No change	Bowen local plan code (where code assessable)
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Bowen local plan code
Function facility	No change	Bowen local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Educational establishment	Code assessment if related to a Landing, Marine industry or Port services use	Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Environment facility	Code assessment	Business activities code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Indoor sport and recreation	No change	Bowen local plan code (where code assessable)
Outdoor sport and recreation	No change	Bowen local plan code (where code assessable)
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		

Recreation and open space		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Precinct B

Table 5.9.2.4 Bowen local plan - Precinct B - Community facilities zone

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Market	No change	Bowen local plan code (where code assessable)
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Bowen local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Educational establishment	No change	Bowen local plan code
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Environment Facility	Code assessable	Community facilities zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Indoor sport and recreation	No change	Bowen local plan code
Outdoor sport and recreation	No change	Bowen local plan code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Air services	No change	
Landing	Accepted development if undertaken by or on behalf of the Council	
	Otherwise code assessment	Community facilities zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Parking station	No change	Bowen local plan code

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Telecommunications facility	No change	Bowen local plan code (where code assessable)
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1(Definitions)	Impact assessment	The Planning Scheme

Table 5.9.2.5 Bowen local plan - Precinct B - Mixed use zone

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
Home based business	No change	Bowen local plan code (where code assessable)
Multiple dwelling	No change	Bowen local plan code
Residential care facility	No change	Bowen local plan code Residential care facility and retirement facility code
Retirement facility	No change	Bowen local plan code
Rooming accommodation	Code assessment if associated with an Educational establishment or Coastal dependent development within the Bowen Local plan area or Bowen Major centre zone	Short-term accommodation and multi-unit uses code Mixed use zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise Impact assessment	The Planning Scheme
Short-term accommodation	No change	Bowen local plan code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	No change	Bowen local plan code (where code assessable)
Market	No change	Bowen local plan code (where code assessable)
Office	No change	Bowen local plan code (where code assessable)
Sales office	No change	Bowen local plan code (where code assessable)
Shop	No change	Bowen local plan code (where code assessable)
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Bar	No change	Bowen local plan code (where code assessable)
Club	No change	Bowen local plan code (where code assessable)
Function facility	No change	Bowen local plan code (where code assessable)
Hotel	No change	Bowen local plan code (where code assessable)
Nightclub entertainment facility	No change	Bowen local plan code (where code assessable)
Theatre	No change	Bowen local plan code (where code assessable)
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Research and technology industry	Code Assessment if related to a Landing, Marine industry or Port services use.	Industry activities code Mixed use zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Service industry	Code Assessment	Industry activities code Mixed use zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Low impact industry	No change	Bowen local plan code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Educational establishment	Code assessment if related to a Landing, Marine industry or Port services use	Mixed use zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
	Otherwise Impact assessment	The Planning Scheme
Emergency services	No change	
Health care services	No change	Bowen local plan code (where code assessable)
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Environment facility	Code assessment	Business activities code Mixed use zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Indoor sport and recreation	No change	Bowen local plan code
Outdoor sport and recreation	Code assessment	Business activities code Mixed use zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Landing	Code assessment	Mixed use zone code Bowen local plan code Infrastructure code Landscaping code

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Transport and parking code
Parking station	No change	Bowen local plan code
Port services	Code assessment	Industry activities code Mixed use zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Table 5.9.2.6 Bowen local plan - Precinct B - Recreation and open space zone

Recreation and open space		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Market	No change	Bowen local plan code (where code assessable)
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Bowen local plan code (where code assessable)
Function facility	No change	Bowen local plan code (where code assessable)
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Educational establishment	Code assessment if related to a Landing, Marine industry or Port services use	Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Environment facility	Code assessment	Business activities code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Indoor sport and recreation	No change	Bowen local plan code (where code assessable)
Outdoor sport and recreation	No change	Bowen local plan code (where code assessable)
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Table 5.9.2.7 Bowen local plan - Precinct C – Waterfront and marine industry zone

Waterfront and marine industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	No change	Bowen local plan code
Office	Code assessment if associated with a Landing, Marine industry or Port services use	Business activities code Waterfront and marine industry zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Outdoor sales	No change	Bowen local plan code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Marine industry	No change	Bowen local plan code
Warehouse	Code assessment if associated with a Landing, Marine industry or Port services use	Industry activities code Waterfront and marine industry zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Educational establishment	Code assessable if associated with a Landing, Marine industry or Port services use	Waterfront and marine industry zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
Aquaculture	No change	Bowen local plan code
Rural industry	No change	Bowen local plan code
All other Rural activities	Impact assessment	The Planning Scheme

Waterfront and marine industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Other activities		
Landing	No change	Bowen local plan code
Major electricity infrastructure	No change	Bowen local plan code
Parking station	No change	Bowen local plan code
Port services	No change	Bowen local plan code
Substation	No change	Bowen local plan code
Telecommunications facility	No change	Bowen local plan code
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Reconfiguring a Lot - All Precincts, All zones under the Bowen Local Plan

Table 5.9.2.8 Bowen local plan - Reconfiguring a lot

Reconfiguration of a lot		
Zone	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Community facilities, or Environmental management and conservation, or Recreation and open space	Impact assessment	The Planning Scheme
All other zones	No change	Bowen local plan code

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

~~5.9.1~~5.9.3 Hamilton Island local plan categories of development and assessment

The following tables identifies the categories of development and assessment for development in the local plan.

Table 5.9.3.1 Hamilton Island local plan - Community facilities zone

Hamilton Island local plan - Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Hamilton Island local plan (where code assessment)
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Hamilton Island local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Educational establishment	No change	Hamilton Island local plan code
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	No change	Hamilton Island local plan code
Outdoor sport and recreation	No change	Hamilton Island local plan code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Air services	No change	
Telecommunications facility	No change	Hamilton Island local plan code (where code assessable)
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.9.3.2 Hamilton Island local plan - Recreation and open space zone

Hamilton Island local plan - Recreation and open space		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Hamilton Island local plan code (where code assessment)
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Hamilton Island local plan code
Function facility	No change	Hamilton Island local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	No change	Hamilton Island local plan code (where code assessment)
Outdoor sport and recreation	No change	Hamilton Island local plan code (where code assessment)
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.9.3.3 Hamilton Island local plan – Tourist accommodation

Hamilton Island local plan – Tourist accommodation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Code assessment	Caretaker's accommodation code Hamilton Island local plan code Tourist accommodation zone code Landscaping Code Transport and parking code
Dual occupancy	Code assessment	Dual occupancy code Hamilton Island local plan code Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Code assessment	Dwelling House Code Hamilton Island local plan code Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
Home based business	Code assessment	Home based business code Tourist accommodation zone code Hamilton Island local plan code
Resort complex	No change	Hamilton Island local plan code ~~Tourist accommodation zone code~~ ~~Infrastructure code~~ ~~Landscaping code~~ ~~Transport and parking code~~
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
All other Business activities	Code assessment if associated with a Resort complex and complying with the acceptable outcomes of the applicable codes	Business activities code Tourist accommodation zone code Hamilton Island local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Code assessment if associated with a Resort complex and complying with the acceptable outcomes of the applicable codes	Tourist accommodation zone code Hamilton Island local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Hamilton Island local plan – Tourist accommodation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Code assessment if associated with a Resort complex and complying with the acceptable outcomes of the applicable codes	Industry activities code Tourist accommodation zone code Hamilton Island local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Impact assessment	The Planning Scheme
Community activities		
Community use	Code assessment if associated with a Resort complex and complying with the acceptable outcomes of the applicable codes	Tourist accommodation zone code Hamilton Island local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Impact assessment	The Planning Scheme
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	No change	
Other activities		
Utility installation	No change	
All other activities	Code assessment if associated with a Resort complex and complying with the acceptable outcomes of the applicable codes	Tourist accommodation zone code Hamilton Island local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

5.10 Categories of development and assessment – Overlays

The following tables identify where an overlay changes the category of assessment from that stated in a zone or local plan and the relevant assessment benchmarks.

Note—Some overlays may only be included for information purposes. This should not change the category of assessment or assessment benchmarks in the Planning Scheme.

Table 5.10.1 Acid sulfate soils overlay

Acid sulphate soils overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Any development if on land~~:~~ ~~(a)~~ subject to the Acid sulfate soils overlay as identified in the Acid sulfate soils map~~;~~ and within: (a) a high risk area, involving: (i) any excavation; or (ii) filling of over 500m³; (b) a medium risk area, involving: (i) excavation greater than 1m; or (ii) filling of over 500m³; (c) a low risk area, involving: (i) excavation greater than 2m; or (ii) filling of over 500m³; or (d) a Potential acid sulphate soils area and involving: (i) filling of over 500m³ below 5m AHD; or excavation of greater than 100m³ of soil below 5m AHD. ~~(i) there would be a change in level of greater than 1m of any part of the site; or~~ (ii) ~~greater than 100m³ of material is imported to or removed from the site.~~	No change	Acid sulfate soils overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.2 Agricultural land overlay

Agricultural land overlay		
Development	**Category of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land subject to the Agricultural land overlay as identified in the Agricultural land overlay map	No change	Agricultural land overlay code
Reconfiguring a lot if on land subject to the Agricultural land overlay as identified in the Agricultural land overlay map	No change	Agricultural land overlay code
Operational work if on land: (a) subject to the Agricultural overlay as identified in the Agricultural land overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving engineering work; or (d) prescribed tidal works; or (e) undertaking roadwork's on a local government road.	No change	Agricultural land overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.3 Airport environs overlay

Airport environs overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land: (a) subject to the Airport environs overlay; and (b) resulting in work encroaching into the operational airspace and is at least 12m high; or (c) within a public safety area; or (d) within the existing lighting area buffer zone; or (e) within the wildlife hazard buffer zone; or (f) resulting in work encroaching into the building restricted area.	No change if complying with the acceptable outcomes of Table 8.2.1.3.1 (Benchmarks for accepted and assessable development) for the Airport Environs overlay code	Airport environs overlay code
	Otherwise code assessment	Airport environs overlay code
Reconfiguring of a lot if on land: (a) subject to the Airport environs overlay; and (b) within the 20 ANEF contour for an airport; or (c) within a public safety area of an airports identified on the Airport environs overlay map.	No change	Airport environs overlay code
Operational works only where not associated with a Material change of use or a Reconfiguration of a lot.	No change	Airport environs overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.~~443~~ Biodiversity, waterways and wetlands overlay

Biodiversity, waterways and wetlands overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land subject to the Biodiversity, waterways and wetlands overlay as identified in the Biodiversity, waterways and wetlands overlay map	No change if complying with acceptable outcomes of Table 8.2.4.3.1 (Benchmarks for accepted and assessable development) of the Biodiversity, waterways and wetlands overlay code	Biodiversity, waterways and wetlands overlay code
	Otherwise code assessment	Biodiversity, waterways and wetlands overlay code
Reconfiguring a lot if on land subject to the Biodiversity, waterways and wetlands overlay as identified in Biodiversity, waterways and wetlands overlay map	No change	Biodiversity, waterways and wetlands overlay code
Operational works if on land subject to the Biodiversity waterways and wetlands overlay as identified in the Biodiversity, waterways and wetlands overlay map and involves: (a) excavation or filling that materially affects premises or their use; (b) landscaping work where associated with a Reconfiguration of a lot or Material change of use; (c) engineering work; (d) prescribed tidal works; or (e) undertaking roadwork's on a local government road.	No change	Biodiversity, waterways and wetlands overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.5 Building heights overlay

Building heights overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use- if on land subject to -Building heights overlay map.-	No change if complying with acceptable outcomes of Table **Error! No text of specified style in document.**.61 (Benchmarks for accepted ~~development~~ and assessable development) of the Building heights overlay code	Building heights overlay code
	Otherwise impact assessment	The Planning Scheme

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.7~~5~~4 Bushfire hazard overlay

Bushfire hazard overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land ~~:~~ subject to the Bushfire hazard overlay, excluding buffer zones, as identified in the Bushfire hazard overlay map~~;~~ and: (a) is~~where~~ not wholly contained within an existing building; ~~or~~ (b) involving building work of greater than 50m^2;~~or~~ (c) there would be a change in level of greater than 0.5m of any part of the site; or (d) greater than 50m^3 of material is imported to or removed from the site.	No change if complying with acceptable outcomes of Table 8.2.~~5~~4.3~~6~~.3.1 (~~Criteria~~ Benchmarks for accepted ~~development~~ and assessable development) of the Bushfire hazard overlay code	Bushfire hazard overlay code
	Otherwise code assessment	Bushfire hazard overlay code
Reconfiguring a lot if on land subject to the Bushfire hazard overlay, excluding buffer zones, as identified in the Bushfire hazard overlay map	No change	Bushfire hazard overlay code
Operational works if on land subject to the Bushfire hazard overlay, excluding buffer zones, as identified in the Bushfire hazard overlay map ~~;~~ and involves: (a) ~~involving~~ excavation or filling that materially affects premises or their use; ~~or~~ (b) ~~involving~~ landscaping work where associated with the Reconfiguration of a lot or Material change of use; or (c) ~~involving~~ engineering work.	No change	Bushfire hazard overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.~~8~~6~~5~~ Coastal ~~environment~~ hazard overlay

Coastal environment overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land: (a) subject to the Coastal ~~environment~~hazard overlay as identified in the Coastal ~~environment~~hazard overlay map; and (b) where not wholly contained within an existing building; or (c) involving building work of greater than 50m^2 ;or (d) there would be a change in level of greater than 0.5m of any part of the site; or (e) greater than 50m^3 of material is imported to or removed from the site.	No change if complying with acceptable outcomes of Table 8.2.7~~5~~.3.1 (Benchmarks~~Criteria~~ for accepted ~~development~~ and assessable development) of the Coastal ~~environment~~hazard overlay code	Coastal ~~environment~~hazard overlay code
	Otherwise code assessment	Coastal ~~environment~~ hazard overlay code
Reconfiguring a lot if on land subject to the Coastal ~~environment~~hazard overlay as identified in the Coastal ~~environment~~hazard overlay map	No change	Coastal ~~environment~~hazard overlay code
Operational works if on land: (a) subject to the Coastal hazard~~environment~~ overlay as identified in the Coastal hazard~~environment~~ overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving engineering work; or (d) prescribed tidal works; or (e) undertaking roadwork's on a local government road.	No change	Coastal hazard~~environment~~ overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.6 Environmental significance overlay

Environmental significance overlay		
Development	Categories of assessment	Assessment benchmarks for assessable development and requirements for accepted development
Material change of use **if on land subject to the Environmental significance overlay as identified in the Environmental significance overlay map**	**No change**	**Environmental significance overlay code**
Reconfiguring a lot **if on land subject to the Environmental significance overlay as identified in the Environmental significance overlay map**	**No change**	**Environmental significance overlay code**
Operational work **if on land:** **subject to the Environmental significance overlay as identified in the Environmental significance overlay map; and** **involving excavation or filling that materially affects premises or their use; or** **involving landscaping work where associated with the Reconfiguration of a lot or Material change of use; or** **involving engineering work; or** **prescribed tidal works; or** **undertaking roadwork's on a local government road.**	**No change**	**Environmental significance overlay code**

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.~~9~~8~~7~~ Extractive resources overlay

Extractive resources overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land subject to the Extractive resources overlay as identified in the Extractive resources overlay map	No change if complying with acceptable outcomes of Table 8.2.8.3.1 (Benchmarks for accepted and assessable development) of the Extractive resources overlay code	Extractive resources overlay code
	Otherwise code asssment	Extractive resources overlay code
Reconfiguring a lot, if on land subject to the Extractive resources overlay as identified in the Extractive resources overlay map	No change	Extractive resources overlay code
Operational works, if on land: (a) subject to the Extractive resources overlay as identified in the Extractive resources overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving engineering work; or (d) prescribed tidal works; or (e) undertaking roadwork's on a local government road.	No change	Extractive resources overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.1098 Flood hazard overlay

Flood hazard overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land: (a) subject to the Flood hazard overlay as identified in the Flood hazard overlay map; and (b) where not wholly contained within an existing building; or (c) involving building work of greater than 50m^2 .;~~or~~ ~~there would be a change in level of greater than 0.5m of any part of the site; or~~ ~~greater than 50m^3 of material is imported to or removed from the site.~~	No change if complying with acceptable outcomes of Table 8.2.98.3.1 (~~Criteria~~ Benchmarks for accepted ~~development~~ and assessable development) of the Flood hazard overlay code	Flood hazard overlay code
	Otherwise code assessment	Flood hazard overlay code
Reconfiguring a lot if on land subject to the Flood hazard overlay as identified in the Flood hazard overlay map	No change	Flood hazard overlay code
Operational works if on land: (a) subject to the Flood hazard overlay as identified in the Flood hazard overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving excavation or filling exceeding a total of 100m^3 ; or (d) there would be a change of greater than 1m in the level of any part of the site; or ~~(c)~~(e) involving engineering work; or ~~(d)~~(f) prescribed tidal works; or ~~(e)~~(g) undertaking roadwork's on a local government road.	No change: (a) if complying with acceptable outcomes of Table 8.2.9.3.1 (Benchmarks for accepted ~~development~~ and assessable development) of the Flood hazard overlay code; or ~~(a)~~(b) if undertaken by or on behalf of the Council~~No change~~	Flood hazard overlay code
	Otherwise code assessment	

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.11109 Heritage overlay

Heritage overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land subject to the Heritage overlay as identified in the Heritage overlay map	Code assessment if development will not result in building work involving demolition, relocation or removal of a heritage place	Heritage overlay code
	Otherwise impact assessment	The Planning Scheme
Reconfiguration of a lot if on land subject to the Heritage overlay as identified in the Heritage overlay map.	No change	Heritage overlay code
Operational works if on land: (a) subject to the Heritage overlay as identified in the Heritage overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving landscaping work where associated with the Reconfiguration of a lot or Material change of use; or (d) involving engineering work; or (e) placing an advertising device on a premise; or (f) prescribed tidal works; or (g) undertaking roadwork's on a local government road.	No change if development will not result in building work involving demolition, relocation or removal of a Hheritage place	Heritage overlay code
	Otherwise code assessment	Heritage overlay code
Building Works, if on land subject to the Heritage overlay as identified in the Heritage overlay map.	Code assessment if the building work will not result in building work involving demolition, relocation or removal of a Heritage place.	Heritage overlay code
	Otherwise impact assessment	The Planning Scheme

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.121110 Infrastructure overlay

Infrastructure overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land subject to the Infrastructure overlay as identified in the Infrastructure overlay map	No change if complying with acceptable outcomes of Table 8.2.11.3.1 (Benchmarks for accepted and assessable development) of the Infrastructure overlay code	Infrastructure overlay code
	Otherwise code assessment	Infrastructure overlay code
Reconfiguration of a lo, if on land subject to the Infrastructure overlay as identified in the Infrastructure overlay map	No change	Infrastructure overlay code
Operational works if on land: (a) subject to the Infrastructure overlay as identified in the Infrastructure overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving landscaping work where associated with the Reconfiguration of a lot or Material change of use; or (d) involving engineering work; or (e) placing an advertising device on a premise; or (f) prescribed tidal works; or (g) undertaking roadwork's on a local government road.	No change	Infrastructure overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.13~~1211~~ Landslide hazard overlay

Landslide hazard overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land: (a) subject to the Landslide hazard overlay as identified in the Landslide hazard overlay map or on land with a slope of 15% or greater; and (b) where not wholly contained within an existing building; or (c) involving building work of greater than 50m^2 ;or (d) there would be a change in level of greater than 0.5m of any part of the site; or (e) greater than 50m^3 of material is imported to or removed from the site.	No change if complying with acceptable outcomes of Table 8.2.12~~1~~.3.1 (Benchmarks ~~Criteria~~ for accepted and assessable development) of the Landslide hazard overlay code	Landslide hazard overlay code
	Otherwise code assessment	Landslide hazard overlay code
Reconfiguring a lot if on land subject to the Landslide hazard overlay as identified in the Landslide hazard overlay map or on land with a slope of 15% or greater.	No change	Landslide hazard overlay code
Operational works if on land: (a) subject to the Landslide hazard overlay as identified in the Landslide hazard overlay map or on land with a slope of 15% or greater; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving landscaping work where associated with the Reconfiguration of a Lot or Material change of use; or (d) involving engineering work; or (e) prescribed tidal works; or (f) undertaking roadwork's on a local government road.	No change	Landslide hazard overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.12 Wetlands and waterways overlay

Wetlands and waterways overlay		
Development	Categories of assessment	Assessment benchmarks for assessable development and requirements for accepted development
Material change of use **if on land subject to the Wetlands and waterways overlay as identified in the Wetlands and waterways overlay map 1**	**No change**	**Wetlands and waterways overlay code**
Reconfiguring a lot **if on land subject to the Wetlands and waterways overlay as identified in the Wetlands and waterways overlay map 1**	**No change**	**Wetlands and waterways overlay code**
Operational works **if on land:** **subject to the Wetlands and waterways overlay as identified in the Wetlands and waterways overlay map 1; and** **involving excavation or filling that materially affects premises or their use; or** **involving landscaping work where associated with the Reconfiguration of a lot or Material change of use; or** **involving engineering work; or** **prescribed tidal works; or** **undertaking roadwork's on a local government road.**	**No change**	**Wetlands and waterways overlay code**

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

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Zoning map ZM - 01:29 (Zoning map)

Part 6 Zones

6.1 Preliminary

(1) Zones organise the Planning Scheme area in a way that facilitates the location of preferred or acceptable land uses.

(2) Zones are mapped and included in Schedule 2 (Mapping).

(3) The categories of development and assessment for development in a zone are in Part 5 (Tables of assessment).

(4) Assessment benchmarks for zones are contained in a zone code.

(5) A precinct may be identified for part of a zone – Table 6.1.1 lists the precincts and their corresponding zones.

Table 6.1.1 Precincts and corresponding zones

Precinct	Zone
Airlie Beach Precinct A	Mixed use
Airlie Beach Precinct B	Low-medium density residential
Airlie Beach Precinct C	Mixed use
Airlie Beach Precinct D	District centre
Airlie Beach Precinct E	District centre
Airlie Beach Precinct F	Mixed use
Airlie Beach Precinct G	Mixed use

(6) Precinct provisions are contained in the corresponding zone codes.

(7) Each zone code identifies the following:

(a) the purpose of the code; and

(b) the overall outcomes that achieve the purpose of the code.

(8) The following are the zone codes for the Planning Scheme:

Residential zones category

(a) Low density residential zone code;

(b) Low-medium density residential zone code; and

(c) Tourist accommodation zone code.

Centre zones category

(a) Major centre zone code;

(b) District centre zone code;

(c) Local centre zone code; and

(d) Neighbourhood centre zone code.

Industry zones category

(a) Low impact industry zone code;

(b) Medium impact industry zone code;

(c) High impact industry zone code;

(d) Special industry zone code;

(e) Waterfront and marine industry zone code; and

(f) Industry investigation zone code.

Recreation zones category

(a) Recreation and open space zone code.

Environmental zones category

(a) Environmental management and conservation zone code.

Other zones category

(a) Community facility zone code;

(b) Emerging community zone code;

(c) Mixed use code;

(d) Rural zone code; and

(e) Rural residential zone code.

6.2 Zone codes

6.2.1 Community facilities zone code

6.2.1.1 Application

This code applies to assessable development:

(a) within the Community facilities zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Community facilities zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.1.2 Purpose and overall outcomes

(1) The purpose of the Community facilities zone code is to provide for community related activities and facilities whether under public or private ownership. These may include the provision of municipal services, public utilities, government installations, hospitals, schools, transport and telecommunications networks and community infrastructure of an artistic, social or cultural nature.

(2) The purpose of the Community facilities zone code in the local government area is to provide for a range of accessible Community, Recreation and Other activities at varying degrees of scale and intensity, which operate effectively and meet the social, educational, spiritual, cultural or health needs of the Whitsunday Region's existing and future communities.

(3) The purpose of the Community facilities zone code will be achieved through the following overall outcomes:

(a) development in the zone caters primarily for specified uses, facilities and works, which include:

(i) land used, owned or operated by Federal, State or Local government for Community and Other activities, such as cemeteries, community uses, emergency services, hospitals, air services, substations, major electricity infrastructure and utility installations; or

(ii) uses, facilities and works, which by virtue of their location, intensity, combination of uses, operations or site characteristics are best managed in a use-specific land use allocation; or

(iii) private Community activities and facilities, including community uses, educational establishments, hospitals and places of worship;

(b) a range of allied and compatible activities may also be established in this zone. These include Recreational activities, such as indoor/outdoor sport and recreation uses;

(c) Community activities and associated uses are located to optimise their accessibility, operational efficiency and benefit to the public;

(d) development accommodates the specific operational, functional and locational needs of the particular use, whilst maintaining a low rise built form compatible with the intended development in the surrounding area;~~. Buildings are to have a maximum height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%;~~

(e) development provides a high level of amenity, maintains the safety of people, buildings and works, and effectively manages the potential for land use conflict with existing and intended surrounding development;

(f) uses, buildings and works are located, designed and operated to minimise adverse impacts on the amenity of any adjacent properties, nearby residential or public spaces, having regard to:

(i) traffic conditions;

(ii) noise or vibration;

(iii) dust, odour or similar emissions:

(iv) privacy;

(v) safety and security;

(vi) illumination;

(vii) access to natural light and ventilation; and

(viii) drainage.

(g) existing and planned Community activities and associated uses are protected from the intrusion of incompatible uses that could limit the ongoing operation of existing Community activities or prejudice appropriate new activities;

(h) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(i) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, permeability and ease of movement within and to the site;

(j) development is provided with a level of infrastructure and essential services that is commensurate with the location, nature, scale and intensity of the use;

(k) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(l) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.2 District centre zone code

6.2.2.1 Application

This code applies to assessable development:

(a) within the District centre zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the District centre zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.2.2 Purpose and overall outcomes

(1) The purpose of the District centre zone code is to provide for a mix of uses and activities. It includes a concentration of land uses, including retail, commercial, residential, offices, administrative and health services, community, small-scale entertainment and recreational facilities capable of servicing a district.

(2) The purpose of the District centre zone code in the local government area is to provide for a range of activities that complement but do not compete with the role and function of the major activity centres. The District centre zone serves the needs of district level catchments and distinct communities in centres that are highly accessible and well connected to the catchment areas. District centres are developed as well-designed, safe and visually attractive business, community and employment centres, predominantly in a low-rise building format, where significant off-site impacts are avoided.

(3) The purpose of the District centre zone code will be achieved through the following overall outcomes:

(a) development provides for a range of Business and Entertainment activities that service the district level needs of surrounding smaller centres and residential areas. These uses include, but are not limited to, food and drink outlets, offices, shops, shopping centres, theatres, clubs and function facilities;

(b) development provides for a range of complementary Community activities in appropriate locations to encourage community interaction and support the health, safety and wellbeing of residents. Such uses include community uses, child care centres, emergency services, health care services and places of worship;

(c) Recreation, Industry and Other activities, such as indoor sport and recreation, service industries and utility installations, may be established where they are compatible with the character and amenity of surrounding development;

(d) beyond existing uses, development provides for a limited range of Accommodation activities, including caretaker's accommodation, dual occupancies, multiple dwellings, rooming accommodation and short-term accommodation, where such uses are ancillary to and support the predominant business functions of the zone;

(e) development of Business activities is of a scale and intensity that is consistent with the intended role and function of the particular activity centre and the Whitsunday hierarchy of centres[1]. For development in the District centre zone, this includes consideration of the following:

[1] Development within the District centre zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(i) the function and role of existing Business activities in district centres is maintained;

(ii) shopping centres have a maximum retail and commercial GLA in the order of 5,000m^2;

(iii) not more than one full-line supermarket is established in each allocated district centre, unless there is a demonstrated need and there are no adverse impacts on the major activity centre; and

(iv) higher order shopping facilities, including department stores and discount department stores, are not established in the District centre zone

(f) ~~unless otherwise specified in a local plan code or Table 6.2.2.2.1 (Maximum building heights in District centre zone),~~ development has a low to medium-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area~~, with a maximum building height of 12.0m above ground level~~;

~~**Table 6.2.2.2.1 Maximum building heights in District centre zone**~~

~~District centre location~~	~~Maximum building height~~
~~Airlie Beach Precinct D~~	~~18m~~
~~Airlie Beach Precinct E~~	~~14m~~

(g) development may provide for Accommodation activities as part of mixed use premises to encourage and facilitate urban consolidation;

(h) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;

(i) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with demonstrated connectivity to surrounding land uses;

(j) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(k) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(l) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(m) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities~~, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes~~;

(n) development demonstrates that an appropriate level of transport infrastructure is available and will not unreasonably interfere with the safe and efficient operation of the surrounding road network[2];

(o) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;

(p) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(q) the safety and efficiency of existing and future infrastructure (including- road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[2] Development within the District centre zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.3 Emerging community zone code

6.2.3.1 Application

This code applies to assessable development:

(a) within the Emerging community zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Emerging community zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.3.2 Purpose and overall outcomes

(1) The purpose of the Emerging community zone code is to:

(a) identify land that is suitable for urban purposes and conserve land that may be suitable for urban development in the future;

(b) manage the timely conversion of non-urban land to urban purposes; and

(c) prevent or discourage development that is likely to compromise appropriate longer-term land uses.

(2) The purpose of the Emerging community zone code in the local government area is to ensure that development is designed and coordinated to achieve safe, healthy and sustainable new urban communities, which are well integrated with existing communities and provided with services and infrastructure.

(3) The purpose of the Emerging community zone code will be achieved through the following overall outcomes:

(a) prior to the granting of development approvals in accordance with any strategic planning undertaken by the Council:

(i) interim land uses and other development is predominantly limited to existing uses to ensure that the future potential of land to be used for urban purposes is not compromised; and

(ii) development avoids the sporadic or premature creation of additional lots[3];

(b) development is undertaken in accordance with any strategic plans, prepared or approved master plan or a preliminary approval pursuant to the Act, demonstrating that:

(i) development occurs in accordance with any strategic planning undertaken by the Council;

(ii) unless otherwise specified in a local plan code, development within the zone co-ordinates with existing or future planned development through logical planning of the full extent of the Emerging community zone and neighbouring communities[4];

[3] Development within the Emerging community zone may be requested to provide a Development needs assessment report in accordance with PSP SC6.7 (Growth management).
[4] Development within the Emerging community zone may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).

(iii) ~~unless otherwise specified in a local plan code,~~ development provides for a low-rise building form that is compatible with the character of the surrounding area, ~~with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%~~;

(iv) development sensitively responds to scenic values and landscape character elements, particularly prominent ridgelines, foreshores, coastal landforms, significant landmarks, prominent stands of vegetation and rural and coastal views and vistas;

(v) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(vi) the scale, density and layout of development facilitates an efficient land use pattern that:

(A) is well connected to other parts of the urban fabric and planned future development;

(B) supports walkable neighbourhoods that are well connected to employment nodes, centres, open space and recreation areas, community services and educational opportunities; and

(C) encourages public transport accessibility and use;

(vii) a mix of land uses and housing types is provided;

(viii) a high level of residential amenity, personal health and safety and protection for property is provided;

(ix) a sense of character and community inclusion is promoted;

(x) communities are supported by interconnected open space networks and local centres incorporating attractive, comfortable, safe and convenient public spaces;

(xi) development provides for pedestrian and bicycle movement networks that maximise connectivity, permeability and ease of movement within emerging community areas and to existing urban areas;

(xii) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities~~, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes~~;

(xiii) development demonstrates that an appropriate level of transport infrastructure is available and will not unreasonably interfere with the safe and efficient operation of the surrounding road network[5];

(xiv) conflicts with the existing or potential productive use of adjoining or nearby rural lands are avoided or appropriately managed;

[5] Development within the Emerging community zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

(xv) development occurs in a logical sequence and facilitates the efficient and timely provision of infrastructure and services prior to, or in conjunction with, the initial stages of the development;

(xvi) development is provided with the full range of urban services, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(xvii) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(xviii) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.4 Environmental management and conservation zone code

6.2.4.1 Application

This code applies to assessable development:

(a) within the Environmental management and conservation zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Environmental management and conservation zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.4.2 Purpose and overall outcomes

(1) The purpose of the Environmental management and conservation zone code is to provide for the protection and maintenance of areas identified as supporting significant biological diversity and ecological integrity.

(2) The purpose of the Environmental management and conservation zone code in the local government area is to provide for the protection and rehabilitation of land to maintain biological diversity, ecological processes, coastal processes, water quality, landscape character, scenic amenity, cultural heritage significance and community wellbeing.

(3) The purpose of the Environmental management and conservation zone code will be achieved through the following overall outcomes:

(a) areas identified as having significant environmental values for environmental diversity and functioning, water catchment, beach protection or coastal management and historical or cultural significance are:

(i) protected for their importance in contributing to environmental sustainability; and

(ii) appropriately managed to the general exclusion of most forms of development;

(b) Recreation activities, limited to parks, may be established in the zone where such development:

(i) supports environmental values and provides opportunities for appreciation or study of those values;

(ii) is compatible with and has a direct connection with the environmental values; and

(iii) provides opportunities for recreational pursuits that have a direct connection with the environmental values of the land;

(c) to maintain the intended character and amenity of the zone, development integrates with and compliments the natural landscape and has a low-rise built form ~~with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%~~;

(d) Other activities, limited to utility installations, may be provided where such activities are located, designed and operated to avoid significant impacts on environmental systems and processes;

(e) green and open space corridor networks are established across the region providing movement opportunities for people and wildlife between the coast and hinterland and access to the ~~r~~Region's cultural heritage and environmental significant features;

(f) development maintains and protects the scenic values and landscape character of the zone, particularly coastal views and vistas, prominent ridgelines, escarpments, foreshores, coastal landforms and significant landmarks that are in both public and private ownership;

(g) natural features, such as creeks, gullies, waterways, wetlands, flora and fauna communities, habitats, vegetation and bushland, are protected and buffered from activities in the zone and adjoining land uses;

(h) development provides for infrastructure and services that are commensurate with the very limited range of small scale and low-key activities that are expected to occur in the zone. Such infrastructure and services are designed and operated to maintain public safety and environmental health; and

(i) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.5 High impact industry zone code

6.2.5.1 Application

This code applies to assessable development:

(a) within the High impact industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the High impact industry zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.5.2 Purpose and overall outcomes

(1) The purpose of the High impact industry zone code is to provide for high impact industry uses. It may include non-industrial and business uses that support the industrial activities where they do not compromise the long-term use of the land for industrial purposes. Activities considered appropriate in this zone are defined as high impact industry in the schedule of definitions.

(2) The purpose of the High impact industry zone code in the local government area is to provide for a range of Industry activities at a larger scale and higher intensity relative to the Medium impact industry zone.

(3) The purpose of the High impact industry zone code will be achieved through the following overall outcomes:

(a) uses in the zone are predominantly for higher intensity, higher impact Industry activities that have the potential to generate significant offsite impacts, including medium impact industry and high impact industry uses;

(b) development of ancillary Accommodation and Business activities may be established only where directly supporting the ongoing Industry activities of the zone. These uses are limited to caretaker's accommodation, food and drink outlets, offices and service stations. Such uses must be appropriately located and designed to ensure that they do not compromise the ongoing operation and viability of Industry activities[6];

(c) development of limited Community and Other activities, compatible with this zone, may also be established. Such uses are limited to crematoriums, emergency services, air services, substations, telecommunications facilities and utility installations;

(d) existing and planned Industry activities are protected from the intrusion of incompatible uses that may compromise or conflict with the primary use of premises for industry purposes;

(e) development provides for a range of lot sizes, including an appropriate proportion of larger lots to cater for larger format and land consumptive Industry activities;

(f) development has a built form that is compatible with the intended scale and character of the streetscape and surrounding area whilst accommodating industry operating requirements~~, with a maximum building height of 20.0m above ground level~~;

[6] Development within the High impact industry zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(g) Industry activities integrate with the locality by providing a high quality of built form and landscaping in keeping with the expectations of a modern, safe, and attractive industrial environment;

(h) development ensures that uses and works for industrial purposes are located, designed and managed to maintain public health and safety, avoid significant adverse effects on the natural environment and minimise impacts on non-industrial land and sensitive uses;

(i) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(j) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use[7];

(k) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities~~, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes~~;

(l) development is provided with the full range of urban services to support industry and employment needs, including reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(m) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(n) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[7] Development within the High impact industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.6 Industry investigation zone code

6.2.6.1 Application

This code applies to assessable development:

(a) within the Industry investigation zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Industry investigation zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.6.2 Purpose and overall outcomes

(1) The purpose of the Industry investigation zone code is to identify and protect land that may be suitable for Industry activities where further detailed planning, investigations and studies are required to determine the suitability of the Industry investigation zone for use as an industry zone.

(2) The purpose of the Industry investigation zone code in the local government area is to ensure that development is designed and coordinated to support Industry activities of a nature and scale that is compatible with the surrounding area and provided with services and infrastructure.

(3) The purpose of the Industry investigation zone code will be achieved through the following overall outcomes:

(a) prior to the granting of development approvals in accordance with strategic planning undertaken by Council or approved State Development Area Development Schemes:

(i) interim land uses and other development is predominantly limited to existing uses to ensure that the future potential of land to be used for urban purposes is not compromised; and

(ii) development avoids the sporadic or premature creation of additional lots[8];

(b) development is undertaken in accordance with any strategic plan, prepared and approved master plan or a preliminary approval pursuant to the Act, demonstrating that:

(i) development occurs in accordance with any strategic planning undertaken by the Council;

(ii) unless otherwise specified in a local plan code, development within the zone co-ordinates with existing or future planned development through logical planning of the full extent of the Industry investigation zone and neighbouring communities[9];

(iii) ~~unless otherwise specified in a local plan code,~~ development provides for a low-rise building form that is compatible with the character of the surrounding area~~, with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%~~;

[8] Development within the Industry investigation zone may be requested to provide a Development needs assessment report in accordance with PSP SC6.7 (Growth management).
[9] Development within the Industry investigation zone may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).

(iv) development sensitively responds to scenic values and landscape character elements, particularly prominent ridgelines, foreshores, coastal landforms, significant landmarks, prominent stands of vegetation and rural and coastal views and vistas;

(v) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(vi) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(vii) the scale, density and layout of development facilitates an efficient land use pattern that:

(A) is well connected to other parts of the urban fabric and planned future development; and

(B) encourages public transport accessibility and use;

(viii) Industry activities are adequately separated from sensitive uses to minimise the likelihood of environmental harm or environmental nuisance occurring;

(ix) development is sited or co-located having regard to its servicing capabilities in terms of infrastructure, road, rail, proximity to sea, airports, other associated industries and work forces;

(x) development provides for pedestrian and bicycle movement networks that maximise connectivity, permeability and ease of movement within industry investigation areas and to existing urban areas;

(xi) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities~~, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes~~;

(xii) conflicts with the existing or potential productive use of adjoining or adjacent non-industrial land are avoided or appropriately managed;

(xiii) interim land uses and other development is predominantly limited to existing uses to ensure that the future potential of land to be used for urban purposes is not compromised;

(xiv) development occurs in a logical sequence and facilitates the efficient and timely provision of infrastructure and services prior to, or in conjunction with, the initial stages of the development;

(xv) the viability of both existing and future Industry activities are protected from the intrusion of incompatible uses;

(xvi) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(xvii) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(xviii) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.7 Local centre zone code

6.2.7.1 Application

This code applies to assessable development:

(a) within the Local centre zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Local centre zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.7.2 Purpose and overall outcomes

(1) The purpose of the Local centre zone code is to provide for a limited range of land uses and activities to service local needs. It includes local shopping, local employment nodes, commercial uses, cafes and dining, entertainment, community services and residential development, where it can integrate and enhance the fabric of the activity centre but is not the predominant use.

(2) The purpose of the Local centre zone code in the local government area is to provide for a range of Business and Community activities that complement, but do not compete with, the role and function of higher order activity centres. The zone meets the convenience service needs of smaller rural, coastal townships or discrete residential areas and provides local employment opportunities. Local centres are developed as well-designed, safe and visually attractive centres, predominantly in a low-rise building format, where significant off-site impacts are avoided.

(3) The purpose of the Local centre zone code will be achieved through the following overall outcomes:

(a) development provides for a range of Business activities that service the local level convenience needs of residents and surrounding tourism or primary production industries and offers locally-based employment opportunities. These uses include, but are not limited to, food and drink outlets, offices, shops, shopping centres and veterinary services;

(b) development provides for a range of complementary Community activities in appropriate locations to encourage community interaction and support the health, safety and wellbeing of local residents. These uses include child care centres, community uses, emergency services and health care services;

(c) Recreation, Industry and Other activities may be established where they are compatible with the character and amenity of surrounding development. Such uses include indoor sport and recreation, service industries and utility installations;

(d) beyond existing uses, development provides for a limited range of Accommodation activities, including caretaker's accommodation, dual occupancies and multiple dwellings, where such uses are ancillary and support the predominant business functions of the zone;

(e) development of Business activities is of a scale and intensity that is consistent with the intended role and function of the particular activity centre and the Whitsunday hierarchy of centres[10]. For development in the Local centre zone, this includes consideration of the following:

[10] Development within the Local centre zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(i) the function and role of existing Business activities in the zone is maintained and not significantly expanded;

(ii) shopping centres have a maximum retail and commercial GLA in the order of 1,500m^2; and

(iii) higher order shopping facilities, including full-line supermarkets, department stores and discount department stores are not established in the zone;

(f) development has a low-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area~~, with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%~~;

(g) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;

(h) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with demonstrated connectivity to surrounding land uses;

(i) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters, such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(k) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(l) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities ~~in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes~~;

(m) development demonstrates that an appropriate level of transport infrastructure is available and will not unreasonably interfere with the safe and efficient operation of the surrounding road network[11];

(n) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;

(o) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(p) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[11] Development within the Local centre zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.8 Low density residential zone code

6.2.8.1 Application

This code applies to assessable development:

(a) within the Low density residential zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Low density residential zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.8.2 Purpose and overall outcomes

(1) The purpose of the Low density residential zone code is to provide for predominantly dwelling houses supported by community uses and small-scale services and facilities that cater for local residents.

(2) The purpose of the Low density residential zone code in the local government area is to provide for predominantly low density, low-rise Accommodation activities on a range of lot sizes. Whilst primarily intended to accommodate dwelling houses, limited other Accommodation activities may also be established in the zone where compatible with the prevailing residential character and amenity.

(3) The purpose of the Low density residential zone code will be achieved through the following overall outcomes:

(a) development provides for low density housing types, primarily in the form of dwelling houses that promote variety in housing size and choice;

(b) limited other Accommodation activities, such as community residences, residential care facilities and retirement facilities, may be established in the zone, where such uses are compatible with the prevailing scale and residential character of surrounding development;

(c) home based businesses that are compatible with local residential amenity may be established in the zone;

(d) development may provide for limited Business, Community and Other activities, including sales offices, shops (limited to corner stores), community uses, emergency services and utility installations, which:

(i) directly support the day to day needs of the immediate residential community;

(ii) are a small-scale and low intensity;

(iii) are compatible with the local residential character and amenity of the area;

(iv) wherever possible, are co-located with similar activities within the zone;

(v) are accessible to the population they serve and are located on the major road network rather than local residential streets; and

(vi) do not have a significant detrimental impact on the amenity of surrounding residents, having regard to hours of operation, generation of odours, noise, waste products, dust, traffic, electrical interference, lighting and visual impacts;

(e) development occurring in residential neighbourhoods takes place in a planned, orderly manner that promotes certainty and maintains a high level of residential amenity for existing residents, in terms of the type, design and density of development that may occur over time;

(f) development in the zone provides for an attractive, open and low density form of urban residential living that promotes a sense of character and community inclusion;

(g) development provides for a range of lot sizes;

(h) to maintain the low density character and residential amenity of the zone, development has a low-rise built form ~~with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%~~;

(i) the scale, density and layout of development facilitates an efficient land use pattern that:

  (i) is well connected to other parts of the urban fabric and planned future development;

  (ii) supports walkable neighbourhoods that are well connected to employment nodes, centres, open space and recreation areas, community services and educational opportunities; and

  (iii) encourages public transport accessibility and use;

(j) development is designed and located in a manner which makes a positive contribution to the streetscape and is sympathetic to the intended scale and character of surrounding development;

(k) development incorporates a high level of residential amenity, personal health and safety and protection for property;

(l) communities are supported by interconnected open space networks and local centres incorporating attractive, comfortable, safe and convenient public spaces;

(m) development provides for pedestrian and bicycle movement networks that maximise connectivity, permeability and ease of movement within emerging community areas and to existing urban areas;

(n) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities~~, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes~~;

(o) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network[12];

(p) development sensitively responds to scenic values and landscape character elements, particularly prominent ridgelines, foreshores, coastal landforms, significant landmarks, prominent stands of vegetation and rural and coastal views and vistas;

[12] Development within the Low density residential zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

(q) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(r) development is provided with the full range of urban services to support the needs of the community, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(s) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(t) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.9 Low impact industry zone code

6.2.9.1 Application

This code applies to assessable development:

(a) within the Low impact industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Low impact industry zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.9.2 Purpose and overall outcomes

(1) The purpose of the Low impact industry zone code is to provide for service and low impact industry uses. It may include non-industrial and business uses that support Industrial activities where they do not compromise the long-term use of the land for industrial purposes. Activities considered appropriate in this zone are defined as low impact industry or service industry in the schedule of definitions.

(2) The purpose of the Low impact industry zone code in the local government area is to provide for low intensity Industry activities of a nature and scale that are compatible with intended development in the surrounding area.

(3) The purpose of the Low impact industry zone code will be achieved through the following overall outcomes:

(a) uses in the zone are predominantly for low intensity, low impact Industry activities, including bulk landscape supplies, low impact industry, research and technology industry, service industry and warehouse uses;

(b) development of ancillary Accommodation activities may be established only where directly supporting the ongoing Industry activities of the zone. These uses are limited to caretaker's accommodation;

(c) development of Business, Rural and Other activities, which are not ancillary but are compatible with Industry activities, may be established in the zone. These uses include, but are not limited to, agricultural supplies stores, hardware and trade supplies, offices, outdoor sales, showrooms, rural industries, transport depots and utility installations. Such uses must be appropriately located and designed to ensure that they do not compromise the ongoing operation and viability of Industry activities[13];

(d) development of limited Community and Recreation activities compatible with this zone may also be established. Such uses are limited to community uses, emergency services, funeral parlours and indoor sport and recreation;

(e) existing and planned Industry activities are protected from the intrusion of incompatible uses that may compromise or conflict with the primary use of premises for industry purposes;

(f) development provides for a range of lot sizes to cater for varying industry needs and user requirements;

(g) development has a predominantly low-rise built form that is sympathetic to the intended scale and character of the streetscape and surrounding area~~, with a maximum building height of 10.0m above ground level~~;

[13] Development within the Low impact industry zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(h) Industry activities integrate with the locality by providing a high quality of built form and landscaping in keeping with the expectations of a modern, safe and attractive industrial environment;

(i) development ensures that uses and works for industrial purposes are located, designed and managed to maintain public health and safety, avoid significant adverse effects on the natural environment and minimise impacts on non-industrial land and sensitive uses;

(j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(k) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use[14];

(l) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities~~, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes~~;

(m) development is provided with the full range of urban services to support industry and employment needs, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(n) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(o) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[14] Development within the Low impact industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.10 Low-medium density residential zone code

6.2.10.1 Application

This code applies to assessable development:

(a) within the Low-medium density residential zone code as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Low-medium density residential zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.10.2 Purpose and overall outcomes

(1) The purpose of the Low-medium density residential zone code is to provide for a range and mix of dwelling types, including dwelling houses and multiple dwellings supported by community uses and small-scale services and facilities that cater for local residents.

(2) The purpose of the Low-medium density residential zone code in the local government area is to provide for low-medium density Accommodation activities in a low to medium-rise format, comprising of a range of single and multiple residential uses for permanent residents.

(3) The purpose of the Low-medium density residential zone code will be achieved through the following overall outcomes:

(a) development provides for a compatible mix of low and medium density residential dwelling choices and forms, predominantly for permanent living, including dwelling houses, dual occupancies and multiple dwellings (such as townhouses, villas, terraces and row houses);

(b) other low-medium density Accommodation activities, such as community residence, relocatable home parks, residential care facilities, retirement facilities, short-term accommodation and tourist parks, may also be provided. The operation and scale of these uses are compatible with, but do not detract from, the intended residential character and amenity of the zone;

(c) home based businesses that are compatible with local residential amenity may be established in the zone;

(d) development may provide for limited Business, Community and Other activities including sales offices, shops (limited to corner stores), community uses, emergency services and utility installations which:

(i) directly support the day to day needs of the immediate residential community;

(ii) are small-scale and low intensity;

(iii) are compatible with the local residential character and amenity of the area;

(iv) wherever possible, are co-located with similar activities within the zone;

(v) are accessible to the population they serve and are located on the major road network rather than local residential streets; and

(vi) do not have a significant detrimental impact on the amenity of surrounding residents, having regard to hours of operation, generation of odours, noise, waste products, dust, traffic, electrical interference, lighting and visual impacts;

(e) residential development encourages and facilitates urban consolidation;

(f) ~~unless otherwise specified in a local plan code or Table 6.2.10.2.1 (Maximum building heights in Low-medium density residential zone),~~ development has a low to medium-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area~~, with a maximum building height of 12.0m above ground level~~;

~~**Table 6.2.10.2.1 Maximum building heights in Low-medium density residential zone**~~

~~Low-medium density residential location~~	~~Maximum building height~~
~~Airlie Beach Precinct B~~	~~14m~~

(g) the scale, density and layout of development facilitates an efficient land use pattern that:

(i) is well connected to other parts of the urban fabric and planned future development;

(ii) supports walkable neighbourhoods that are well connected to employment nodes, centres, open space and recreation areas, community services and educational opportunities; and

(iii) encourages public transport accessibility and use;

(h) multi-storey development ensures that there is no unreasonable loss of amenity for surrounding development, having regard to:

(i) microclimate impacts, including the extent and duration of any overshadowing;

(ii) privacy and overlooking impacts;

(iii) impacts upon views and vistas; and

(iv) building massing and scale relative to its surroundings;

(i) development is designed and located in a manner which makes a positive contribution to the streetscape and is sympathetic to the intended scale and character of surrounding development;

(j) development incorporates a high level of residential amenity, personal health and safety and protection for property;

(k) communities are supported by interconnected open space networks and local centres incorporating attractive, comfortable, safe and convenient public spaces;

(l) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(m) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities~~, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes~~;

(n) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network[15];

(o) development sensitively responds to scenic values and landscape character elements, particularly prominent ridgelines, foreshores, coastal landforms, significant landmarks, prominent stands of vegetation and rural and coastal views and vistas;

(p) development avoids or mitigates adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location design, operation and management;

(q) development is provided with the full range of urban services to support the needs of the community, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(r) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(s) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[15] Development within the Low-medium density zone may be requested to provide a Traffic assessment report in accordance with PSP SC6.7 (Growth management).

6.2.11 Major centre zone code

6.2.11.1 Application

This code applies to assessable development:

(a) within the Major centre zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Major centre zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.11.2 Purpose and overall outcomes

(1) The purpose of the Major centre zone code is to provide for a mix of uses and activities. It includes concentrations of higher order retail, commercial, offices, residential, administrative and health services, community, cultural and entertainment facilities and other uses capable of servicing a sub-region in the Planning Scheme area.

(2) The purpose of the Major centre zone code in the local government area is to accommodate a wide range of Business, Entertainment, Accommodation and Community activities in an active and vibrant mixed use environment. The scale and intensity of such development is consistent with the intended role and function of the Whitsunday hierarchy of centres.

(3) The purpose of the Major centre zone code will be achieved through the following overall outcomes:

(a) development supports the role of the zone as the regional focus and location of the highest order and intensity of Business and Entertainment activities. Such uses include, but are not limited to, food and drink outlets, offices, shops, shopping centres, clubs, function facilities, hotels, theatres and tourist attractions;

(b) development provides the highest order of Community activities to service the regional needs of the centre and to encourage community interaction, health and wellbeing. These Community activities include child care centres, community uses, educational establishments, emergency services, health care services and hospitals and places of worship;

(c) Recreation, Industry and Other activities, such as indoor sport and recreation, service industries and utility installations may be established where they are compatible with the character and amenity of surrounding development;

(d) a mix of low-medium density Accommodation activities, such as dual occupancies, multiple dwellings, rooming accommodation and short-term accommodation uses are provided that are complementary to the predominant business functions of the zone, with residential buildings incorporating non-accommodation activities at street level to activate the public realm;

(e) development of Business activities is of a scale and intensity that is consistent with the intended role and function of the particular activity centre and the Whitsunday hierarchy of centres[16];

[16] Development within the Major centre zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(f) Development has a low to medium-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area~~, with a maximum building height of 12.0m above ground level~~;

(g) development provides for an efficient pattern of land use where the greatest mix of uses and highest intensity of development is located in areas with relatively high levels of access to public transport facilities. All development has a clear connection to the pedestrian, bicycle, public transport and road transport networks and infrastructure;

(h) wherever possible, Business and Community activities are co-located and designed to contribute to safety, security and vitality of the centre;

(i) the built form and urban design of development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places, in keeping with the primary role and focus of the zone as a major hub;

(j) development contributes to the creation of an active, safe and legible public realm and, where appropriate, incorporates significant public open spaces including plazas, parks and gardens;

(k) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with connectivity to surrounding land uses;

(l) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding development, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(m) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(n) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use~~;~~;

(o) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities~~, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes~~;

(p) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network[17];

(q) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;

(r) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

[17] Development within the Major centre zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

(s) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.12 Medium impact industry zone code

6.2.12.1 Application

This code applies to assessable development:

(a) within the Medium impact industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Medium impact industry zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.12.2 Purpose and overall outcomes

(1) The purpose of the Medium impact industry zone code is to provide for medium impact industry uses. It may include non-industrial and business uses that support the Industrial activities where they do not compromise the long-term use of the land for industrial purposes. Activities considered appropriate in this zone are defined as medium impact industry in the schedule of definitions.

(2) The purpose of the Medium impact industry zone code in the local government area is to provide for a wide range of Industry activities at a larger scale and higher intensity relative to the Low impact industry zone.

(3) The purpose of the Medium impact industry zone code will be achieved through the following overall outcomes:

(a) uses in the zone are predominantly for low to medium intensity and low to medium impact Industry activities, including bulk landscape supplies, low impact industry, medium impact industry, research and technology industry, service industry and warehouse uses;

(b) development of ancillary Accommodation may be established only where directly supporting the ongoing Industry activities of the zone. These uses are limited to caretaker's accommodation;

(c) development of Business, Rural and Other activities, which are not ancillary but are compatible with Industry activities, may be established in the zone. These uses include, but are not limited to, agricultural supplies stores, hardware and trade supplies, offices, outdoor sales, showrooms, rural industries, transport depots, transport depots and utility installations. Such uses must be appropriately located and designed to ensure that they do not compromise the ongoing operation and viability of Industry activities[18];

(d) development of limited Community activities, compatible with this zone may also be established. Such uses are limited to crematoriums, emergency services and funeral parlours;

(e) existing and planned Industry activities are protected from the intrusion of incompatible uses that may compromise or conflict with the primary use of premises for industry purposes;

(f) development provides for a range of lot sizes to cater for varying industry needs and user requirements;

[18] Development within the Medium impact industry zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(g) development has a predominantly low-rise built form that is sympathetic to the intended scale and character of the streetscape and surrounding area~~, with a maximum building height of 15.0m above ground level~~;

(h) Industry activities integrate with the locality by providing a high quality of built form and landscaping in keeping with the expectations of a modern, safe, and attractive industrial environment;

(i) development ensures that uses and works for industrial purposes are located, designed and managed to maintain public health and safety, avoid significant adverse effects on the natural environment and minimise impacts on non-industrial land and sensitive uses;

(j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(k) Industry activities provide for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use[19];

(l) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities~~, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes~~;

(m) development is provided with the full range of urban services to support industry and employment needs, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(n) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(o) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[19] Development within the Medium impact industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.13 Mixed use zone code

6.2.13.1 Application

This code applies to assessable development:

(a) within the Mixed use zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Mixed use zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.13.2 Purpose and overall outcomes

(1) The purpose of the Mixed use zone code is to provide for a mixture of development that may include business, retail, residential, tourist accommodation and associated services, service industry and low impact uses.

(2) The purpose of the Mixed use zone code in the local government area is to provide for an appropriate mix of uses that take advantage of and support the development of key mixed use activity areas.

(3) The purpose of the Mixed use zone code will be achieved through the following overall outcomes:

(a) development provides for a range of activities that are compatible with the intent of the zone;

(b) Community and Other activities established in the zone are appropriately designed and located to assist in maintaining public health, contribute to the comfort and safety of residents and visitors and integrate with the built form and character of the zone. Such uses include community uses, emergency services, health care services and utility installations;

(c) the range, scale and intensity of Business, Recreation and Entertainment activities provided within this zone service the needs of surrounding residents and visitors, not compromising the role and function of existing centres within the region. These activities include but are not limited to food and drink outlets, offices, shops, indoor sport and recreation, bars, clubs, hotels, nightclub entertainment facilities, micro-breweries, coffee roasteries and tourist attractions;

(d) development provides for a range of Accommodation activities consistent with the mixed use environment intended in this zone. Such Accommodation activities include multiple dwellings, resort complexes, rooming accommodation and short-term accommodation;

(e) the scale, character and built form of development contributes to a high standard of amenity in keeping with the intended role and function of the particular precinct[20];

(f) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;

[20] Development within the Mixed use zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(g) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with connectivity to surrounding land uses;

(h) ~~unless otherwise specified in a local plan code or Table 6.2.13.2.1 (Maximum building heights in Mixed use zone),~~ development has a low to medium-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area~~, with a maximum building height of 12.0m above ground level~~;

~~**Table 6.2.13.2.1 Maximum building heights in Mixed use zone**~~

~~Mixed use location~~	~~Maximum building height~~
~~Airlie Beach Precinct A~~	~~14m~~
~~Airlie Beach Precinct C~~	~~21m~~
~~Airlie Beach Precinct F~~	~~18m~~
~~Airlie Beach Precinct G~~	~~14m~~

(i) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding development, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(k) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network[21];

(l) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(m) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;

(n) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(o) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[21] Development within the Mixed use zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.14 Neighbourhood centre zone code

6.2.14.1 Application

This code applies to assessable development:

(a) within the Neighbourhood centre zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Neighbourhood centre zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.14.2 Purpose and overall outcomes

(1) The purpose of the Neighbourhood centre zone code is to provide for a small mix of land uses to service residential neighbourhoods. It includes small-scale convenience shopping, professional offices, community services and other uses that directly support the immediate community.

(2) The purpose of the Neighbourhood centre zone code in the local government area is to provide for a limited range of small-scale Business and Community activities that support the basic convenience needs of local neighbourhoods.

(3) The purpose of the Neighbourhood centre zone code will be achieved through the following overall outcomes:

(a) development provides for the convenience and day to day Business needs of localised residential catchments, with uses including small-scale food and drink outlets, offices and shops;

(b) Community, Industry and Other activities, such as child care centres, community uses, emergency services, service industries and utility installations, may be established in the zone where they are compatible with the amenity of surrounding residential development;

(c) development provides for a limited range of Accommodation activities, including caretaker's accommodation, dual occupancies and multiple dwellings where such uses are ancillary to and support the predominant business functions of the zone;

(d) Business and Community activities are of a small-scale and limited intensity to maintain and reinforce the role and function of higher order activity centres as the preferred location for Business activities in the region, as demonstrated in the Whitsunday hierarchy of centres;

(e) development of Business activities in the Neighbourhood centre zone includes consideration of the following:

(i) the function and role of existing Business activities in the zone is maintained[22];

(ii) any commercial or retail component of development does not exceed 150m^2 GLA; and

(iii) site cover of the entire development does not exceed 50%;

[22] Development within the Neighbourhood centre zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(f) development has a low-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area~~, with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%~~;

(g) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;

(h) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with connectivity to surrounding land uses;

(i) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding development, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(j) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(k) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities~~, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes~~;

(l) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network[23];

(m) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(n) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;

(o) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(p) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[23] Development within the Neighbourhood centre zone may be requested to provide a Traffic assessment report in accordance with PSP SC6.7 (Growth management).

6.2.15 Recreation and open space zone code

6.2.15.1 Application

This code applies to assessable development:

(a) within the Recreation and open space zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Recreation and open space zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.15.2 Purpose and overall outcomes

(1) The purpose of the recreation and open space zone code is to provide for a range of sporting, recreation, leisure, cultural and educational activities. It may provide for local, district and regional scale parks that serve the recreation needs of residents and visitors and may include areas for conservation. Areas, such as parks, playing fields and playgrounds, are generally accessible to the public, however, access may be limited in certain areas at certain times. When required to meet community needs, development may include built structures, such as shelters, amenity facilities, picnic tables, clubhouses, gymnasiums, public swimming pools and tennis courts and other infrastructure to support the activities, provide safe access and support the management of these essential built structures.

(2) The purpose of the Recreation and open space zone code in the local government area is to provide for Recreation activities, open space and park functions and ancillary uses and infrastructure which are associated with the public use of those areas.

(3) The purpose of the Recreation and open space zone code will be achieved through the following overall outcomes:

(a) development provides for a range of passive and active Recreation activities that provide for the recreational needs of residents and visitors, including indoor/outdoor sport and recreation and park uses. The zone accommodates both formal and informal Recreation activities, including playing fields, equestrian facilities, outdoor cultural activities, educational activities, public swimming pools and outdoor courts;

(b) development may provide for limited other Community and Entertainment activities where they provide support for the predominant Recreation activity. Such uses include community uses, emergency services, clubs and function facilities as well as further supporting infrastructure, such as amenities blocks, shelters, spectator stands and picnic tables. Lighting infrastructure may be established in the zone where it supports the ongoing safe, comfortable and efficient operation of Recreation activities;

(c) recreation and open space areas may be used for temporary or periodical Business activities, such as markets or outdoor entertainment events, where these uses are of a scale that can be reasonably accommodated by the existing recreation and open space facilities and do not unduly impact on the amenity and character of the surrounding area;

(d) to maintain the intended character and amenity of the zone, development integrates with and compliments the streetscape and has a low-rise built form~~, with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%~~;

(e) development in the zone encourages personal safety and property security through the design of buildings and spaces, allowing for casual surveillance and the clear definition of public and private spaces;

(f) the co-location and multiple use of sport and recreation fields and facilities by complementary Recreation activities is encouraged;

(g) areas used for Recreation activities and open space complement and, where possible, are connected to other parts of the broader regional open space network, including land in the Environmental management and conservation zone;

(h) development in the zone provides a high level of amenity and mitigates the potential for land use conflicts with existing and planned development in the locality;

(i) existing and planned Recreation activities and open space areas are protected from the intrusion of incompatible land uses that may compromise or conflict with the primary use of the land for recreation and open space purposes;

(j) foreshores provide high quality recreation areas and are protected from further encroachment by incompatible development;

(k) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through location, design, operation and management;

(l) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(m) development is provided with an appropriate level of services and infrastructure that maintains public health, avoids negative impacts on the natural environment and ensures the safety of buildings and works;

(n) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(o) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.16 Rural zone code

6.2.16.1 Application

This code applies to assessable development:

(a) within the Rural zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Rural zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.16.2 Purpose and overall outcomes

(1) The purpose of the Rural zone code is to:

(a) provide for a wide range of rural uses, including cropping, intensive horticulture, intensive animal industries, animal husbandry, animal keeping and other primary production activities;

(b) provide opportunities for non-rural uses that are compatible with agriculture, the environment and the landscape character of the rural area, where they do not compromise the long-term use of the land for rural purposes; and

(c) protect and manage significant natural features, resources, and processes, including the capacity for primary production.

(2) The purpose of the Rural zone code in the local government area is to provide for a wide range of Rural activities and a limited range of non-rural activities, which complement or provide a service to rural areas. Activities in rural areas are sustainably managed to protect, maintain and enhance the productivity, character, visual amenity and ecological sustainability of the area.

(3) The purpose of the Rural zone code will be achieved through the following overall outcomes:

(a) development provides for a broad range of Rural activities, including animal husbandry, cropping, roadside stalls and wholesale nurseries, animal keeping, aquaculture, intensive animal industry, intensive horticulture, renewable energy facilities and rural industry, provided that adverse environmental and amenity impacts are avoided or appropriately managed;

(b) permanent Accommodation activities are limited to dwelling houses and caretaker's accommodation on existing lots. Home based businesses, nature-based tourism, Short-term accommodation (Dwelling), rural workers accommodation and tourist parks may also be established where the scale, intensity and nature of the use ~~complements~~ integrates with the rural landscape, ~~R~~rural activities and promotes the sustainable use of rural land;

(c) Business, Industry, Recreation and Community activities that are compatible with a rural setting and support rural enterprise and community wellbeing are facilitated where they do not compromise the use of the land for Rural activities. Such uses include agricultural supply stores, veterinary services, bulk landscaping supplies, community uses, ~~and~~ emergency services and, where supporting the tourism industry, indoor sport and recreation, outdoor sport and recreation, environment facility, shop or food and drink outlet;

(d) non-rural activities are located, designed and operated to minimise conflicts with existing and future Rural activities on the surrounding rural lands;

(e) intensive Rural activities are not located adjacent to sensitive uses and are designed and operated to maintain the rural character and amenity of the zone;

(f) development encourages the continued operation of existing agri-business and continued development of new agri-business opportunities;

(g) development for extractive industry or a renewable energy facility is appropriately designed, operated and managed to minimise significant nuisance and environmental impacts on surrounding premises;

(h) development does not alienate or fragment agricultural land for current or future productivity unless:

(i) there is an overriding need for the development in terms of public benefit; and

(ii) no other site is suitable for the particular purpose;

(i) the built form of development in the zone integrates with and complements the predominant rural character and scale of the zone and sensitively responds to the environmental and topographical features of the landscape. ~~Development is not to occur on land with a slope greater than 15%~~;

~~(i)~~(j) to maintain the rural character and amenity of the locality, development of Business or Accommodation activities have a low-rise built form with a maximum building height of 8.5m above ground level, or 10.0m above ground level, where located on slopes exceeding 15%;

~~(j)~~(k) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

~~(k)~~(l) development is provided with an appropriate level of services and infrastructure that maintains public health, avoids negative impacts on the natural environment and ensures the safety of buildings and works;

~~(l)~~(m) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(n) the safety and efficiency of existing and future infrastructure (including road, rail, telecommunications and electrical infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

~~(m)~~

6.2.17 Rural residential zone code

6.2.17.1 Application

This code applies to assessable development:

(a) within the Rural residential zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Rural residential zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.17.2 Purpose and overall outcomes

(1) The purpose of the Rural residential zone code is to provide for residential development on large lots where local government infrastructure and services may not be provided and where the intensity of residential development is generally dispersed.

(2) The purpose of the Rural residential zone code in the local government area is to ensure that development is low density and semi-rural in nature, developed as a logical extension, infill or consolidation of existing rural residential zoned land. These areas occur on land considered unsuitable for agricultural production with Rural activities limited to small-scale activities that do not impact on the rural residential amenity of the zone.

(3) The purpose of the Rural residential zone code will be achieved through the following overall outcomes:

(a) development provides for low density Accommodation activities, in the form of dwelling houses on a range of relatively large lots within a semi-rural setting. Home based businesses may be established in the zone, where the scale, intensity and nature of the activity does not disturb the rural residential character and amenity of the surrounding locality;

(b) Rural, Business and Community activities are limited to small-scale and low intensity uses that are compatible with the prevailing rural residential character and amenity of the zone. Such uses are limited to animal husbandry, cropping, roadside stalls, sales offices, community uses and emergency services;

(c) to maintain the low density character and rural residential amenity of the zone, development has a low-rise built form ~~with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%~~;

(d) the built form of development integrates with and complements the predominant rural residential character and scale of the zone and is sympathetic to the environmental and topographical features of the landscape;

(e) development for Accommodation activities adjacent to rural land does not interfere with the existing or ongoing use of the rural land for productive agricultural purposes;

(f) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

~~(n)~~(g) development is provided with an appropriate level of services and infrastructure that maintains public health, avoids negative impacts on the natural environment and ensures the safety of buildings and works; and

~~(g)~~(h) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.18 Special industry zone code

6.2.18.1 Application

This code applies to assessable development:

(a) within the Special industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Special industry zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.18.2 Purpose and overall outcomes

(1) The purpose of the Special industry zone code is to provide for specialised industry uses, including those that are noxious and hazardous. It may include non-industrial and business uses that support the Industrial activities where they do not compromise the long-term use of the land for industrial purposes. Activities considered appropriate in this zone are defined as special industry in the schedule of definitions;

(2) The purpose of the Special industry zone in the local government area is to provide for existing and future large scale, high intensity industry, which has the potential to significantly impact sensitive uses;

(3) The purpose of the Special industry zone code will be achieved through the following overall outcomes:

(a) uses in the zone are predominantly for higher intensity, higher impact Industry activities that have the potential to generate significant off-site impacts, including high impact industry and special industry uses;

(b) development of limited Accommodation, Community and Other activities compatible with this zone may also be established. These uses are limited to caretaker's accommodation, emergency services, substations, telecommunications facilities and utility installations. Such uses must be appropriately located and designed to ensure that they do not compromise the ongoing operation and viability of Industry activities[24];

(c) development provides for a range of lot sizes, including an appropriate proportion of larger lots to cater for larger format and land consumptive Industry activities;

(d) development has a built form that is compatible with the intended scale and character of the streetscape and surrounding area whilst accommodating industry operating requirements~~, with a maximum building height of 20.0m above ground level~~;

(e) Industry activities integrate with the locality by providing a high quality of built form and landscaping in keeping with the expectations of a modern, safe, and attractive industrial environment;

(f) the viability of both existing and future noxious and hazardous Industry activities are protected from the intrusion of incompatible uses;

(g) uses and works for noxious and hazardous industrial purposes are located, designed and managed to maintain safety to people, avoid significant adverse effects on the natural environment and minimise impacts on adjacent

[24] Development within the Special impact industry zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

non-industrial land, having regard to the inherent risks associated with these types of industries;

(h) Accommodation activities are not located within close proximity to the Industry activities in the zone;

(i) any sensitive uses located in the Special industry zone do not compromise the viability of both existing and future Industry activities;

(j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(k) Industry activities provide for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use[25];

(l) development is provided with the full range of urban services to support industry and employment needs including reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(m) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(n) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[25] Development within the Special industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.19 Tourist accommodation zone code

6.2.19.1 Application

This code applies to assessable development:

(a) within the Tourist accommodation zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Tourist accommodation zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.19.2 Purpose and overall outcomes

(1) The purpose of the Tourist accommodation zone code is to provide for short-term accommodation in locations where there is a strong focus on tourist attractions supported by community uses and small-scale services and facilities.

(2) The purpose of the Tourist accommodation zone code in the local government area is to provide development that meets the needs and expectations of visitors to the Region through the co-location of a range of Accommodation and Business activities.

(3) The purpose of the Tourist accommodation zone code will be achieved through the following overall outcomes:

(a) development provides for Accommodation activities, primarily in the form of relocatable home parks, resort complexes, rooming accommodation, short-term accommodation and tourist parks, that promote variety in visitor accommodation;

(b) development facilitates opportunities for establishing tourist facilities and services in urban, rural, environmental or coastal areas to complement tourist accommodation and enhance the attractiveness of tourist areas;

(c) development may provide for limited Business, Community and Other activities, including food and drink outlets, shops, community uses, emergency services and utility installations, which:

(i) directly support the day to day needs of the immediate visitors and residential community;

(ii) are small-scale and low intensity;

(iii) are compatible with the local residential character and amenity of the area;

(iv) wherever possible, are co-located with similar activities within the zone;

(v) are accessible to the population they serve and are located on the major road network, rather than local residential streets;

(vi) do not undermine the viability of nearby centres[26];

(vii) do not have a significant detrimental impact on the amenity of surrounding residents, having regard to hours of operation,

[26] Development within the Tourist accommodation zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

generation of odours, noise, waste products, dust, traffic, electrical interference, lighting and visual impacts;

(d) to maintain the low intensity character and residential amenity of the zone, development has a low-rise built form~~, with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%~~;

(e) development enhances and protects the unique local, scenic, environmental, cultural or historic character of the locality;

(f) development is facilitated where it has a direct relationship with local scenic, environmental, recreational, cultural or historic character;

(g) development is designed and located in a manner which makes a positive contribution to the streetscape and is sympathetic to the intended scale and character of surrounding development;

(h) development incorporates a high level of residential amenity, personal health and safety and protection for property;

(i) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(j) development located close to centres, community facilities and open space provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(k) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities~~, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes~~;

(l) development demonstrates an appropriate level of transport infrastructure is available and will not unreasonably interfere with the safe and efficient operation of the surrounding road network[27];

(m) development is reflective of, and responsive to, the environmental constraints of the land;

(n) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) that form the basis of the tourist attraction. Any unavoidable impacts are minimised through sensitive location, design, operation and management;

(o) development is provided with an appropriate level of services and infrastructure that maintains public health, avoids negative impacts on the natural environment and ensures the safety of buildings and works;

(o) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(p) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is

[27] Development within the Tourist accommodation zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.20 Waterfront and marine industry zone code

6.2.20.1 Application

This code applies to assessable development:

(a) within the Waterfront and marine industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Waterfront and marine industry zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.20.2 Purpose and overall outcomes

(1) The purpose of the Waterfront and marine industry zone code is to provide for waterfront, marine and business industry uses that require land near, or adjoining the waterfront. It may include non-industrial and business uses that support the Industrial activities, where they do not compromise the long-term use of the land for industrial purposes.

(2) The purpose of the Waterfront and marine industry zone code in the local government area is to provide a dedicated area for the establishment of waterfront and marine Industry activities as well as a limited range of non-industry activities that are compatible.

(3) The purpose of the Waterfront and marine industry zone code will be achieved through the following overall outcomes:

(a) the Waterfront and marine industry zone is predominantly used for marine industry uses, including ship and boat building, marine equipment manufacturing, marine and maritime service providers, storage, marine vessel refitting and marine vessel maintenance operations;

(b) other Industry activities may be established in the zone where they require access to a navigable waterway or provide support or complementary services to marine industry uses;

(c) development of ancillary Accommodation and Business activities may be established only where directly supporting the ongoing Industry activities of the zone. These uses are limited to caretaker's accommodation, food and drink outlets, outdoor sales and service station;

(d) Rural and Other activities may also be established in the zone where they are ancillary to and directly support the ongoing viability and operation of marine industry uses. These uses include rural industries (including wholesale and distribution of seafood products), aquaculture, landings and port services;

(e) compatible non-maritime uses should be co-located within the site allowing for good pedestrian access and permeability;

(f) the zone is protected from the intrusion of incompatible land uses that may compromise or conflict with the primary use of premises for Industry activities;

(g) the first stage of development incorporates a single integrated area for marine services and repair infrastructure for use by all existing and future operators located in the zone, comprising of:

(i) a canal basin;

(ii) a boat ramp into the canal basin;

(iii) a straddle lift for vessels up to 30m in length;

(iv) hardstand area (with a minimum area of approximately 2 hectares);

(v) equipment for the removal, treatment and disposal of sewage and other solid and liquid waste from vessels, including bilge water;

(vi) equipment for the removal and storage of fuel from vessels;

(vii) a vessel wash down facility designed and constructed to industry best practice standards;

(viii) a location for an enclosed pressure sand blasting and painting facility; and

(ix) a waste treatment system for the containment, treatment and removal of waste materials from blasting, painting and surface coating activities. The waste treatment system must be located so that influx of tidal waters is prevented;

~~(h)~~ development has a built form that meets the functional needs of marine industry uses and is also sympathetic to the non-urban character and amenity of the surrounding area~~, with a maximum building height above ground level of:~~

~~(i) 20.0m for buildings and structures used for the manufacturing, servicing or repair of vessels; and~~

~~(ii)~~(h) ~~12.5m for all other buildings and structures~~;

(i) development incorporates high quality urban design and landscaping to create an attractive, functional and legible waterfront industry precinct;

(j) development ensures that uses and works for industrial purposes are located, designed and managed to maintain public health and safety, avoid significant adverse effects on the natural environment and minimise impacts on non-industrial land and sensitive uses;

(k) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(l) Industry activities provide for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use[28];

(m) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities~~, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes~~;

(n) development is provided with the full range of urban services to support industry and employment needs, including parks, reticulated water,

[28] Development within the Waterfront and marine industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(o) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(p) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

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Airlie Beach local plan boundary and precinct map

~~Local plan - HILP - 01 (Heights plan)~~Bowen Local plan boundary and precinct map

Hamilton Island local plan boundary and precinct map

Part 7 Local Plans

7.1 Preliminary

(1) Local plans address matters at the local or district level and may provide more detailed planning for the zones.

(2) Local plans are mapped and included in Schedule 2 (Mapping).

(3) A precinct may be identified for part of a local plan.

(4) The categories of development and assessment for development in a local plan are in Part 5 (Tables of assessment).

(5) Assessment benchmarks for local plans are contained in a local plan code.

(6) Each local plan code identifies the following:

(a) the application of the local plan code;

(b) the purpose of the local plan code;

(c) the overall outcomes that achieve the purpose of the local plan code;

(d) the purpose and overall outcomes for each precinct;

(e) the performance outcomes that achieve the overall outcomes of the local plan code;

(f) the acceptable outcomes that achieve the performance outcomes of the local plan code; and

(g) the performance and acceptable outcomes of a precinct that achieve the overall outcomes of the precinct.

(7) The following are the local plan codes for the Planning Scheme:

(a) Airlie Beach local plan;
(b) Bowen local plan; and
~~(a)~~(c) Hamilton Island local plan.

7.2 Local plan codes

7.2.1 Airlie Beach local plan code

7.2.1.1 Application

This code applies to assessable development within the Airlie Beach local plan area as identified on the Local plan maps contained within Schedule 2 (Mapping).

Editor's note – To the extent of any inconsistency between the Airlie Beach local plan code and any other part of the Planning Scheme, the Airlie Beach local plan code prevails.

7.2.1.2 Purpose and overall outcomes

(1) The purpose of the Airlie Beach local plan code is to provide a development framework that:

(a) promotes the unique attributes of the locality;

(b) facilitates diverse Accommodation, Business and Entertainment activities;

(c) cultivates a hub of activity, social interaction, quality public space and placemaking; and

(d) contributes to the vitality and experience of Airlie Beach, as a tropical coastal tourist destination;

(2) The purpose of the Airlie Beach local plan code will be achieved through the following overall outcomes:

(a) The character of Airlie Beach, which includes its vital, small town scale, tropical climate, pedestrian neighbourhoods, compact Main Street form, blue views to the sea and green views to Airlie Hill, visually penetrable buildings and heights and lush landscape elements, is maintained;

(b) development reduces visual bulk of buildings by utilising podiums, awnings, articulation, materials, colours and landscaping to create visual interest;

(c) development is climate responsive and promotes a 'tropical sense of place', incorporating high quality, adaptable, energy efficient building design that maximises the utility of prevailing breezes, the surrounding natural landscape, open spaces and pedestrian routes;

(d) semi-public spaces, streets, laneways or other public spaces are designed to:

(i) ensure public access is available 24 hours a day; and

(ii) create a safe environment that maximises casual surveillance and discourages anti-social behaviour;

(e) placemaking, wayfinding and landscaping are utilised to promote a strong sense of place, encourage social interaction and activity, guide navigation throughout Airlie Beach and delineate boundaries between public, semi-public and private spaces;

(f) development incorporates permeable pedestrian and cycle movement from the Bicentennial Walkway through to the Whitsunday Transit Terminal and from the Foreshore through Precinct A, Precinct B and Precinct C to Waterson Way via existing and future laneways and pedestrian routes;

(g) pedestrian focused environments are established along Canal Street, Coconut Grove, Main Street and Waterson Way with:

(i) buildings built to the street alignment at ground level;

(ii) predominantly active uses at ground level;

(iii) façades articulated to ensure large, blank walls are not created;

(iv) awnings covering adjoining pedestrian footpaths along the full length of buildings;

(v) driveways avoided where alternate access points are available; and

(vi) undercroft car parking or car parking located to the rear or side of buildings;

(h) car parking is located away from the primary road frontage or screened, at rates that recognise pedestrian and cycle accessibility and cross utilisation within Airlie Beach;

(i) car parking demand is met efficiently, considering linkages and alternating peak demand between uses, with payments for parking in lieu considered in Precinct A and B where required parking cannot be provided on site;

Editor's note – Council is developing a precinct parking plan to inform payments per car park in lieu of development unable to provide on-site and timing of car park delivery. If applicable, contact Council for pre-lodgement advice to determine suitability.

(j) redevelopment in the Main Street and or adjoining the Foreshore is encouraged at higher density to account for existing constraints and encourage further revitalisation, enhancement of existing laneways and development of future laneways;

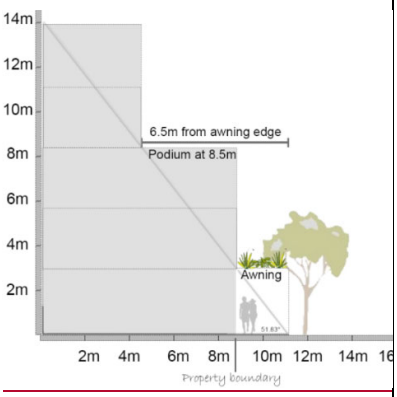
(k) development in Precinct C incorporates an internal road layout, which provides rear of lot access to properties in Precinct B and a vehicular connection across Airlie Creek;

(l) development in Precinct C and Precinct D is sited, orientated and designed to create an integrated, permeable and landscaped area with an active public plaza provided in each precinct to create a social hub and focal point of activity; and

(m) development in Precinct D incorporates a luxury hotel, including function facilities, designed to cater for a premium tourism market.

7.2.1.3 Assessment benchmarks

Table 7.2.1.3.1: Benchmarks for assessable development

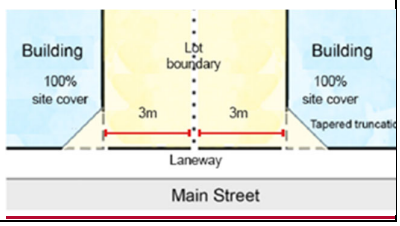
Performance Outcomes		Acceptable Outcomes	
All areas - Built form			
PO1	Development utilises podiums, awnings, articulation, an attractive roofline and landscaping to improve visual interest, visual amenity, reduce wind tunnel effects and reduce building bulk when viewed from a street, laneway or adjoining pedestrian routes.	**AO1.1**	Development exceeding 8.5m in building height, provides a podium and incorporates built form elements that differentiate between the podium and other building levels, including: (a) landscaping; (b) articulation; and (c) variations in building colour, materials and trimmings.
		AO1.2	The building incorporates vertical and horizontal articulation, such that no unbroken façade is longer than 10m.
		AO1.3	On the primary frontage podiums setback the tower 6.5m from the outside edge of the awning or 3m from the building façade, whichever is greater, and may be included at the awning level or any level above, up to 8.5m from ground level. 
		AO1.4	Podiums setback the tower a minimum of 3m from any side or rear boundary and may be included at the awning level or any level above, up to 8.5m from ground level.
PO2	Except where adjoining a laneway, buildings in Precinct A, Precinct B, on Waterson Way in Precinct C or on Canal Street or Coconut Grove in Precinct D create a continuous active street environment at ground level.	**AO2.1**	To promote a continuous active street environment, unless adjoining a laneway, development within Precinct A and Precinct B have front and side setbacks of 0m, at ground level.
		AO2.2	Development on Waterson Way within Precinct C or on Canal Street or Coconut Grove within

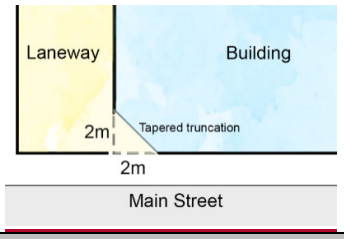
			Precinct D, have a minimum front and side setback of 0m and maximum front setback of 3m, at ground level.
PO3	Where development involves Accommodation activities, communal open space is provided such that residents have sufficient area to engage in communal activities, enjoy private and semi-private spaces and accommodate visitors.	**AO3.1**	Development involving Accommodation activities provides foyers and communal spaces to facilitate social interaction between residents and visitors, which comply with the following minimum areas and dimensions: (a) area equal to at least 20% of the total building footprint; and (b) minimum width of 3m. Editor's note – this acceptable outcome varies AO13.5 in the Short-term accommodation and multi-unit use code. All other parts of that code continue to apply, including private open space, such as balconies, are provided in accordance with Part 9.3.17 Short-term accommodation and multi-unit uses code.
All areas - Site layout and relationship of buildings to site features			
PO4	Development is oriented to the primary street frontage and promotes casual surveillance of public areas.	**AO4.1**	Development is designed to create a safe and attractive pedestrian environment by: (a) orienting the building façade to the primary street frontage; (b) ground level articulation clearly delineating building entry points; and (c) providing balconies, windows and other openings that overlook adjoining streets and public areas to maximise casual surveillance.
PO5	Development promotes a 'tropical sense of place' through the use of: (a) architectural elements that create shade; (b) lightweight and natural building materials and colours; and (c) generous shady landscaping.	**AO5.1**	Development utilises architectural features that create shade at ground level and façade patterns, both composed of building materials and finishes that are muted earth/environmental tones.
		AO5.2	Development incorporates landscaping, including at least three of the following options: (a) ground level planting boxes; (b) deep planting street trees, in keeping with adjoining street tree species; (c) vegetated podiums; (d) green walls; (e) balcony plantings; or (f) green roofs.
PO6	Development considers the position and orientation of windows, balconies and outdoor areas to capture prevailing breezes and views	**AO6.1**	Development is designed and sited to maximise passive cooling to increase the building's efficiency.
		AO6.2	Development overlooks natural landscapes and open spaces to

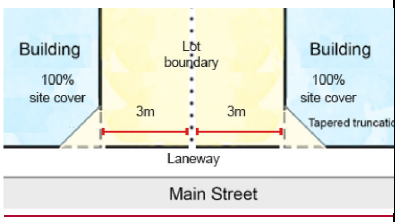
	of the natural landscapes and open spaces.		increase the connection between built form and the environment.
PO7	Active uses are predominant at ground level, where fronting: (a) Canal Street; (b) Coconut Grove; and (c) Waterson Way.	**AO7.1**	Development is sited and designed such that Canal Street, Coconut Grove and Waterson Way comprise active uses or spaces at ground level, which promote casual surveillance and visual interest to adjoining pedestrian pathways.
PO8	Development with a Main Street, Foreshore or plaza frontage stimulates the interaction between private, semi-public and public spaces by establishing active uses at ground level. Editor's note - Where development in Precinct A has a primary frontage to Main Street, the development must also address any secondary frontage to the Foreshore.	**AO8.1**	Development is sited and designed such that Main Street frontages comprise Business and Entertainment activities at ground level that are at least 80% open or transparent to allow internal activities to be visible from the outside and include open recesses to allow ground level activities to interact with the Street without affecting pedestrian movement.
		AO8.2	Development is sited and designed such that Foreshore and plaza frontages with: (a) ground level Accommodation activities, include building access and communal areas; or (b) Business or Entertainment activities, include active frontages that are at least 80% open or transparent to allow internal activities to be visible from the outside.
PO9	Development provides awnings, where fronting: (a) Canal Street; (b) Coconut Grove; (c) Main Street; (d) Waterson Way; and (e) the Foreshore.	**AO9.1**	Buildings provide adequate and appropriate shelter along adjoining streets and pedestrian routes in the form of an awning with a width: (a) that is 3m wide or to within 1m of any kerb, whichever is less; or (b) if awnings on adjoining premises are greater than 3m in width, awnings provided are consistent with the width and height of the adjoining awning, to within 1m of any kerb
PO10	Development reduces the visual impact of car parking areas where fronting: (a) Canal Street; (b) Coconut Grove; (c) Main Street; and (d) Waterson Way.	**AO10.1**	Development: (a) provides undercroft car parking that protrudes above the adjacent ground level by less than 1m; or (b) is sited and designed to locate car parking to the rear or side of the building.
All areas – placemaking, wayfinding, landscaping and CPTED			

PO11	Development ensures that lighting and building design facilitate wayfinding and the security of people and property, having regard to: (a) building entrances, loading and storage areas that are well lit and lockable after hours; (b) exterior building design that promotes safety; (c) minimisation of entrapment locations; and (d) opportunities for casual surveillance and sight lines.	**AO11.1**	Siting and design of lighting: (a) identifies and adequately illuminates building access points, loading or storage areas; (b) improves legibility and safety of entrances, exits and pathways between built form; (c) facilitates safety and casual surveillance by applying CPTED principles; and (d) promotes the visibility of placemaking and wayfinding measures. Editor's note—Applicants should have regard to Crime Prevention through Environmental Design Guidelines for Queensland.
		AO11.2	Development adjoining a laneway, identified on the ABLP Transport map, designs internal laneway frontages to be well lit and: (a) adjoined by active uses; or (b) where laneway frontages are not adjoined by active uses, public art, placemaking measures or landscaping are utilised to create a desirable pedestrian connection.
		AO11.3	The siting and design of built form does not create enclaves, entrapment points or accesses with low visibility from casual surveillance points.
PO12	Development in a Mixed use zone involving the creation of public space includes placemaking elements that contribute to the character and amenity of the area in the form of: (a) educational material about Airlie Beach's natural environment, wildlife, culture or history; (b) artwork, such as sculptures, mosaic tiling or murals; or (c) viewpoints allowing visitors to enjoy significant vistas, where available.	**AO12.1**	Development creating public space includes: (a) educational signage at points of local significance to enhance the resident and visitor experience; (b) artworks with local context, provided at a size and scale appropriate to the public open space area; or (c) where available, vistas from public spaces, including pedestrian routes, that consider natural features and seek to promote connection to the surrounding natural environment. Editor's note – A placemaking concept plan may be required dependent on the scale of the development.

PO13	Development in a Mixed use zone involving the creation of public space provides signage to enhance legibility and ease of navigation.	**AO13.1**	Development creating public space, including pedestrian routes and laneways, provides signage, consistent with existing Airlie Beach signage themes, at junction points providing direction to: (a) surrounding attractions, such as the Bicentennial Walkway, Boathaven Beach, Airlie Lagoon, Airlie Creek Track, Airlie Crescent Lookout and Honeyeater Lookout Trail; (b) nearby services, facilities and amenities; and (c) future plazas identified on the ABLP boundary and precinct map. Editor's note – A signage concept plan may be required dependent on the scale of the development. Editor's note – Contact Council for guidance on commonly themed signage measures.
PO14	Development in a Mixed use zone involving the creation of public space, including pedestrian routes and laneways, provides high quality landscaped areas.	**AO14.1**	Continuous landscaping of pedestrian routes and laneways provides shaded corridors connecting open space areas, natural features, plazas and buildings to each other, Main Street and the Foreshore. Note – A Landscaping plan may be prepared in accordance with the PSP SC6.4 Landscaping. Editor's note – this acceptable outcome is in addition to the Part 9.4.6 Landscaping code. All other parts of that code continue to apply.
		AO14.2	Open space areas are landscaped to create safe, comfortable and attractive pedestrian environments, providing: (a) shading to formal and informal seating areas; and (b) high quality landscaping, including large shade trees. Note – A Landscaping plan may be prepared in accordance with the PSP SC6.4 Landscaping. Editor's note – this acceptable outcome is in addition to the Part 9.4.6 Landscaping code. All other parts of that code continue to apply.
All areas – Laneways and connectivity			

PO15	Future laneways and pedestrian routes, identified on the ABLP Transport map, are available for public use 24 hours a day.	**AO15.1**	Future laneways and pedestrian routes, identified on the ABLP Transport map, must be dedicated to Council as public space.
PO16	Development supports permeable and attractive pedestrian and cycle movement from the Bicentennial Walkway through to the Whitsunday Transit Terminal and from the Foreshore to the plazas, Airlie Creek and Waterson Way.	**AO16.1**	Development establishes the future pedestrian routes and laneways identified on the ABLP Transport map.
		AO16.2	Development maintains and enhances existing pedestrian routes and laneways identified on the ABLP Transport map.
PO17	Pedestrian routes and laneways are created that facilitate permeable movement between Precincts, public plazas and surrounding residential streets, including, but not limited to: (a) Airlie Creek pedestrian spine; (b) connections across Airlie Creek; and (c) future laneways identified on the ABLP Transport map.	**AO17.1**	Development creates a desirable, safe and contiguous pedestrian environment enhanced by shade trees, signage, lighting, landscaping and seating along pedestrian corridors: (a) the length of Airlie Creek riparian corridor, providing visual connection to the creek where possible; (b) across Airlie Creek to connect the pedestrian route on both sides of the Creek; (c) from the plaza in Precinct C to adjoining residential streets, Orana Street, Raintree Place and Seaview Drive; and (d) from the plaza in Precinct C to the Foreshore.
PO18	Laneways accommodate easy movement for a large number of users by providing sufficient width and truncated corners.	**AO18.1**	Where identified on the ABLP transport map as a future laneway and located on a shared lot boundary, development on each adjoining lot provides a laneway width of 3m with no built form above ground level. 

		AO18.2	Buildings adjoining a laneway identified on the ABLP transport map, provide a minimum 2m tapered truncation on corners within the building envelope adjoining the laneway at the entrance/exit. 
Transport and access			
PO19	Development provides sufficient car parking and does not result in any net loss of on-street car parking.	**AO19.1**	Where development is within Precinct A or Precinct B and the existing number of on-site car parks are retained, additional car parking is calculated at the rates provided in Table 9.4.8.3.3 (Minimum on-site parking requirements) applied only to any additional GFA created by the development. Editor's note – Where development does not provide the required number of on-site car parking spaces, an infrastructure agreement may be entered into between the developer and Council, which provides for contributions to a Precinct Parking Plan in lieu of on-site car parking spaces. Editor's note – Contributions toward a precinct parking plan are a preferred option for development within the Main Street to reduce vehicle crossovers impeding pedestrian movement.
		AO19.2	Where development is not within Precinct A or Precinct B, car parking is calculated at the rates provided in Table 9.4.8.3.3 (Minimum on-site parking requirements). Editor's note – Where development does not provide the required number of on-site car parking spaces, an infrastructure agreement may be entered into between the developer and Council, which provides for contributions to a Precinct Parking Plan in lieu of on-site car parking spaces.
		AO19.3	Development does not result in the loss of any on-street car parking spaces or loading bays.
PO20	Development avoids or reduces vehicle crossovers, where fronting: (a) Canal Street; (b) Coconut Grove; and (c) Waterson Way.	**AO20.1**	Development fronting Canal Street, Coconut Grove and Waterson Way utilises side and rear access to buildings or driveways access multiple sites to

			minimise the total number of vehicle crossovers.
Precinct A and Precinct B – Built form			
PO21	Development maximises the development potential of the site to further revitalise Main Street and the Foreshore and encourage use of laneways.	**AO21.1**	The maximum site cover is: (a) 100% excluding any existing laneway, corner truncation or future laneway, as identified on the ABLP Transport map; or  (b) 90%, if not adjoining a laneway.
		AO21.2	Podium levels have a maximum tower footprint of 60% of the lot area, if on a premise that is 1,400m² or more, with no horizontal dimension greater than 50m.
Precinct B & C – Transport and access			
PO22	Development facilitates an internal road layout and vehicular movement across Airlie Creek, generally in accordance with the road layout plan identified on the ABLP transport map, including rear of lot vehicular access to the properties in Precinct B.	**AO22.1**	Development in Precinct C must provide an Airlie Creek vehicular crossing, generally in accordance with the road layout plan identified on the ABLP transport map.
		AO22.2	Development in Precinct C must provide vehicular connectivity, generally in accordance with the road layout plan identified on the ABLP transport map subject to relevant constraints: a) existing access points; b) hazards; c) topography; d) plaza location; e) pedestrian routes; and f) natural features. Note – A Traffic impact assessment report prepared in accordance with PSP SC6.7 Growth management may assist in demonstrating compliance with the performance outcome.
		AO22.3	Where possible, development in Precinct C must provide rear of lot vehicular access to properties in Precinct B, generally in accordance with the road layout plan identified on the ABLP transport map.
PO23	Development removes Main Street vehicle crossovers by utilising rear of lot access.	**AO23.1**	Development in Precinct B, adjoining the indicative internal road layout identified on the

			ABLP transport map, gains rear of lot access from the internal road or, where the indicative road has not yet been formalised, complies with PO24.
PO24	Development does not increase Main Street vehicle crossovers and, where possible, reduces Main Street vehicle crossovers.	**AO24.1**	Development in Precinct B, not adjoining the proposed internal road layout identified on the ABLP transport map, avoids vehicular access to the Main Street, or where this is not possible access is via a maximum of one vehicle crossover that may be shared with adjoining premises.
PO25	Development involving Business, Entertainment or Accommodation activities within Precinct C relocates all bus stops from Main Street to Precinct C.	**AO25.1**	Development that triggers the construction of the internal road network on the ABLP transport map relocates bus stops from Main Street to appropriate locations within Precinct C. Editor's note – Changes in location of the bus stop must occur in accordance with the *Public Transport Infrastructure Manual 2015.* Bus stop locations must be within 400m walking distance from the majority of destinations in Airlie beach. Note – A Traffic impact assessment report prepared in accordance with PSP SC6.7 Growth management may assist in demonstrating compliance with the performance outcome.
Precincts C & D - Public plazas			
PO26	Development in Precincts C and D create hubs of economic, social and cultural activity in the form of plaza(s), identified on the ABLP boundary and precinct map, through the orientation of buildings and direct pedestrian connections from adjoining precincts.	**AO26.1**	Development orientates pathways and built form in a manner that facilitates legible, safe and convenient pedestrian movement from surrounding precincts to the nearest plaza(s), identified on the ABLP boundary and precinct map, utilising the existing and future laneways and pedestrian routes identified on the ABLP transport map.
PO27	Development facilitates the establishment of central plaza(s), available 24 hours a day for public use and generally at locations identified as plaza(s) on the ABLP boundary and precinct map.	**AO27.1**	Plaza(s) identified on the ABLP boundary and precinct map must be dedicated to Council as public space.
PO28	Plaza(s) are designed to create safe, comfortable and attractive pedestrian environments, composed of: (a) Wayfinding maps and signage; (b) active uses; (c) high quality landscaping; (d) shading;	**AO28.1**	Plaza(s) are designed to create safe, comfortable and attractive pedestrian environments, including: (a) shaded formal and informal seating areas; (b) high quality landscaping, including large shade trees;

	(e) seating; and (f) areas of informal public open space.		(c) placemaking elements that promote social interaction and sense of place; and (d) Airlie Beach themed legibility measures including: i. a central map of the broader area; and ii. signage delineating distances to attractions and amenities at key pathway divergences. Editor's note – Contact Council for guidance on commonly themed signage measures.
PO29	Development is designed to maximise the efficient use of the precinct, considering the relevant constraints, opportunities and infrastructure.	**AO29.1**	Development must not detrimentally affect future development or compromise internal pedestrian and vehicle movement within each precinct. Note – Where only a portion of Precinct C or Precinct D is proposed for development, development may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).
Precinct D – Land Use			
PO30	Where development is for a hotel in Precinct D, the hotel must include a function facility.	**AO30.1**	A function facility associated with a hotel must be a minimum of 300m² GFA or 3% of the total GFA, whichever is greater.
All precincts – Reconfiguring a Lot			
PO31	Reconfiguring of a lot is designed to maximise the efficient use of the site, considering the relevant constraints, opportunities and infrastructure.	**AO31.1**	Reconfiguring of a lot within the Mixed use zone must not detrimentally affect future development within the Local Plan area. Note – Development within the Airlie Beach Local Plan area may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).

7.2.2 Bowen local plan code

7.2.2.1 Application

This code applies to assessable development within the Bowen local plan area as identified on the Local plan maps contained within Schedule 2 (Mapping).

Editor's note – To the extent any inconsistency between the Bowen local plan code and any other part of the Planning Scheme, the Bowen local plan code prevails.

7.2.2.2 Purpose and overall outcomes

(1) The purpose of the Bowen local plan code is to provide a development framework that facilitates:

(a) a mixed use marine hub, including marine education, marine industry, diverse business activities and high quality accommodation product, designed in a manner that avoids conflicts between uses in the marina;

(b) development that contributes to, rather than competes with, the Bowen CBD;

(c) marina and foreshore development, which contributes to the vitality and experience of the local plan area incorporating revitalized spaces, high quality landscaping and transport options connected to Bowen Beaches and Bowen CBD; and

(d) a mix of uses and high quality public space areas, which are designed and operated to maximise ocean views and marina access.

Note - Development within the Bowen local plan area may be requested to provide a Structure plan in accordance with PSP SC6.7.5 (Structure plan).

(2) The purpose of the Bowen local plan code will be achieved through the following overall outcomes:

Precinct A: Bowen Foreshore and Starboard Drive

(a) development provides a mix of Business, Entertainment and Accommodation activities that complement existing uses within the Bowen CBD;

(b) Accommodation activities provide for higher density living opportunities above the street level to facilitate active frontages at the street level, contribute to the vibrancy of the local plan area and enhance the development potential of the land;

(c) development provides active and open frontages adjoining Santa Barbara Parade, Herbert Street, Starboard Drive and recreation areas;

(d) development design encourages pedestrian and cycle movement around the precinct and facilitates connectivity between precincts and into wider Bowen;

(e) multi-storey development reduces the bulk of built form through setbacks, podiums, façade articulation, variation in the building footprint, variation in tower footprint and use of natural materials, colours, ground level plantings and vertical landscaping;

(f) placemaking elements, consistent Bowen themed signage, maps, universal symbols and landscaping are utilised at key locations to guide wayfinding that highlights public plazas, attractions and amenities;

Precinct B: Henry Darwen Drive

(g) development activates Henry Darwen Drive with a mix of low intensity, marine oriented:
  i. Business activities;
  ii. Service industry;
  iii. Educational establishment;
  iv. Port services; and
  v. Offices and Accommodation activities that support uses within the other Precincts;

(h) Accommodation activities provide for higher density living opportunities above the street level to facilitate active frontages at the street level, contribute to the vibrancy of the local plan area and enhance the development potential of the land;

(i) Accommodation activities are sited, designed and landscaped to maximise views of McCanes Bay and mitigate amenity impacts from nearby Marine industry uses, Landings and Port services;

(j) signage, pathways and landscaped connections facilitate efficient pedestrian and cycle movement throughout the local plan area and into Bowen CBD;

(k) development incorporates semi-public or, where appropriate, public spaces adjoining water frontages;

(l) development on the Recreation and open space zone land and Community facilities zone land is appropriately designed to be self-contained, responding to the disconnect from the Bowen CBD, and capitalising on the proximity to the water;

(m) development facilitates the public activation of Henry Darwen Drive;

Precinct C: Bowen marine industry

(n) development includes the provision of a regionally significant Marine industry hub, incorporating relevant supporting and ancillary functions;

(o) Industrial activities are designed and sited to mitigate impacts on sensitive land uses outside of the precinct, incorporating landscaping, lighting, fencing and operational controls, which also improve the character of the Marina;

(p) sensitive land uses are not located in the precinct to avoid conflict with the marine industry uses and supporting activities;

(q) access and manoeuvring for heavy vehicles is safe and avoids conflicts with vehicle and pedestrian movement, and is appropriately linked with the surrounding heavy vehicle network;

(r) development on the Open space zone land and Community facilities zone land is appropriately designed to be self-contained, responding to the disconnect from the Bowen CBD, and capitalising on the proximity to the water; and

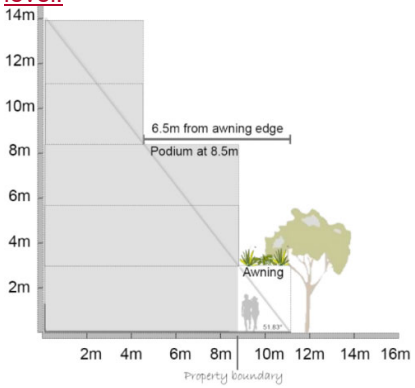
(s) water access for boats is safe and avoids conflicts with boats in the Marina.

7.2.2.3 Assessment Benchmarks

Table 7.2.2.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Pedestrian and cycle movement			
PO1	Development within the Marina creates pedestrian and cycle pathways to service the development and provide linkages throughout the locality, enhance water frontage activation and maximize vistas of the water where possible.	AO1.1	Development creates a desirable, contiguous pedestrian environment enhanced by shade trees, lighting, landscaping and seating along pedestrian pathways: (a) along all water frontages of Starboard Drive Marina arm; (b) along south-west water frontages of Henry Darwen Drive; and (c) connecting Henry Darwen Drive to the Bowen CBD via Santa Barbara Parade and Herbert Street.
PO2	Marina development creates landscaped entrance statements at key junctions and appropriate signage that provides legibility for users for the destinations within each entrance.	AO2.1	Suitably landscaped entrance statements are located: (a) at the entrance to each Marina arm, being the intersection of Santa Barbara Parade with Starboard Drive and Henry Darwen Drive; and (b) adjoining Peter Wyche Drive, to screen marine industry uses and pay tribute to Flagstaff Hill multi-purpose facility through placemaking design.
		AO2.2	Each entrance statement must include signage, which clearly identifies the relevant businesses and attractions.
PO3	Development does not create unsafe or restricted conditions for heavy vehicle movement on the heavy vehicle network.	AO3.1	Landscaping, vehicular accesses or pedestrian connections avoid conflicts with, and maintains safety along, the heavy vehicle network. Note – Bowen's heavy vehicle network may be viewed within Council's Integrated Transport Strategy.
All precincts – Landscaping			
PO4	Development provides high quality consistent landscaping, which: (a) integrates with existing Herbert Street landscaping; (b) integrates with the Foreshore along Santa Barbara Parade; and (c) provides a visual buffer of Industry activities adjoining Peter Wyche Drive and attractive boulevard for Flagstaff Hill visitors.	AO4.1	Development provides high quality streetscape landscaping, including shade street trees, adjoining: (a) Herbert Street to provide a continuation of existing high-quality landscaping; (b) Santa Barbara Parade to integrate with the Foreshore and delineate road crossing locations; and (c) Peter Wyche Drive, at least 3m wide and of adequate density to provide visual buffer to Industry activities within Precinct C.

Performance Outcomes		Acceptable Outcomes	
All precincts – Building heights			
PO5	Development does not dominate the intended streetscape character and, where development exceeds Bowen local plan building heights, the height is necessary for a functional marine industry use or: (a) provides high quality public space on the premises; (b) ensures sensitive building design that responds to view corridors and landscape elements; (c) provides high quality architectural design and building articulation, which reduces the bulk of the building; and (d) avoids overlooking and overshadowing of adjoining uses or land.	AO5.1	Development is compatible with the intended scale and character of the streetscape and surrounding area and does not exceed the maximum building height defined within the Building Heights Overlay Code.
All precincts - Other			
PO6	Development is designed to maximise the efficient use of the site, considering the relevant constraints, opportunities and infrastructure.	AO6.1	Development within the Mixed use zone on Starboard Drive (Precinct A) or any premises within Precinct B or C must not detrimentally affect future development within the Local Plan area. Note – Development within the Bowen Local Plan area may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).
Precinct A and B – Site layout and relationship of buildings to site features			
PO7	Development within Precinct B ensures an adequate buffer between sensitive uses and anticipated Marine industry uses within Precinct C.	AO7.1	Parking areas, Education facilities Industry activities, waste disposal areas, service areas and back-of-house activities within Precinct B are located on land nearest Precinct C and face north-east.
		AO7.2	Vegetation buffers are utilised within Precinct B to provide visual and noise buffers to marine industry uses within Precinct C, commensurate to the intensity of anticipated Marine industry impacts of Precinct C uses.
PO8	Development within Bowen Marina facilitates the creation of: (a) Landing and Port services uses capable of servicing Stone Island and	AO8.1	Development facilitates Landing and Port services uses and ancillary car parking within the Bowen Marina. Note – where only a portion of Bowen Marina is proposed for development, development may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth

Performance Outcomes		Acceptable Outcomes	
	commercial marine tourism ventures off of the coast of Bowen; and (b) a maritime orientated Educational establishment use.		management) to identify suitable locations for future Port services.
		AO8.2	Development facilitates the provision of a maritime orientated Educational establishment use.
PO9	Development adjoining public spaces and key pedestrian pathways facilitates casual surveillance of the area.	**AO9.1**	Development adjoining Herbert Street, Santa Barbara Parade, Starboard Drive, Henry Darwen Drive and water fronting walkways are sited and designed to: (a) address and provide an active or semi-active frontage at ground level; and (b) promote casual surveillance of public and semi-public spaces through the location of balconies, al-fresco dining, beer gardens or communal areas.
Precinct A and B – Built form			
PO10	Development utilises podiums, awnings, articulation, an attractive roofline and landscaping to improve visual interest, visual amenity, reduce wind tunnel effects and reduce building bulk when viewed from the street or adjoining pedestrian pathway.	**AO10.1**	Development exceeding 8.5m in building height, provides a podium fronting pedestrian pathways and incorporates built form elements that differentiate between the podium and other building levels, including: (d) landscaping; (e) articulation; or (f) variations in building colour, materials or trimmings.
		AO10.2	Podiums setback the tower 6.5m from the outside edge of the awning on the primary frontage and may be included at the awning level or any level above, up to 8.5m from ground level. 
		AO10.3	Podiums setback the tower a minimum of 3m from any side or rear boundary and may be included at the awning level or any level above, up to 8.5m from ground level.

Performance Outcomes		Acceptable Outcomes	
		AO10.4	The building incorporates vertical and horizontal articulation, such that no unbroken façade is longer than 10m.
PO11	Buildings along Santa Barbara Parade, Herbert Street and Dalrymple Street create an active street environment.	AO11.1	To promote a continuous active street environment the maximum front and side setbacks of development which fronts Santa Barbara Parade, Herbert Street or Dalrymple Street is 0m, between ground level and any podium.
PO12	Development adjoining Herbert Street and Santa Barbara Parade: (d) promotes 'sub-tropical sense of place' through the use of natural building materials, colours and vertical landscaping that create a cooler microclimate; and (e) includes architectural features reflective of the built form character of Herbert Street.	AO12.1	Development adjoining Herbert Street or Santa Barbara Parade design façade treatments and awnings below podium level to be sympathetic of the predominant characteristics of built form within Herbert Street, including at least three of the following: (a) façade patterning, utilizing timber or natural treatments; (b) timber or muted earth/environmental tones; (c) cornices; (d) decorative battens; (e) balconies fronting streets; and (f) high ceilings at ground level.
		AO12.2	Development adjoining Herbert Street or Santa Barbara Parade utilises vertical landscaping, including at least three of the following options: (a) ground level planting boxes; (b) deep planting street trees, in keeping with adjoining street tree species; (c) vegetated podiums; (d) green walls; (e) balcony plantings; or (f) green roofs.
PO13	Development is sensitively designed in response to view corridors and prevailing breezes by: (a) avoiding large building footprints and building façades; (b) sensitively orientating built form to minimise visual impact on sensitive land uses; and (c) variations in building height, design and mass.	AO13.1	Building layout provides variations in building height, design and mass to: (a) step back tower levels where adjoining parks and pedestrian pathways; (b) preserve air flow from prevailing south easterly breezes; (c) facilitate view corridors; and (d) promote natural light to communal and public spaces.
		AO13.2	A single building footprint may not exceed 3,000m².
		AO13.3	Buildings do not exceed 70% total site coverage.

Performance Outcomes		Acceptable Outcomes	
		AO13.4	Any part of the building above the podium level does not exceed a tower footprint of 1,500m², with no horizontal dimension greater than 50m.
PO14	Development without ground level Business or Entertainment activities fronting pedestrian walkways on Santa Barbara Parade or Henry Darwen Drive provide a desirable pedestrian frontage.	AO14.1	Development which fronts pedestrian walkways or public spaces locates Business or Entertainment activities along these frontages to facilitate active and desirable pedestrian environments and incorporate: (a) variations in building footprint and ground level articulation; (b) permeable or semi-permeable facades and frontages; (c) high quality landscaping, including shade trees; (d) appropriate lighting; and (e) clearly delineated building accesses at ground level.
Precinct A and B – Accommodation activities			
PO15	Accommodation activities in Precinct A and B maximise the development potential of the site and promote a dynamic mixed use environment.	AO15.1	Accommodation activities are consistent with the intent of the Local Plan Precinct A and Precinct B including: (a) Multiple dwelling; (b) Residential care facility; (c) Retirement facility; (d) Rooming accommodation; and (e) Short-term accommodation.
		AO15.2	Rooming accommodation located in Precinct B must be associated with an Educational establishment or Coastal dependent development within the Bowen Local plan area or Bowen Major centre zone.
Precinct C - Site layout and relationship of buildings to site features			
PO16	Industrial activities avoid negative impacts on visual amenity as viewed from Peter Wyche Drive.	AO16.1	Industrial activities avoid negative impacts on visual amenity as viewed from Peter Wyche Drive through landscaping, setbacks and variations in built form.
All precincts – Reconfiguring a Lot			
PO17	Reconfiguring of a lot is designed to maximise the efficient use of the site, considering the relevant constraints, opportunities and infrastructure.	AO17.1	Reconfiguring of a lot within the Mixed use zone on Starboard Drive (Precinct A) or any premises within Precinct B or C must not detrimentally affect future development within the Local Plan area. Note – Development within the Bowen Local Plan area may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).

7.1.17.2.3 Hamilton Island local plan code

7.1.1.17.2.3.1 Application

This code applies to acceptable and assessable development within the Hamilton Island local plan as identified on the zoningLocal plan maps contained within Schedule 2 (Mapping).

Note – Applicants should seek guidance from Hamilton Island Enterprises prior to lodging a development application.

Editor's note – To the extent of any inconsistency between the Hamilton Island local plan code and any other part of the Planning Scheme, the Hamilton Island local plan code prevails.

7.1.1.27.2.3.2 Purpose and overall outcomes

(1) The purpose of the Hamilton Island local plan code is to provide a development framework that facilitates growth to sustain and strengthen the tourist centre of Hamilton Island, while retaining its valuable natural assets.

(2) The purpose of the Hamilton Island local plan code will be achieved through the following overall outcomes:

(a) Hamilton Island provides for an integrated tourist resort community, comprising Hamilton and Dent Islands;

(b) Dent Island functions as an integrated part of Hamilton Island;

(c) Dent Island provides low impact, small scale resort Accommodation and Recreational activities, which is less intensively developed then Hamilton Island;

(d) Hamilton Island's role and use as an offshore gateway to the Whitsunday Islands is maintained and enhanced;

(e) development does not compromise the ongoing operation of existing tourist facilities and attractions with uses contributing to the vitality and experience of Hamilton Island as a tourist destination, residential community and a cultural focal point;

(f) development provides for a cluster of appropriately located low and low-medium density Accommodation activities in both traditional neighbourhood and mixed use formats, providing for and supporting the residential and tourist function of the Island, optimising premium hillside views to the ocean and maintaining the privacy of existing residential sites;

(g) development is located on ridgelines and vegetated gullies to remain generally recessive through existing vegetation and foreshore features as viewed from surrounding marine waters by way of suitable aesthetic building design, treatments and colours;

(h) development for Business, Entertainment, Recreation activities provide for both resident and visitor needs to support day and night time economies. Activities are established where they are compatible with the character and amenity of surrounding development, optimise public accessibility to, and visibility of, waterfront areas and natural features or support marina functions and provide services to boats and boat users;

(i) development of Community, Industry and Other activities may be established where they support tourist, marina or aviation functions and services and are compatible with the scale, nature, character and amenity of surrounding development;

(j) the character and individual identity of each development, evident in the style of buildings, landscaping and views to, and from, the surrounding waterbodies and natural features/landscapes is maintained;

(k) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;

(l) development provides for a built form that is predominately low-rise and compatible in theme, scale and character with the existing or desired form of development within the Island;

(m) development provides for an architectural character, which reflects an open and relaxed lifestyle centred on the outdoors that is designed to be responsive to the tropical maritime climate and environment;

(n) development provides and maintains a high level of residential and visitor amenity;

(o) development is linked by a series of circulation and open space networks that are designed to provide pedestrian, cyclists and other resort transport modes with direct, integrated, safe and pleasant access to centres, waterfront, marina and recreation activities;

(p) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters, such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(q) the tourism and recreation significance and the environmental and landscape values of Hamilton Island are recognised and protected with the accessibility of the surrounding marine and national parks (or other areas of conservation or scenic value) maintained for visitors and residents;

(r) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance, including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation, through sensitive location, design, operation and management;

(s) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;

(t) development is located and designed to maximise the efficient extension and safe operation of infrastructure;

(u) the safety and efficiency of existing and future infrastructure is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure; and

(v) risks to people and property as a result of bushfire, coastal and landslide hazards are considered. Development should only be carried out in hazard areas where it is demonstrated that impacts are suitably avoided and managed.

~~7.1.1.3~~7.2.3.3 Assessment benchmarks

Table 7.2.3.3.1 Benchmarks for acceptable and assessable development

Performance Outcomes		Acceptable Outcomes	
All zones			
Minimum lot size			
PO1	Reconfiguring a lot provides for the size, dimensions and orientation of lots to: (a) be appropriate for their intended use; (b) be compatible with the existing or preferred character and identity of the zone and local area; (c) provide for appropriate landscaping, convenient vehicle access, manoeuvrability and on-site parking; (d) provide for the efficient use of land, whilst including sufficient area for suitable and useable private open space; and (e) take account of, and respond sensitively to, site constraints.	**AO1.1**	Land is retained in lots with a minimum lot size of: (a) 500m^2 within the Mixed use zone; (b) 1,000m^2 within the Low density residential zone; (c) 500m^2 within the Low-medium density residential zone; and (d) 1,000m^2 within the Low impact industry zone.
Built form			
PO2	The height of a building does not unduly: (a) overshadow adjoining dwellings; or (b) obstruct the outlook from adjoining lots; or (c) dominate the intended streetscape character.	**AO2.1**	Development has a maximum building height: (a) consistent with that provided in Local plan - Hamilton Island local plan boundary and precinct map~~HILP - 01 (Hamilton Island local plan: Heights plan~~); or (b) where not specified in the Local plan - Hamilton Island local plan boundary and precinct map~~HILP - 01 (Hamilton Island local plan: Heights plan)~~: (i) 8.5m above ground level; or (ii) 10.0m above ground level where located on slopes exceeding 15%.
		AO2.2	The maximum building height of a garage, carport or shed is: (a) 4.5m above ground level to the highest point; and (b) 3.6m to the eaves.
PO3	Development is sited and designed to: (a) provide amenity for users of the premises, whilst preserving the privacy and amenity of nearby properties;	**AO3.1**	For dwelling houses and dual occupancy buildings the: (a) front boundary is setback a minimum of 3m; and (b) rear boundary is setback a minimum of:

Performance Outcomes		Acceptable Outcomes	
	(b) preserve any existing vegetation that will buffer the proposed building; (c) allow for landscaping to be provided between buildings, street frontages and between neighbouring buildings; and (d) maintain the visual continuity, pattern of buildings and landscape elements within the street.		(i) 6m; or (ii) 3m where the lot backs onto Recreation and open space or non-residential areas; (c) side boundaries are setback: (i) a minimum of 3m for lots 550m² or less; or (ii) a minimum of 4m for lots greater than 550m².
		AO3.2	For all other Accommodation activities the front boundary is setback a minimum of: (a) 6m from the primary road frontage; or (b) 3m where fronting an internal private road; and (c) side and rear boundaries are setback a minimum of 4m.
		AO3.3	For Accommodation activities fronting a waterbody (including ocean), buildings are setback a minimum of 20m from the waterbody.
		AO3.4	The integrity of natural vegetation and ground is retained and left predominantly undisturbed within boundary setback areas.
PO4	Buildings are sited and designed to: (a) provide adequate building separation distance from adjoining uses; and (b) optimise visual permeability of the built form.	**AO4.1**	New buildings or any new building levels are separated from any existing building in the following manner: (a) habitable rooms in any new building are separated from any existing building in accordance with the table below: Building height 7m 12 (b) non-habitable rooms in an existing building are separated from the existing building in accordance with the table below: Building height 7m 9m
PO5	The building is sited and designed to: (a) provide a visibly clear pedestrian entrance to and from the building; and (b) minimise the potential for pedestrian and vehicular conflict.	**AO5.1**	The building is sited and designed, such that: (a) the main pedestrian entrance to the building, or group of buildings, is located on the primary street frontage; and (b) pedestrian access to the entrance of the building(s) or

Performance Outcomes		Acceptable Outcomes	
			individual dwellings is easily discerned.
PO6	Buildings are sited and designed in a manner which: (a) minimises visual bulk and scale of the building mass; (b) provides visual interest through building articulation and architectural design features; and (c) allows sufficient area at ground level for communal open space, site facilities, resident and visitor parking, landscaping and maintenance of a residential streetscape where required.	**AO6.1**	The building incorporates most or all of the following design features: (a) vertical and horizontal articulation, such that no unbroken elevation is longer than 15m; or (b) variations in plan shape, such as curves, steps, recesses, projections or splays; or (c) variations in the treatment and patterning of windows, sun protection and shading devices or other elements of façade treatmentt at a finer scale than the overall building structure; or (d) balconies, verandahs or terraces; or (e) planting, particularly on podiums, terraces and low-level roof decks.
		AO6.2	Any projection above the podium level outside the boundaries of the building envelope is limited to balconies that do not project more than 1.5m into the setback.
		AO6.3	Roof forms include pitches or skillions with a substantial portion of the roof plane parallel to the ground slope.
Privacy and amenity			
PO7	Development does not unreasonably impact upon the amenity or environmental quality of its environs, especially any nearby sensitive uses.	**AO7.1**	Undesirable visual, noise and odour impacts on public spaces and sensitive uses, are avoided or reduced by: (a) providing vehicle loading/unloading and refuse storage/collection facilities within enclosed service yards or courtyards; and (b) providing an enclosed, roofed, vermin and fauna proof refuse area, incorporating cross ventilation and enclosing doors located at driveway entries.
PO8	Fencing ensures the protection of new landscaping and existing vegetation from fauna and is designed having regard to: (a) privacy and overlooking; (b) views and vistas;	**AO8.1**	Street front fencing: (a) does not exceed 1.5 metres in height and: (i) is screened by landscaping for the entire length; or

Performance Outcomes		Acceptable Outcomes	
	(c) building character and appearance; (d) safety and surveillance of street and entry areas; and (e) the natural landscape.		(ii) where street front fencing is not screened with landscaping, the length of the fence does not exceed 75% of the frontage or 15 metres.
		AO8.2	Side and rear boundary fencing: (a) does not exceed 1.8 metres in height; (b) is constructed of masonry, timber or chain wire coated in black or grey PVC; and (c) is screened by extensive landscaping.
PO9	Buildings and structures maintain the visual prominence of any significant landmarks and conserve important views and vistas.	**AO9.1**	Development ensures: (a) views from the mainland to Dent Island are of the natural landscape; (b) views from the surrounding waters and Islands of the Whitsundays to both Hamilton and Dent Islands are primarily of the natural landscape; (c) views of development on Hamilton Island are available from Dent Island; and (d) views of development on Dent Island from Hamilton Island are minimised.
PO10	Building and structures do not dominate the natural landscape.	**AO10.1**	Buildings on sloping lots are: (a) orientated so that the longer axis is parallel to the contours; or (b) have a stepped profile following the slope of the site.
		AO10.2	Buildings and structures consist of lightweight and framed construction, including the use of functional elements, such as: (a) shaded verandahs; or (b) balconies; or (c) pergolas.
		AO10.3	Where the underfloor surface, services and foundation structures are visible, these are screened with physical, such as timber battens or landscape elements.
		AO10.4	The design of garages, covered parking areas and storage areas are integrated with the building's architecture, including materials and landscaping.
PO11	The design, size, frequency and location of wayfinding signage	**AO11.1**	Building names and other property identification are

Performance Outcomes		Acceptable Outcomes	
	does not detract from the character and amenity of the area.		prominently displayed and illuminated at night.
		AO11.2	Signage complements the architecture of the development and streetscape.
Open space and landscaping			
PO12	The development provides communal open space, private open space and landscaping, such that residents have sufficient area to engage in communal activities, enjoy private and semi-private spaces and accommodate visitors.	**AO12.1**	Multiple dwellings ensure that: (a) at least 30% of the site area at ground level is provided as communal open space for clothes drying and communal recreation facilities; and (b) at least 50% of this communal open space area is landscaped to achieve total ground cover at maturity.
		AO12.2	Each ground floor dwelling or rooming unit has a courtyard or similar private open space area with: (a) a minimum of 25m^2; (b) a minimum dimension of 4m; and (c) direct access from a main living area.
		AO12.3	Each dwelling or rooming unit above ground floor level has a balcony or similar private open space area with: (a) a minimum area of 10m^2; (b) a minimum dimension of 2m; and (c) direct access from a main living area.
PO13	Landscaping complements the existing or desired character of the Island, contributing to the amenity, accessibility and safety of public areas and is well integrated with the natural landscape.	**AO13.1**	A minimum of 30% of the site is to be landscaped with soft landscaping, exclusive of service areas, pools, paving, retaining structures and driveways.
		AO13.2	Accommodation activities provide for a landscaped area with a minimum width of 3m along all boundaries, exclusive of service areas, pools, paving, retaining structures and driveways.
		AO13.3	Where buildings with elevated or pole construction are proposed, the open ground beneath and immediately surrounding the building is extensively revegetated where light penetrates.
		AO13.4	Landscaped areas are designed to integrate open space

Performance Outcomes		Acceptable Outcomes	
			networks and the built form through the use of the following: (a) provision of landscaped physical and visual connections through the site; and (b) use of a variety of plants and planting structure to provide comfortable use of public and semi-public spaces.
		AO13.5	Existing trees are retained where removal is not required to site new buildings.
		AO13.6	Where significant vegetation is removed, replacement vegetation is advanced in size and maturity to contribute to the character of the surrounding area.
Access and parking			
PO14	Roads, driveways and pathways within residential areas are finished to a high visual standard with sufficient parking facilities provided.	**AO14.1**	Driveways are sealed and constructed of concrete, clay pavers, coloured or exposed aggregate finished concrete.
		AO14.2	On-site parking spaces are provided for a maximum of 2 buggy carts per dwelling unit.

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Overlay map - AL - 01:29 (Agricultural land overlay)

Overlay map - AE - 01:02 (Airport environs overlay)

Biodiversity, waterways and wetlands overlay

Building heights overlay

Overlay map - BH - 01:29 (Bushfire hazard overlay)

Overlay map - CP1 - 01:14 (Coastal environment hazard overlay: sStorm tide inundation)

Overlay map - CP2 - 01:14 (Coastal environment hazard overlay: eErosion prone areas and permanent inundation)

Overlay map - ER - 01:29 (Extractive resources overlay)

Overlay map - ES - 01.29 (Environmental significance overlay)

Overlay map - FH - 01:29 (Flood hazard overlay)

Overlay map - HER - 01:29 (Heritage overlay)

Overlay map - INF1 - 01:29 (Infrastructure overlay: tTransport infrastructure)

Overlay map - INF2 - 01:29 (Infrastructure overlay: uUtility infrastructure)

Overlay map - LH - 01:29 (Landslide hazard overlay)

Overlay map - WW1 - 01:29 (Waterways and wetlands overlay)

Overlay map - WW2 - 01:29 (Waterways and wetlands overlay: Climatic region)

Part 8 Overlays

8.1 Preliminary

(1) Overlays identify areas in the Planning Scheme that reflect state and local level interests and that have one or more of the following characteristics:

(a) there is a particular sensitivity to the effects of development; or

(b) there is a constraint on land use or development outcomes; or

(c) there is the presence of valuable resources; or

(d) there are particular opportunities for development.

(2) Overlays are mapped and included in Schedule 2 (Mapping).

(3) The changed category of development or assessment, if applicable, for development affected by an overlay are in Part 5 (Tables of assessment).

(4) Some overlays may be included for information purposes only. This should not result in a change to the category of development or assessment or any additional assessment benchmarks.

(5) Assessment benchmarks for an overlay may be contained in one or more of the following:

(a) a map for an overlay; or

(b) a code for an overlay; or

(c) a zone code; or

(d) a local plan code; or

(e) a development code.

(6) Where development is proposed on premises partly affected by an overlay, the assessment benchmarks for the overlay only relates to the part of the premises affected by the overlay.

(7) The overlays for the Planning Scheme are:

(a) Acid sulfate soils;

(b) Agricultural land;

(c) Airport environs;

(d) Biodiversity, waterways and wetlands;

(e) Building heights;

~~(d)~~(f) Bushfire hazard;

~~(e)~~(g) Coastal ~~environment~~hazard;

~~(f) Environmental significance;~~

~~(g)~~(h) Extractive resources;

~~(h)~~(i) Flood hazard;

~~(i)~~(j) Heritage;

~~(j)~~(k) Infrastructure; and

~~(k)~~(l) Landslide hazard.~~; and~~

~~(l) Waterways and wetlands.~~

8.2 Overlay codes

8.2.1 Acid sulfate soils overlay code

8.2.1.1 Application

This code applies to accepted and assessable development:

(a) subject to the Acid sulfate soils overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Acid sulfate soils overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.1.2 Purpose and overall outcomes

(1) The purpose of the Acid sulfate soils overlay code is to ensure that the generation, or release, of acid and associated metal contaminants from acid sulfate soils does not have significant adverse effects on the natural environment, built environment, infrastructure or human health.

(2) The purpose of the Acid sulfate soils overlay code will be achieved through the following overall outcomes:

(a) development ensures that the release of acid and associated metal contaminants into the environment is avoided by either:

(i) not disturbing acid sulfate soils when excavating or otherwise removing soil or sediment, extracting groundwater or filling land; or

(ii) treating and, if required, undertaking ongoing management of any disturbed acid sulfate soils and drainage waters.

8.2.1.3 Assessment benchmarks

Table 8.2.1.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Avoidance or mitigation of acid sulfate soils			
PO1	Where acid sulfate soils are identified, development: (a) does not disturb acid sulfate soils; or (b) is managed to avoid or minimise the release of acid and metal contaminants, where disturbance of acid sulfate soils is unavoidable.	**AO1.1**	Acid sulfate soils are: (a) not identified on site; or (b) avoided or managed in accordance with the Queensland Acid Sulfate Soils Technical manual (Queensland Government, 2014). Note – This may be demonstrated by undertaking an Acid sulfate soils assessment report in accordance with PSP SC6.2 (Environmental features).

8.2.2 Agricultural land overlay code

8.2.2.1 Application

This code applies to accepted and assessable development:

(a) subject to the Agricultural land overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Agricultural land overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.2.2 Purpose and overall outcomes

(1) The purpose of the Agricultural land overlay code is to ensure that agricultural land is protected from development that may lead to its alienation, fragmentation or diminished productivity.

(2) The purpose of the Agricultural land overlay code will be achieved through the following overall outcomes:

(a) agricultural land is used for Rural activities;

(b) conflict between Rural activities and sensitive uses is avoided;

(c) development avoids adverse impacts on agricultural land from land degradation and stormwater runoff; and

(d) the stock route network is protected.

8.2.2.3 Assessment benchmarks

Table 8.2.2.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Conservation of agricultural land			
PO1	Development ensures that agricultural land is conserved to ensure its long-term availability and productive use for agriculture.	**AO1.1**	Development: (a) is for Rural activities; or (b) will not permanently alienate the ability for land to be used for Rural activities.
		AO1.2	Development that will result in the permanent alienation of land for future Rural activities is not located on agricultural land unless a site investigation confirms that the land is not suitable for that purpose. Note – This may be demonstrated by undertaking an evaluation in accordance with the Guidelines for Agricultural Land Evaluation in Queensland, 2nd edition, prepared by Queensland Government, 2015.
Avoidance or mitigation of land use conflict			

Performance Outcomes		Acceptable Outcomes	
PO2	Development for Accommodation activities and other sensitive uses does not adversely impact on the ongoing operational efficiency and productive use of agricultural land.	**AO2.1**	Any new Accommodation activities or sensitive uses are to be separated and/or buffered appropriately. Note – This may be demonstrated by undertaking a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 (Landscaping).
Realignment of lot boundaries			
PO3	The boundaries of existing lots containing agricultural lands are not realigned, unless it can be demonstrated that a realignment of lot boundaries would: (a) result in a more productive use and management of Agricultural land classification class A or class B land and water for Rural activities; or (b) does not lead to increased fragmentation of Agricultural land classification class A or class B land; or (c) does not increase the potential conflict between Rural and Non-rural activities.	**AO3.1**	The number of new lots, including the balance of the area is equal to or less than the total number of original lots.
		AO3.2	Provision of adequate separation areas between small lots and nearby Rural activities is provided to ensure nearby agricultural land is protected. Note – This may be demonstrated by undertaking a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 (Landscaping).
Sediment and stormwater run-off			
PO4	Development is located, designed and constructed to minimise the impact of sediment and stormwater run-off on agricultural lands.	**AO4.1**	Development is undertaken in accordance with PSP SC6.8 (WRC development manual).
Protection of stock route networks			
PO5	Development does not impact the integrity or connectivity of the stock route network.	**AO5.1**	Development provides for an adequate separation area where adjacent to the stock route network.
		AO5.2	Development ensures the connectivity and capacity of the stock route network.

8.2.3 Airport environs overlay code

8.2.3.1 Application

This code applies to accepted and assessable development:

(a) subject to the Airport environs overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Airport environs overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.3.2 Purpose and overall outcomes

(1) The purpose of the Airport environs overlay code is to protect the safety, efficiency and operational integrity of the Region's airports and associated aviation facilities.

(2) The purpose of the Airport environs overlay code will be achieved through the following overall outcomes:

(a) development does not create incompatible intrusions, or compromise aircraft safety in operational airspace;

(b) development does not adversely affect the functioning of aviation facilities;

(c) development avoids increasing risk to public safety in public safety areas;

(d) development is compatible with forecast levels of aircraft noise within the 20 ANEF contour and greater (as defined by Australian Standard 2021-2000 Acoustics – aircraft Noise intrusion – Building siting and construction (AS 2021) as adopted 7 July 2000); and

(e) sensitive land uses and other incompatible activities are appropriately located and designed, to not impact on airport operations.

8.2.3.3 Assessment benchmarks

Table 8.2.3.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Operational airspace			
PO1	Development does not create a permanent or temporary physical or transient obstruction in an airport's operational airspace.	**AO1.1**	Buildings, structures or temporary equipment, such as cranes, do not encroach into an airport's operational airspace.
		AO1.2	Landscaping does not include vegetation that at maturity will encroach into the airport's operational airspace.
		AO1.3	Transient activities associated with development, such as parachuting, hot air ballooning and hang-gliding, will not occur within an airport's operational airspace. Note – where development intrudes into the airport's operational airspace, the application will be referred to the airport manager for assessment.
Lighting and reflective surfaces			

Performance Outcomes		Acceptable Outcomes	
PO2	Development within the lighting buffer zone does not include external lighting or reflective surfaces that could distract or confuse pilots.	**AO2.1**	Development identified within the lighting buffer zone does not: (a) emit light that will exceed the maximum light intensity specified for the area; or (b) include any of the following types of outdoor lighting: (i) straight parallel lines of lighting 500m to 1000m long; (ii) flare plumes; (iii) upward shining lights; (iv) flashing lights; (v) laser lights; (vi) sodium lights; or (vii) reflective surfaces. Note – *Development which does include type(s) of lighting as listed above will be referred to the airport manager.* Note – *Civil Aviation Safety Authority (CASA) can provide advice to both Council and applicants at pre-lodgement or development assessment stage of development. They also have legislative powers to make directives to modify lighting after it has been installed – this should be avoided.*
Emissions			
PO3	Emissions within an airport's operational airspace do not significantly: (a) increase air turbulence; (b) reduce visibility; or (c) compromise the operation of aircraft engines.	**AO3.1**	Within an airport's operational airspace, development: (a) does not emit: (i) smoke, dust, ash or steam; or (ii) a gaseous plume at a velocity exceeding 4.3m/sec; or (b) where emitting smoke, dust ash, steam or a gaseous plume exceeding 4.3m/sec, is designed and constructed to mitigate adverse impacts of emissions upon operation airspace.
Wildlife hazard			
PO4	Development does not cause wildlife to create a safety hazard within an airport's operational airspace	**AO4.1**	Development located within 3km of an airport's runway: (a) does not involve uses listed in column 1 of Table 8.2.3.3.2 (Land uses associated with increases in wildlife strikes and hazards); and (b) where involving a use listed in column 2 of Table 8.2.3.3.2 (Land uses associated with increases in wildlife strikes and hazards), includes measures to reduce

Performance Outcomes		Acceptable Outcomes	
			the potential to attract birds and bats.
		AO4.2	Development located between 3km and 8km of an airport's runway, involving a use listed in column 1 or column 2 of Table 8.2.3.3.2 (Land uses associated with increases in wildlife strikes and hazards), includes measures to reduce the potential to attract birds and bats
		AO4.3	Development located between 8 km and 13 km of a strategic airport's runway, involving a use listed in column 1 or column 2 of Table 8.2.3.3.2 (Land uses associated with increases in wildlife strikes and hazards), does not increase the potential to attract birds and bats.
Protection of aviation facilities			
PO5	Development within the building restricted area does not interfere with the function of aviation facilities Note—Development complies with this performance outcome where written confirmation from Air Services Australia confirms that the development will not impair the functioning of the aviation facility.	**AO5.1**	Development located within the building restricted area for an aviation facility: (a) does not create: (i) permanent or temporary physical obstructions in the line of sight between antennas; (ii) an electrical or electromagnetic field that will interfere with signals transmitted by the facility; or (iii) reflective surfaces that could deflect or interfere with signals transmitted by the facility; and (b) is designed and constructed to mitigate adverse impacts on the function of the facility. Note—Advice from Air Services Australia should be sought when proposing development within the Aviation facility sub-category. Appendix 2 contained in the SPP Guideline, State interest—infrastructure, Guidance on strategic airports and aviation facilities identifies development likely to impact certain aviation facilities.
Public safety areas			
PO6	Development within an airport's public safety area does not increase the risk to public safety.	**AO6.1**	Development within an airport's public safety area does not: (a) propose greater dwelling density than a dwelling house;

Performance Outcomes		Acceptable Outcomes	
			(b) introduce or intensify Business, Entertainment, Community or Recreational activities; or (c) involve the manufacture, use or storage of flammable, explosive, hazardous or noxious materials.
Aircraft noise			
PO7	Development ~~involving a sensitive land use~~ is appropriately located and designed to prevent adverse impacts from aircraft noise.	**AO7.1**	Development within the 20–40 ANEF contour is: (a) consistent with Table 8.2.3.3.3 (Compatible and incompatible land uses within ANEF contours of the SPP guideline: Strategic airports and aviation facilities); and (b) is designed and constructed to attenuate aircraft noise by achieving the indoor design sound levels specified in Table 8.2.3.3.4 (Desirable indoor sound levels for sensitive land uses of the SPP guideline: Strategic airports and aviation facilities).

Table 8.2.3.3.2 Land uses associated with increases in wildlife strikes and hazards

Column 1: High risk	Column 2: Moderate risk
Areas of environmental significance Conservation estate (wetland) Rural activities Cropping (turf farm) Cropping (fruit tree farm) Intensive animal industry (piggery) Aquaculture (fish processing/packing plant) Recreation activities Major sport, recreation and entertainment facility (showground) Industry activities Low-impact industry (food processing plant) Medium-impact industry (food processing plant) High-impact industry (food processing plant) Other activities Food/organic waste facility Putrescible waste facility (e.g. landfill, transfer station)	Areas of environmental significance Conservation estate (all other) Rural activities Animal husbandry (cattle/dairy farm) Intensive animal industry (poultry farm) Recreation activities Major sport, recreation and entertainment facility (all other) Outdoor sport and recreation Park Other activities Non-putrescible waste facility (e.g. landfill, transfer station) Sewage/wastewater treatment facility

Table 8.2.3.3.3 Compatible and incompatible land uses within ANEF contours

Sensitive land uses	Compatibility of use within ANEF contour of site		
	Compatible	Compatible subject to conditions	Incompatible
Accommodation activity (except Short-term accommodation and Hostel)	Less than 20 ANEF	20–25 ANEF	25–40 ANEF
Short-term accommodation Hotel Hostel	Less than 25 ANEF	25–30 ANEF	30–40 ANEF
Educational establishment Child care centre	Less than 20 ANEF	20–25 ANEF	25–40 ANEF
Hospital Health care service	Less than 20 ANEF	20–25 ANEF	25–40 ANEF
Community use Places of worship	Less than 20 ANEF	20–30 ANEF	30–40 ANEF
Office	Less than 25 ANEF	25–35 ANEF	35–40 ANEF
Low impact industry	Less than 30 ANEF	30–40 ANEF	Greater than 40 ANEF

Note - only considers aircraft noise impacts on indoor spaces specifically-, for AS 2021 additional background informationshould be referred to AS 2021by those seeking additional background information.

Table 8.2.3.3.4 Desirable indoor design sound levels for sensitive land uses

Land use	Location within development	Indoor design sound level dB(A)
Accommodation activities (except Short-term accommodation)	Sleeping areas	50
	Other habitable	55
Short-term accommodation Hotels	Sleeping areas	55
Educational establishments Child care centres	Libraries Classrooms, study areas Sleeping areas	50
	Teaching area, assembly areas	55
Hospitals Health care services	Wards, theatres, treatment and consulting rooms	50
	Laboratories	65
Community uses Places of worship		50
Offices	Private offices, conference rooms	55
	Open offices	65
Low impact industry	Inspection, analysis, precision work	75
	Light machinery, assembly, bench work	80

Note - only considers aircraft noise impacts on indoor spaces specifically, for additional background information refer to AS 2021.

Note - only considers aircraft noise impacts on indoor spaces specifically. AS 2021 should be referred to by those seeking additional background information.

8.2.4 Biodiversity, waterways and wetlands overlay code

8.2.4.1 Application

This code applies to accepted and assessable development:

(a) subject to the Biodiversity, waterways and wetlands maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Biodiversity, waterways and wetlands overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.4.2 Purpose and overall outcomes

(1) The purpose of the Biodiversity, waterways and wetlands overlay code is to ensure that:

(a) matters of National and State environmental significance including vegetation, wetlands and waterways are protected, maintained, enhanced or rehabilitated;

(b) development in, or adjacent to, wetlands is planned, designed, constructed and operated to prevent the loss, or degradation of, the wetlands and their environmental values; and

(c) ecological connectivity and habitat extent are maintained or enhanced.

(2) The purpose of the Biodiversity, waterways and wetlands overlay code will be achieved through the following overall outcomes:

(a) matters of environmental significance are maintained, protected or rehabilitated;

(b) development protects known populations and supporting habitat of:

(i) matters of National environmental significance, as listed in the *Environment Protection and Biodiversity Conservation Act 1999*;

(ii) endangered, vulnerable and near threatened flora and fauna species, as listed in the *Nature Conservation Act 1992*; and

(iii) regulated vegetation protected under the *Vegetation Management Act 1999*;

(c) development is avoided within environmentally significant areas;

(d) where development cannot be avoided, development:

(i) protects and establishes appropriate buffers to waterways, wetlands, native vegetation and significant fauna habitat;

(ii) ensures that adverse impacts on areas of environmental significance are minimised through design, siting, operation, management and mitigation measures;

(iii) does not cause adverse impacts on the integrity and quality of water in upstream or downstream catchments, including declared fish habitat areas and the Great Barrier Reef World Heritage Area;

(iv) protects and maintains ecological and hydrological functions of waterways, wetlands, waterway corridors and declared fish habitat areas;

(v) the health and resilience of biodiversity is maintained or enhanced to support ecological integrity and biodiversity values of the Whitsunday Region;

(vi) rehabilitates degraded areas to provide improved habitat condition, connectivity, function and extent; and

(vii) protects areas of environmental significance from weeds, pests and invasive species;

(e) development is located, designed and managed to avoid or mitigate adverse impacts on ecological systems and processes;

(f) ecological restoration enhances degraded sites where appropriate; and

(g) development ensures that viable connectivity is maintained or enhanced between flora and fauna identified as matters of environmental significance.

Editor's note—PSP SC6.2 Environmental Features Planning Scheme Policy provides advice and guidance for achieving certain outcomes of this code, including guidance for the preparation of an Ecological assessment report and a Vegetation management plan.

8.2.4.3 Assessment benchmarks

Table 8.2.4.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
All development			
PO1	Development protects, maintains or does not cause adverse impacts on the biodiversity values of ecosystems or, where adverse impacts cannot be reasonably avoided, they are minimised.	**AO1.1**	Development: (a) occurs outside the part of the lot affected by the Biodiversity, waterways and wetlands overlay; (b) occurring on part of the lot affected by the Biodiversity, waterways and wetlands overlay provides a report certified by an appropriately qualified person demonstrating that the development site does not contain any matters of environmental significance; or (c) on existing lots, where new dwelling houses cannot be sited outside the overlay, adverse impacts on matters of environmental significance are limited to the building footprints, access and necessary bushfire buffers. Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features). Note - Matters of National Environmental Significance are to consider the requirements of the *Environment Protection and*

Performance Outcomes		Acceptable Outcomes	
			Biodiversity Conservation Act 1999 and matters of State significance are to consider the requirements of the *Nature Conservation Act 1992, Marine Parks Act 2004, Fisheries Act 1994, Vegetation Management Act 1999* and the *Environmental Protection Act 1994*. Note – Matters of State Environmental Significance, where it is demonstrated that adverse impacts cannot be avoided or minimised, significant residual impacts on matters may require an offset in accordance with the *Environmental Offsets Act 2014*. Note: AO1.1(c) may be demonstrated through site plans and photographic evidence to the satisfaction of Council.
PO2	Development avoids significant impacts on areas designated as Protected or Legally secured offset areas.	**AO2.1**	Development is wholly situated outside of an area designated as Protected or Legally secured offset areas. Editor's Note – For guidance on offset areas refer to the *Environmental Offsets Act 2014*.
PO3	An adequate buffer to waterways, wetlands is provided and maintained for dwelling houses and associated structures.	**AO3.1**	Development provides for buffer(s) from waterways and wetlands in accordance with Table 8.2.4.3.3.

Table 8.2.4.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
All development			
PO1	Development protects and enhances ecological connectivity and/or habitat extent.	**AO1.1**	Development retains vegetation and riparian corridors through appropriate land tenure, such as easements, covenants or reserves for environmental purposes, in areas large enough to maintain ecological values, functions and processes of ecosystems. Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
PO2	An adequate buffer to areas of environmental significance, including waterways, wetlands, protected vegetated areas and wildlife habitat, is provided and maintained.	**AO2.1**	Development provides for buffer(s): (a) from waterways, wetlands, protected areas and wildlife habitat in accordance with Table 8.2.4.3.32; or (b) that are of appropriate dimensions and characteristics to protect the long-term viability of matters of environmental significance located on and/or adjacent to the site.

Performance Outcomes		Acceptable Outcomes	
			Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
		AO2.2 ~~AO4.2~~	The buffer area is protected through appropriate land tenure, such as easements, covenants or reserves for environmental purposes with the following requirements: (a) cleared, degraded or disturbed waterway or wetland buffer areas within the site are rehabilitated; (b) any remnant vegetation is to be maintained and regenerated with indigenous species; and (c) development does not result in the degradation of environmental values of wetlands and riparian corridors due to edge effects. Note – The appropriate land tenure and extent of the rehabilitation may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
Water quality and environmental value			
PO3	Development does not cause adverse impacts on the quality and integrity of water in upstream or down-stream properties and catchments, including the Great Barrier Reef Marine Park.	AO3.1	Development ensures adverse impacts on declared fish habitat area values are avoided by designing, siting, operating and managing development to: (a) contribute to the protection of fish habitat values; and (b) maintain the quality and integrity of declared fish habitat areas and water entering them.
PO4	The development is planned and designed considering the land use constraints of the site, including vegetation, for achieving stormwater design objectives.	AO4.1	Except for a Dwelling house, a SQMP is prepared ensuring it: (a) is consistent with any local area stormwater management planning; (b) provides for achievable stormwater quality treatment measures, meeting design objectives listed in the PSP 6.2.7~~4~~ (Stormwater management) and WRC Stormwater Quality Guidelines; and (c) meets current best practice environmental management, reflecting land use constraints, such as: (i) erosive, dispersive and/or saline soil types;

Performance Outcomes		Acceptable Outcomes	
			(ii) landscape features (including landform); (iii) acid sulfate soil and management of nutrients of concern; and (iv) rainfall erosivity. Editor's Note – Local area stormwater management planning may include Urban stormwater quality management plans, Catchment or waterway management plans, Healthy waters management plans, Water quality improvement plans or Natural resource management plans.
		AO4.2 ~~AO6.2~~	Stormwater treatment devices are located entirely outside of waterways, waterway buffers, wetland areas and avoid vegetation removal.
PO5	Coastal catchments maintain their ecological and hydrological integrity.	**AO5.1**	Development in coastal catchments avoids or minimises soil disturbance that alters natural hydrology. Note – Compliance with this outcome may be demonstrated by following the management advice in the guideline: Implementing policies and plans for managing nutrients of concern for coastal algal blooms in Queensland by the Department of Environment and Heritage Protection.
PO6	The existing surface water hydrological regime is enhanced or maintained.	**AO6.1**	Development must: (a) provide a net ecological benefit and improvement to the environmental values and functioning of a wetland area; (b) rehabilitate the existing hydrological regime; or (c) restore the natural hydrological regime of the wetland area to enhance the ecological functions and biodiversity values of the wetland.
		AO6.2 ~~AO8.2~~	Development ensures the: (a) existing surface water hydrological regime of a wetland area does not change, including through channelisation, redirection or interruption of flows; (b) extent of any change to the existing surface water hydrological regime is minimised to ensure wetland values and functioning are protected, the change is minimised if: (i) there is no change to the reference duration high-flow and low-flow

Performance Outcomes		Acceptable Outcomes	
			duration frequency curves, low-flow spells frequency curve and mean annual flow to and from the wetland; or (ii) any relevant stream flows into the wetland comply with the relevant flow objectives of the applicable water resource plan for the area; or (c) for development resulting in an increase to the velocity or volume of stormwater flows into the wetland, the collection and re-use of stormwater occurs in accordance with (a) or (b). Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
Non-tidal waterways environmental values			
PO7	The establishment of non-tidal artificial waterways must provide a deed of agreement for the management and operation of the waterway.	**AO7.1**	Any non-tidal artificial waterway is managed and operated by a responsible entity for the life of the waterway by deed of agreement that: (a) identifies the waterway; (b) states a period of responsibility for all entities; (c) states a process for any transfer of responsibility for the waterway; (d) states required actions under the agreement for monitoring the water quality of the waterway and all receiving waters; (e) states required actions under the agreement for maintaining the waterway, including any relevant conditions of a development approval; and (f) identifies funding sources for the above, such as bonds or levies.
PO8	Non-tidal artificial waterways are managed and operated by suitably qualified persons to achieve water quality objectives in natural waterways.	**AO8.1**	Any non-tidal artificial waterway is designed, constructed and managed by a suitably qualified Registered Professional Engineer Queensland (RPEQ) with experience in establishing and

Performance Outcomes		Acceptable Outcomes	
			managing artificial waterways to achieve relevant water-quality objectives, including: (a) aquatic weeds are managed in any non-tidal artificial waterway to achieve a low percentage of coverage of the water surface area (less than 10%); and (b) pests and vectors, such as mosquitoes, are managed through avoiding stagnant water areas, establishing native fish predators or any other best practices for monitoring and treatment.
		AO8.2	Wastewater and stormwater discharge in waterways is managed to avoid, or minimise, the release of nutrients of concern to minimise the occurrence, frequency and intensity of coastal algal blooms. Note – nutrients of concern are included in the PSP 6.2.7 (Stormwater Management) and WRC Stormwater Quality Guidelines.
PO9	Non-tidal artificial waterways are designed to protect biodiversity and environmental values.	**AO9.1**	Any non-tidal artificial waterway must be designed and managed for all of the following functions: (a) aesthetic landscaping and recreation; (b) flood management; (c) stormwater harvesting as part of an integrated water cycle management plan; or (d) aquatic habitat.
		AO9.2	The quality and integrity of declared fish habitat areas and water entering them is maintained.
PO10	Non-tidal artificial waterways are located in a way that is compatible with the land use constraints of the site and do not cause adverse impacts on the quality and integrity of water upstream or downstream properties and catchments, including the Great Barrier Reef Marine Park.	**AO10.1**	If the proposed development involves a non-tidal artificial waterway: (a) environmental values in existing downstream waterways and associated habitats are protected; (b) there are no adverse impacts on the long-term stability of the new bed and banks of the waterway; (c) groundwater recharge areas are not affected; (d) the location of the waterway incorporates low lying areas

Performance Outcomes		Acceptable Outcomes	
			of a catchment connected to an existing waterway; (e) existing areas of ponded water are included; and (f) non-tidal artificial waterways are located: (i) outside natural wetlands and any associated buffer areas; (ii) to minimise disturbing soils or sediments; and (iii) to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazard areas.
PO11	Non-tidal artificial waterways are located in a way that is compatible with existing tidal waterways.	**AO11.1**	Where a non-tidal artificial waterway is located adjacent to, or is connected to, a tidal waterway by means of a weir, lock, pumping system or similar: (a) there is sufficient flushing or a tidal range of >0.3m; (b) any tidal flow alteration does not adversely impact on the tidal waterway; or (c) there is no introduction of salt water into freshwater environments.
Management of impacts on matters of environmental significance			
PO12	Development of premises adjoining or containing Regulated vegetation intersecting a watercourse must not adversely affect the integrity of the riparian buffer.	**AO12.1**	Proposed roads and vehicle crossings must not be located within areas designated as Regulated vegetation intersecting a watercourse.
		AO12.2	Development: (a) maintains hydrological processes and the physical integrity of water bodies at a standard commensurate with pre-development environmental conditions; (b) ensures that impacts from works on the long-term sustainable use of the waterbody are avoided; and (c) the stability and function of waterbodies beds and banks is maintained.

Performance Outcomes		Acceptable Outcomes	
PO13	Development on land adjacent to a waterway provides safe public access to waterways and minimises edge effects.	AO13.1	Where development is adjacent to a waterway with a stream order of 2 or higher and within the PIA or Emerging community zone, a pedestrian pathway is provided: (a) outside the riparian buffer; (b) between the riparian buffer and the development; (c) in accordance with CPTED principles; and (d) to offer a safe and legible access every 100m from the nearest public space or road.
		AO13.2	Where development is adjacent to a waterway with a stream order of 3 or higher and within the PIA or Emerging community zone, a road and pedestrian pathway is located outside the riparian buffer, between the riparian buffer and the proposed development.

Table 8.2.4.3.3 - ~~Table 8.2.4.3.2 –~~ Minimum riparian buffers and setbacks for biodiversity, waterways and wetlands

Classification	Riparian buffers and setbacks
Waterways	
Stream order 1 and 2	10m, measured perpendicular from the top of the high bank
Stream order between 3 and 4	25m, measured perpendicular from the top of the high bank
Stream order 5 or above	50m, measured perpendicular from the top of the high bank
Wetlands	
Urban wetland	20m from the edge of the wetland
Non-urban wetland	50m from the edge of the wetland
Biodiversity	
Protected areas and wildlife habitat	25m

8.2.5 Building heights overlay code

8.2.5.1 Application

This code applies to accepted and assessable development:

(a) subject to the Building heights overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Building heights overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.5.2 Purpose and overall outcomes

(1) The purpose of the Building heights overlay code is to ensure that development within the Region meets the expectations of amenity and building height limits for each zone and use type; and

(2) The purpose of the Building heights overlay code will be achieved through the following overall outcomes:

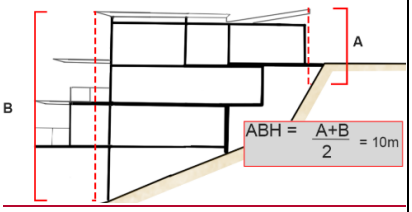
(a) development is generally in accordance with the maximum building heights identified for specific local plan codes, zone codes and building classes; and

(b) development on steep slopes is sited and designed to closely follow the natural contours of the land and utilises landscaping and screening to minimise the visibility of the underside of the building, mechanical equipment, support poles and air conditioning components.

8.2.5.3 Assessment benchmarks

Table 8.2.5.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Building heights			
PO1	The height of a building does not unduly: (a) overshadow adjoining dwellings; or (b) dominate the intended streetscape character.	**AO1.1**	Development on a premises with slope less than 25% and within ~~a~~the Bowen, Hamilton Island or Airlie Beach ~~Local Plan areas~~Precinct does not exceed the applicable precinct building height specified in Table 8.2.5.3.2. Note – Where a conflict occurs between QDC MP1.1; MP1.2; or MP1.3 and the Building heights overlay code, this code prevails. Note – See Schedule 1.2.2 Administrative definitions for definition of building height.
		AO1.2	Development on a premises with slope less than 25% that is not within a Bowen, Hamilton Island or Airlie Beach Precinct~~Local Plan area~~ does not exceed the applicable zone building height specified in Table 8.2.5.3.3. Note – Where a conflict occurs between QDC MP1.1; MP1.2; or MP1.3 and the Building heights overlay code, this code prevails.

Performance Outcomes		Acceptable Outcomes	
			Note – See Schedule 1.2.2 Administrative definitions for definition of building height.
Building heights on excessive slope			
PO2	Development on sites with excessive slope does not: (a) overshadow adjoining dwellings; (b) dominate the intended streetscape character; or (c) visually dominate the hillside on which they are located.	AO2.1	The average building height (ABH) of development on a premises with slope greater than 25% does not exceed 10m, as per the figure below:  Note – Slope is measured using ground level at points A and B expressed as a percentage. ~~$(\frac{A}{B} \frac{A}{B} \times 100)$.~~ Note – Where a conflict occurs between QDC MP1.1; MP1.2; or MP1.3 and the Building heights overlay code, this code prevails. Note – Council will favourably consider setback relaxations on sites with excessive slope.
		AO2.2	Development on a premises with slope greater than 25% is designed to integrate with the hillside and reduce the visibility of the underside of the building, mechanical equipment, support poles and air conditioning components through: (a) decorative features that cast shadows, such as timber battens or lattice screens; (b) retention of mature vegetation where possible; (c) establishing additional landscaping; and (d) building materials and finishes composed of muted earth/environmental tones that blend with the hillside environment. Note – Appropriate colours will depend on the existing native vegetation and backdrop. A colour palette may be requested by Council to ensure built form integration.

Non-habitable building heights			
PO3	The height of a non-habitable building does not unduly: (a) dominate the streetscape; (b) impact on adjoining dwellings; or (c) diminish the scale of any associated dwelling.	AO3.1	Where located within the PIA, a Class 10a building does not exceed 5.5m building height. Note – Where a conflict occurs between QDC MP1.1; MP1.2; or MP1.3 and the Building heights overlay code, this code prevails.

Table 8.2.5.3.2 Local Plan building heights

Local Plan area	Local Plan building heights
Airlie Beach lLocal pPlan area	Maximum building height of: (a) Airlie Beach Precinct A - 14m above ground level; (b) Airlie Beach Precinct B - 184m above ground level; (c) Airlie Beach Precinct C - 21m above ground level; (d) Airlie Beach Precinct D - 18m above ground level; (e) Airlie Beach Precinct E - 184m above ground level; (f) Airlie Beach Precinct F - 148m above ground level; or (g) Airlie Beach Precinct G - 14m above ground level.
Bowen lLocal pPlan area	Maximum building height of: (a) Bowen Precinct A -18m above ground level; (b) Bowen Precinct B - 12m above ground level; or (c) Bowen Precinct C - 20m above ground level, if associated with manufacturing or repair of vessels, otherwise 12.5m.
Hamilton Island lLocal pPlan area	Maximum building height of: (a) Hamilton Island Precinct A –14m above ground level; (b) Hamilton Island Precinct B - 12m above ground level; or (c) Hamilton Island Precinct C - 8.5m, or 10m above ground level, where premises slopes between 15% and 25%.

Table 8.2.5.3.3 Building heights for zones outside of a Local Plan area

Zone	Zone building heights
Residential zones category	
Low density residential zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Low-medium residential density zone	Maximum building height of 12m above ground level.
Tourist accommodation zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Centre zones category	
Major centre zone	Maximum building height of 12m above ground level.
District centre zone	Maximum building height of 12m above ground level.
Local centre zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Neighbourhood centre zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Industry zones category	
Low impact industry zone	Maximum building height of 10m above ground level.

Medium impact industry zone	Maximum building height of 15m above ground level.
High impact industry zone	Maximum building height of 20m above ground level.
Special industry zone	Maximum building height of 20m above ground level.
Waterfront industry zone	Maximum building height of 20m above ground level for buildings and structures used for the manufacturing, servicing or repair of vessels, otherwise 12.5m.
Industry investigation zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Recreation zones category	
Recreation and open space zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Environmental zones category	
Environmental management and conservation zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Other zones category	
Community facilities zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Emerging community zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Mixed use zone	Maximum building height of 12m above ground level.
Rural residential zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.

~~8.2.4~~8.2.6 Bushfire hazard overlay code

~~8.2.4.1~~8.2.6.1 Application

This code applies to accepted and assessable development:

(a) subject to the Bushfire hazard overlay map, excluding buffer zones, contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Bushfire hazard overlay code by the tables of assessment in Part 5 (Tables of assessment).

~~8.2.4.2~~8.2.6.2 Purpose and overall outcomes

(1) The purpose of the Bushfire hazard overlay code is to:

(a) provide for the assessment of the suitability of development in Bushfire hazard areas to ensure that risk to life, property, community, economic activity and the environment during bushfire events is minimised; and

(b) provide for the assessment of development that maintains the safety of people and property by not exposing them to an unacceptable risk from bushfire events.

(2) The purpose of the Bushfire hazard overlay code will be achieved through the following overall outcomes:

(a) development directly, indirectly and cumulatively avoids an unacceptable increase in severity of the bushfire hazard and does not significantly increase the potential for damage on the site or to other properties;

(b) development is compatible with the level of risk associated with the bushfire hazard;

(c) development location, siting and design responds to the risk of the bushfire hazard and minimises risk to personal safety and property;

(d) development supports the disaster management response or recovery by providing efficient access for evacuation of people, emergency services and water supplies during bushfire events;

(e) where practical, community infrastructure is located and designed to function effectively during and immediately after a bushfire event; and

(f) natural processes and the protective function of landforms and vegetation are maintained, where possible, in potential Bushfire hazard areas.

~~8.2.4.3~~8.2.6.3 Assessment benchmarks

Table 8.2.6.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
PO1	Development is compatible with the level of risk associated with the bushfire hazard.	**AO1.1**	Development: (a) is not located on land identified in a Bushfire hazard area: or (b) if identified within a Bushfire hazard area, must ensure that people, property and the community are not exposed to an unacceptable or increased

Performance Outcomes		Acceptable Outcomes	
			level of risk from a bushfire event. Note – This may be demonstrated by undertaking a site specific Bushfire hazard assessment report and Bushfire hazard management plan in accordance with PSP SC6.5 (Natural hazards).
PO2	Development is not located on slopes and land forms that expose people or property to an intolerable risk to life or property.	AO2.1	Development does not occur along ridgelines, saddles and crests where slopes exceed 14 degrees.
PO3	Development maintains the safety of people and property by establishing appropriate low fuel, bushfire defendable spaces between proposed building envelopes, hazardous vegetation and adjoining buildings to mitigate the spread of bushfires.	AO3.1	Buildings or building envelopes, excluding class 10 structures, are separated: (a) by at least 8m where for a material change of use; and (b) by a bushfire defendable space on the premises that provides a buffer from hazardous vegetation by a distance that achieves a radiant heat flux level at any point on the building or envelope that does not exceed: (i) 10kW/m² where involving a vulnerable use, essential service use or hazardous chemical facility use; or (ii) 29kW/m² for all other development. Editor's note – where a bushfire defendable space is proposed to be achieved by utilising existing cleared areas external to the site, certainty must be established (through tenure or other means) that the land will remain cleared of hazardous vegetation. Note - This may be demonstrated by undertaking a site-specific Bushfire hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
		AO3.2	Landscaping, revegetation and rehabilitation areas are designed and managed to achieve: (a) a potential fuel load which is less than eight tonnes/hectare in aggregate; and (b) fuel structure which is discontinuous. Note - This may be demonstrated by undertaking a site-specific Bushfire hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
PO4	Development supports and does not unduly burden disaster management response or recovery capacity and capabilities by providing	AO4.1	Private driveways: (a) do not exceed a gradient of 12.5%; (b) serve no more than two buildings; and

Performance Outcomes		Acceptable Outcomes	
	evacuation routes and access for emergency services.		(c) if exceeding 60m, accommodate turning areas for fire-fighting medium rigid vehicles in accordance with *Fire hydrant and Vehicle Access Guidelines for residential, commercial and industrial lots, QFES 2015*.
		~~AO1.2~~AO	Development has access to an evacuation route that is a public road with a potential exposure no greater than 2kW/m^2 fire intensity that does not cross the fire access trail: (a) if by foot, to a safe assembly zone; or (b) if by car, the preferred method, to a road that can enable evacuation from the area. Note – This may be demonstrated by undertaking a site-specific Bushfire hazard assessment report in accordance with PSP SC6.5 (Natural hazards).~~Access to the development is provided in the form of:~~ ~~(a) a public road network or alternate emergency access that separates the development from hazardous vegetation; or~~ ~~(b) a fire access trail that is contained wholly on the subject site; or~~ ~~(c) an evacuation route with a potential exposure no greater than 2kW/m^2 fire intensity that does not cross the fire access trail:~~ ~~(i) if by foot, to a safe assembly zone; or~~ ~~(ii) the preferred method, by car, to a road that can provide escape from the area.~~ ~~Note – This may be demonstrated by undertaking a site specific Bushfire hazard assessment report in accordance with PSP SC6.5 (Natural hazards).~~
~~PO2~~PO5	Development provides for firefighting requirements, including: (a) ready access to adequate water supplies; (b) safety considerations for other utilities, including electricity and gas supplies; and avoidance of the release of, or exposure to, hazardous	~~AO2.1~~AO	Development ensures that: (a) all lots are within 70m of a hydrant with reticulated water supply, fully installed in accordance with AS2419.1-2005 (Fire hydrant installations); or (b) where a reticulated water supply is not available, one tank that is below ground or of non-flammable construction is located within 10m ~~within 100m~~

Performance Outcomes		Acceptable Outcomes	
	materials, as a result of a bushfire event.		of each building, excluding class 10 structures ~~each Class 1, 2, 3 or 4 building has~~, and includes the following: (i) for residential buildings, a take-off connection at a level that allows static water supply of 10,000L ~~from the tank that is at a level that allows 20,000 litres to be dedicated for firefighting purposes~~; ~~(i)~~(ii) for all other buildings, a volume and design specified in AS 2304-2011 (Water storage tanks for fire protection); ~~(ii)~~(iii) a hardstand area allowing medium ~~heavy~~ rigid fire appliance access within 6m of tank; ~~(iii)~~(iv) fire brigade tank fittings (50mm ball valve & male camlock coupling); ~~(iv)~~(v) above ground water pipes, where fittings are metal; and ~~(v)~~(vi) if underground, the tank has an access hole of 200mm (minimum) to allow access for suction lines. Editor's Note - Plastic tanks are not recommended, however, if they are submerged, they may be acceptable.
		~~AO2.2~~AO	The location of water supplies for firefighting is readily identified from the street frontage with clear identification directing fire fighters to its access point.
		~~AO2.3~~AO	Mains gas supplies are protected in accordance with AS1596-2002 (The storage and handling of LP gas), the requirements of relevant authorities and metal piping is exclusively used.
		~~AO2.4~~AO	Manufacturing or ~~Bulk~~ storage of hazardous materials in bulk, as defined in the *Work Health and Safety Act 2011*, does not occur in an identified Bushfire hazard area.
~~PO3~~PO6	Development for community infrastructure is located, designed and sited to: (a) function efficiently to protect the safety of people during	~~AO3.1~~AO	Development of essential services and community infrastructure for vulnerable persons or emergency response does not occur in a Bushfire hazard area.

Performance Outcomes		Acceptable Outcomes	
	and immediately after a bushfire event; (b) reduce the exposure of people and vulnerable populations at risk from a bushfire event; and (c) mitigate the impacts of a bushfire on the community and environment.		

Table 8.2.6.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
PO1	Development provides a road and fire access layout that enables: (a) safe evacuation of people within bushfire hazard areas; and ~~(a)~~(b) access for fire fighting vehicles.~~People residing or working within the development area have relevant emergency management plans in place and ensure the safety of emergency management personal.~~	**AO1.1**	Development in bushfire hazard areas, outside the urban area or adjoining National Park in an urban area, resulting in multiple buildings and/or lots, provides either of the following firebreaks: (a) a perimeter road that: (i) separates all buildings, structures and/or lots from bushfire hazard areas; (ii) provides or forms part of a minimum cleared width between bushfire hazard areas and buildings or structures of 20m; (iii) includes a constructed public road with a minimum carriageway width of 6m; and (iv) is constructed to an all-weather standard; or (b) fire maintenance trails that: (i) separate all buildings, structures and/or lots from bushfire hazard areas; (ii) provide or form part of a minimum cleared width between bushfire hazard areas and buildings/structures of 20m; (iii) have a minimum formed trail width of 4m; (iv) have a maximum gradient of 12.5%; (v) have vehicular access points at each end (not a dead end); (vi) provide passing bays and turning areas (no more than a 3-point turn) for medium rigid vehicles; (vii) are constructed and maintained to be accessible and driveable for fire fighting vehicles at all times, prevent erosion (i.e.

Performance Outcomes		Acceptable Outcomes	
			erosion control devices) and provide adequate drainage; and (viii) are provided within publicly owned land or establish an access easement in favour of Council and the Queensland Fire and Rescue Service. Note – This may be demonstrated by undertaking a site-specific Bushfire hazard assessment report in accordance with PSP SC6.5 (Natural hazards).~~Development allows for the safe operation of firefighting personal, by providing: an area that is not exposed to radiant heat of more than 7kW/m² during the passing of a fire front; or a Bushfire management plan is prepared in accordance with PSP SC6.5 (Natural hazards).~~
		AO1.2	Cul-de-sacs or non-through roads are not provided in bushfire hazard areas unless the cul-de-sac is provided within an alternative access linking the cul-de-sac to other through roads.
PO2	Development provides for firefighting requirements, with safety considerations for other utilities, including electricity and gas supplies.	**AO2.1**	Electricity supplies and transmission poles in the area are protected and not vulnerable to bushfire events or associated activities (e.g. Falling trees).

~~8.2.5~~8.2.7 Coastal ~~environment~~ hazard overlay code

~~8.2.5.1~~8.2.7.1 Application

This code applies to accepted and assessable development:

(a) subject to the Coastal ~~environment~~ hazard overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Coastal ~~environment~~ hazard overlay code by the tables of assessment in Part 5 (Tables of assessment).

~~8.2.5.2~~8.2.7.2 Purpose and overall outcomes

(1) The purpose of the Coastal ~~environment~~ hazard overlay code is to ensure that development is designed, constructed and operated to:

(a) protect, conserve, rehabilitate and manage the coast, including its resources and biological diversity;

(b) avoid the social, financial and environmental costs arising from the adverse impacts of coastal hazards, taking into account the predicted effects of climate change;

(c) preferentially use land on the coast for coastal-dependent development; and

(d) ensure development maintains the safety of people and property.

(2) The purpose of the Coastal ~~environment~~ hazard overlay code will be achieved through the following overall outcomes:

(a) wherever possible, development within a Coastal hazard area avoids:

(i) intensification of existing uses;

(ii) new permanent built structures; and

(iii) seaward extensions to existing built structures;

(b) development maintains and enhances natural processes, including those below tidal waters;

(c) development location, siting and design responds to the risk of storm tide and tidal inundation and minimises risk to personal safety and property;

(d) development supports, and does not compromise, the ability of the disaster management response or recovery capacity and capabilities;

(e) development provides for

(i) efficient evacuation and emergency services access during coastal hazard events; or

(ii) plans for the prospect and impact of isolation or hindered evacuation due to flooding from storm-tide and tidal inundation;

(f) development ensures that urban services are designed, located and operated to minimise damage to property, disruption to building function and the recovery time after a storm-tide or tidal inundation event;

(g) development does not cause or increase adverse impacts on other premises within the coastal environment from flooding and does not impede the ability of neighbouring sites to implement future coastal hazard mitigation measures;

(h) development in areas subject to coastal hazards protects biodiversity, the loss of environmental networks and the scenic amenity of important coastal areas, landscapes and views;

(i) development minimises the private use of land prone to permanent inundation;

(j) development maintains public access to the coast;

(k) development preserves opportunities for locating coastal-dependent land uses in areas adjoining tidal waters; and

(l) development and infrastructure avoids or mitigates the impacts of predictable future coastal hazard due to increase in sea-level rise and cyclonic activity.

~~8.2.5.3~~8.2.7.3 Assessment Criteria

Table 8.2.7.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
PO1	Development involving a building is: (a) located and designed to ensure the safety of all persons and buildings from coastal hazards; and (b) located to minimise amenity impacts, disruptions to residents, recovery time, rebuilding and restoration costs after a coastal hazard event.	**AO1.1**	Development of a habitable building: (a) is not located on land identified in a Coastal hazard area; (b) ensures the finished floor level of a new building is located at a minimum 500mm above the defined storm tide event (DSTE), if within the inundation area, or 1m above DSTE, if within the wave run-up area~~300mm above the defined storm tide event (DSTE) for all habitable rooms~~; or (c) where involving an extension no greater than 75m² to an existing building, habitable room(s) are not less than the floor level of existing habitable rooms and non-habitable rooms at ground level below the DSTE allow for the flow through of water. ~~is not less than the floor level of existing habitable room(s) where involving an extension for no greater than 75m² to an existing building.~~ Note – Where a premise is mapped by both flood and coastal hazards, the assessment benchmark that provides the highest level of protection from any source of inundation applies.

Performance Outcomes		Acceptable Outcomes	
			Editor's Note – Refer to Council's detailed Coastal ~~environment~~ hazard overlay map for further detail. Contact Council for information regarding DSTE and freeboard heights.~~Where no further information is provided by Council the applicant must source the information independently.~~
		AO1.2	~~Buildings~~ Structures are only located within a Coastal hazard area, if: (a) ~~-~~a registered professional engineer Queensland (RPEQ) certifies that the development is structurally designed to be able to resist hydrostatic and hydrodynamic loads associated with flooding up to and including the DSTE; or~~.~~ ~~(a)~~(b) a non-habitable structure within an inundation area that is designed to allow the flow through of water up to the DSTE and suits class H soil classification with 100kpa bearing capacity. Editor's Note – if part of the site is outside the Coastal hazard overlay, this is the preferred location for all buildings. Contact Council for information regarding DSTE and freeboard heights.
		AO1.3	Development on land identified within a Coastal hazard area ensures storage of hazardous materials is located above the DSTE. Editor's Note - Contact Council for information regarding DSTE and freeboard heights.
PO2	~~Buildings are sited and designed to protect people and property from coastal hazards and avoid the need for additional coastal environment works.~~ Marina development provides facilities for the handling and disposal of ship-sourced pollutants.	**AO2.1**	Marina development involving six or more berths provides common user facilities for the handling and disposal of ship-sourced pollutants, including oil, garbage and sewage and: (a) is provided at a suitable location at the marina; (b) is designed and operated to ensure the risk of spillage from operations is minimised; (c) provides appropriate equipment to contain and remove spillages, stored in a convenient location near the facility and available for immediate use; and

Performance Outcomes		Acceptable Outcomes	
			(d) is able to be used by boats visiting the marina. Editor's note: Refer to Australian and New Zealand Environment and Conservation Council (ANZECC), 1997, Best Practice Guidelines for Waste Reception Facilities at Ports, Marinas and Boat Harbours in Australia and New Zealand.~~Where adjacent to or fronting the coastline, all buildings are located:~~ ~~landward or equal to the seaward alignment of any buildings on neighbouring properties; or~~ ~~where there are no neighbouring properties, at least 6m from the seaward property boundary of the site.~~
		AO2.2	Where practical, the ship-sourced pollutant reception facility is connected to sewerage or other waste reception infrastructure. Editor's note: Reception facilities require compliance assessment under the *Plumbing and Drainage Act 2018~~002~~*. The plumbing compliance assessment process will ensure that the proposed facilities address 'peak load'.~~Common user facilities for the handling and disposal of ship-sourced pollutants, including oil, garbage and sewage:~~ ~~(a) are provided at a suitable location at the marina;~~ ~~(b) designed and operated to ensure the risk of spillage from operations is minimised;~~ ~~(c) provide appropriate equipment to contain and remove spillages, stored in a convenient position near the facility and available for immediate use; and~~ ~~(d) for boats visiting the marina are able to use the ship-sourced pollutants reception facilities.~~ ~~Editor's note: Refer to: Australian and New Zealand Environment and Conservation Council (ANZECC), 1997, Best Practice Guidelines for Waste Reception Facilities at Ports, Marinas and Boat Harbours in Australia and New Zealand.~~ ~~Where practical, the marina pollutant reception facility is~~

Performance Outcomes		Acceptable Outcomes	
			~~connected to sewerage or other waste reception infrastructure.~~ ~~Editor's note: Reception facilities require compliance assessment under the Plumbing and Drainage Act 2002. The plumbing compliance assessment process will ensure that the proposed facilities address 'peak load'.~~
Erosion prone areas and permanent inundation			
PO3	Except in limited circumstances, development is located outside of an Erosion prone or Permanent inundation area.	**AO3.1**	Unless for Recreation activities or building extensions, development is situated wholly outside of Erosion prone and Permanent inundation areas, except where it is demonstrated that buildings or structures are: (a) located within a Maritime development area; (b) part of redevelopment that intensifies the use of a site in an urban area, if the development mitigates any increase in risk to people and property from adverse coastal erosion impacts; (c) able to be decommissioned, disassembled and relocated either on the site or to another site; or (d) Dwelling houses in an urban area where: (i) landward or equal to the seaward alignment of any buildings on neighbouring properties; or (ii) there are no neighbouring properties, are at least 12m from the seaward property boundary of the site. Note – Coastal building lines identified by State DA mapping may also apply to some development in Queens Beach and Brisk Bay triggering referral for State Assessment.

Table 8.2.7.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
All development in Coastal hazard areas			
PO1	Development: (a) maintains coastal dune heightdune crest height; or (b) where a reduction in coastal dune heightdune crest heights cannot be avoided, mitigates risk to development from wave overtopping and storm-tide inundation.	**AO1.1**	Development avoids, or where this is not feasible, minimises reductions in coastal dune height.in dune crest height.
PO2	Development maintains or enhances coastal ecosystems and natural features, such as mangroves and coastal wetlands, between development and tidal boulders, where they protect or buffer communities and infrastructure from sea level rise and coastal inundation impacts.	**AO2.1**	Development ensures that: (a) existing natural environmental features, such as mangroves and wetlands, are maintained as much as possible; or (b) where changes to these natural features cannot be avoided, alternate methods are used to mitigate risks to development from coastal hazards. Note – Removal of vegetation within a Coastal hazard area may trigger referral to the State Assessment and Referral Agency (SARA).
PO3	Development maintains or enhances the scenic amenity and natural character of the coastal landscape, views and vistas from the foreshore or significant viewpoints.	**AO3.1**	Development is located, scaled and designed to be sympathetic to the coastal scenic amenity: (a) maintaining or restoring vegetation buffers between development and coastal waters; or (b) where impacts on the coastal scenic amenity cannot be avoided, alternative methods are used to maintain the natural character of the coastal landscape.
PO4	Development avoids the release of hazardous materials into floodwaters.	**AO4.1**	Development ensures: bBuildings used for the manufacture or storage of hazardous materials in bulk, as defined by the *Health and Safety Regulation 2011* ensures: (a) are designed to prevents the intrusion of waters from a DSTE; and (b) the exposure of floodwaters to hazardous materials is prevented; and (c)(b) emergency planning and contingency measures are appropriately developed and managed.
PO5	Development maintains the safety of people living and	**AO5.1**	Development ensures: (a) a safe refuge is available for people within the

Performance Outcomes		Acceptable Outcomes	
	working on the premises from a DSTE.		development site during a DSTE; or (b) that at least one evacuation route remains passable for emergency evacuations during a DSTE. Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
PO6	Development does not negatively impact the flood characteristics of the DSTE outside of the subject site.	**AO6.1**	Unless within a Maritime development area, development is only located within the Coastal hazard area, if a Registered Professional Engineer Queensland (RPEQ) certifies that the development does not change the flood characteristics of the DSTE outside the subject site. Editor's note - Contact Council for information regarding DSTE and freeboard heights.~~Buildings are only located within the Coastal hazard area if a registered professional engineer Queensland (RPEQ) certifies that the development does not change the flood characteristics of the DSTE outside the subject site.~~
PO7	Development supports, and does not unduly burden, disaster management response or recovery capacity and capabilities.	**AO7.1**	Development does not: (a) increase the number of people calculated to be at risk from the coastal hazard event; (b) increase the number of people likely to need evacuation; (c) impact on the ability of traffic to use evacuation routes; or (d) unreasonably increase traffic volumes on evacuation routes. Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
PO8	Except in limited circumstances, development is located outside a wave run-up area.	**AO8.1**	Development is situated wholly outside of a wave run-up area except where the development is: (a) located within a Maritime development area or future Maritime development area; (b) coastal dependent development in an Urban area;

Performance Outcomes		Acceptable Outcomes	
			(c) temporary or relocatable development; (d) does not result in an increase of development intensity on the site; or (e) for tourist attractions or tourist accommodation, and a Coastal hazard assessment report demonstrates that the development avoids any increase in risk to people, infrastructure or property from coastal hazard impacts. Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
PO9	Development that is within an inundation area is located, designed, constructed and operated to avoid adverse coastal hazard impacts, including impacts on the development's ongoing operation.	**AO9.1**	Development is located outside an inundation area unless: (a) it does not result in an increase in the intensity of development on the site; (b) involving redevelopment that intensifies the use of a site, if the development mitigates any increase in risk to people and property from inundation impacts; or (c) a Coastal hazard assessment report demonstrates that the development avoids any increase in risk to people or property from coastal hazard impacts. Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
Community infrastructure			
~~**PO8**~~**PO10**	Development involving community infrastructure remains functional to serve community needs during and immediately after a coastal hazard event.	~~**AO8.1**~~**AO**	Community infrastructure: (a) is designed, sited and operated to avoid adverse impacts on the community facilities, access and egress routes and the environment; (b) retains essential site access during a coastal hazard event; and (c) is able to remain functional, even when other infrastructure or services may be compromised in a coastal hazard event. Note – This may be demonstrated by undertaking a Coastal hazard

Performance Outcomes		Acceptable Outcomes	
			assessment report in accordance with PSP SC6.5 (Natural hazards).
Public access to the coast			
~~PO9~~PO11	Development ensures that there is no net loss of public access to the foreshore and, where practicable, provides enhanced opportunities for safe public access to the foreshore in a manner consistent with conserving coastal resources.	~~AO9.1~~AO	Development is located, designed and operated: (a) in a manner that retains or enhances existing public access to and along the foreshore; or (b) where loss of public access to the foreshore cannot practicably be avoided, development provides the same or a greater amount of new public access opportunities in an alternative location.
Coastal dependent development ~~Maritime development~~ and Maritime development areas			
~~PO10~~PO1	Except in limited circumstances, coastal dependent development ~~maritime development~~ is located within a Maritime development area.	~~AO10.1~~A(	Coastal dependent development~~Maritime development~~: (a) is located within an identified Maritime development area; (b) demonstrates that the site is suitable for identification as a Maritime development area; or (c) is located outside a Maritime development area, if it is: (i) a minor marine development; (ii) dredging for navigation channels; or (iii) development in a port.
~~PO11~~PO1	Development in a Maritime development area: (a) supports some area for coastal dependent development~~is predominantly for maritime development~~; and (b) ensures ancillary and subsidiary development is sited and designed to avoid reverse amenity impacts from Industrial or Commercial coastal dependent development~~predominantly of a commercial or public nature~~.	~~AO11.1~~A(	Within the Maritime development area: (a) adequate space is provided within the non-tidal component of the development site for coastal dependent development; (b) Port services and Industrial activities are suitably buffered from sensitive uses; and ~~(a)~~ sensitive uses are sited and designed to minimise amenity conflicts with existing or future areas identified for coastal dependent development.~~less than half of the non-tidal component of the development site is allocated for non-maritime development, not including~~

Performance Outcomes		Acceptable Outcomes	
			Accommodation activities; and (b)(c) less than a quarter of the non-tidal component of the development site is allocated for Accommodation activities.
PO12 Coastal environment map 1 – Storm tide inundation (Overlay map - CP1 - 01:14)			
PO13 Where development is in an urban area			
PO14	**PO15** Except in limited circumstances, development is located outside a high hazard storm tide area.	**PO16**	**PO17** Development is situated wholly outside of a high hazard storm tide area except where the development is: **PO18** temporary and /or relocatable development; or **PO19** coastal-dependent development; or **PO20** located within a Maritime development area; or **PO21** does not result in an increase of development intensity on the site.
PO22	**PO23** Development that is subject to a medium hazard storm tide area is located, designed, constructed and operated to avoid adverse coastal hazard impacts, including impacts on the development's ongoing operation. **PO24**	**PO25**	**PO26** Development within an urban area is located outside a medium hazard storm tide area unless: **PO27** it does not result in an increase in the intensity of development on the site; **PO28** involving redevelopment that intensifies the use of a site, if the development mitigates any increase in risk to people and property from inundation impacts; or **PO29** a Coastal hazard assessment report demonstrates that the development avoids any increase in risk to people or property from coastal hazard impacts. **PO30** **PO31** Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
PO32 Where development is in a non-urban area			
PO33	**PO34** Except in limited circumstances, development does not occur within a non-urban area that is subject to storm tide hazard.	**PO35**	**PO36** Development within a non-urban area that is subject to storm tide hazard is: **PO37** located within a Maritime development area; or **PO38** for tourist attractions and tourist accommodation, the development:

Performance Outcomes		Acceptable Outcomes	
			PO39 locates Accommodation activities outside the high hazard storm tide area; or PO40 is located, designed, constructed and operated to avoid adverse storm tide hazard impacts, including impacts on the development's ongoing operation, as demonstrated by a Coastal hazard assessment report prepared to support the development proposal. PO41 PO42 Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
PO43 Coastal environment map 2 – Erosion prone areas and permanent inundation PO44 (Overlay map - CP2 - 01:14)			
PO45	PO46 Except in limited circumstances, development is located outside of an Erosion prone or Permanent inundation area.	PO47	PO48 Development is situated wholly outside of an Erosion prone or Permanent inundation area, except where the development is: PO49 temporary and/or relocatable development; PO50 located within a Maritime development area; or PO51 redevelopment that intensifies the use of a site in an urban area, if the development mitigates any increase in risk to people and property from adverse coastal erosion impacts.
		PO52	PO53 Development is situated wholly outside of an Erosion prone or Permanent inundation area except where: PO54 community infrastructure; or PO55 able to be abandoned; and PO56 demonstrates that: PO57 it is not feasible to locate the development outside an Erosion prone or Permanent inundation area; PO58 buildings and structures are located landward of alignment of adjacent habitable buildings; or PO59 where it is demonstrated that item (ii) is not reasonable, buildings and

Performance Outcomes		Acceptable Outcomes	
			structures are located as far landward as practicable.
PO60	PO61 Redevelopment occurring within an Erosion prone or Permanent inundation area mitigates any increase in risk to people and property from adverse coastal erosion or permanent inundation impacts.	PO62	PO63 Redevelopment relocates buildings and structures: PO64 outside of an Erosion prone or Permanent inundation area; or PO65 relocates buildings and structures landward of the alignment of adjacent habitable buildings; or PO66 where it is demonstrated that item (b) is not reasonable, buildings and structures are located as far landward as practicable; and PO67 provides sufficient space seaward of the development within the premises to allow for the construction of erosion control structures, such as a sea wall.
		PO68	PO69 Redevelopment in an Erosion prone or Permanent inundation area that results in an intensification of a use, mitigates the coastal erosion or permanent inundation threat to the development, having regard to the: PO70 layout of the development, minimising the footprint of the development within the Erosion prone or Permanent inundation area and locating the development as far landward as possible; PO71 ability of buildings or structures to be decommissioned, disassembled or relocated either on the site or to another site; PO72 use of appropriate foundations for the building or structure; and PO73 installation and maintenance of site erosion control structures. PO74 PO75 Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).

Performance Outcomes		Acceptable Outcomes	
~~PO76~~PO1	Coastal -dependent development or development within a Maritime development area mitigates any increase in risk to people and property from the impacts of Storm tide inundation, Erosion prone and Permanent inundation areas.	~~AO12.1~~A(	Development within Maritime development area and coastal dependent development: (a) is located outside an Erosion prone or Permanent inundation area; or ~~(a)~~ installs and maintains coastal environment works to mitigate adverse impacts to people and property from coastal erosion or permanent inundation.~~Coastal dependent development:~~ ~~(b) installs and maintains coastal environment works to mitigate adverse impacts to people and property from coastal erosion or permanent inundation; or~~ ~~(c) locates, designs and constructs buildings or structures to withstand coastal erosion or permanent inundation impacts.~~ ~~(d) Development within Maritime development area that is not coastal dependent development:~~ ~~(e) is located outside an Erosion prone or Permanent inundation area; or~~ ~~(f)~~(a) ~~installs and maintains coastal environment works to mitigate adverse impacts to people and property from coastal erosion or permanent inundation at the location.~~

~~8.2.6 Environmental significance overlay code~~

~~8.2.7~~

~~8.2.8 Application~~

~~8.2.9~~

~~8.2.10 This code applies to accepted and assessable development:~~

~~8.2.11~~

~~8.2.12 subject to the Environmental significance overlay map contained within Schedule 2 (Mapping); and~~

~~8.2.13~~

~~8.2.14 identified as requiring assessment against the Environmental significance overlay code by the tables of assessment in Part 5 (Tables of assessment).~~

~~8.2.15~~

~~8.2.16 Purpose and overall outcomes~~

~~8.2.17~~

~~8.2.18 The purpose of the Environmental significance overlay code is to ensure that:~~

~~8.2.19~~

~~8.2.20 matters of environmental significance are protected; and~~

~~8.2.21~~

~~8.2.22 ecological connectivity and habitat extent are maintained or enhanced.~~

~~8.2.23~~

~~8.2.24 The purpose of the Environmental significance overlay code will be achieved through the following overall outcomes:~~

~~8.2.25~~

~~8.2.26 matters of environmental significance are valued and protected;~~

~~8.2.27~~

~~8.2.28 the health and resilience of biodiversity is maintained or enhanced to support ecological integrity;~~

~~8.2.29~~

~~8.2.30 development conserves and enhances biodiversity values and associated ecosystem services in the Region;~~

~~8.2.31~~

~~8.2.32 development protects and establishes appropriate buffers to native vegetation and significant fauna habitat;~~

~~8.2.33~~

~~8.2.34 development protects known populations and supporting habitat of:~~

~~8.2.35~~

~~8.2.36 matters of National environmental significance, as listed in the *Environment Protection and Biodiversity Conservation Act 1999*;~~

~~8.2.37~~

~~8.2.38 endangered, vulnerable and near threatened flora and fauna species, as listed in the *Nature Conservation Act 1992*; and~~

~~8.2.39~~

~~8.2.40 regulated vegetation protected under the *Vegetation Management Act 1999*;~~

~~8.2.41~~

~~8.2.42 development is located, designed and managed to avoid or mitigate adverse direct or indirect impacts on ecological systems and processes; and~~

~~8.2.43~~

~~8.2.44 development ensures that viable connectivity is maintained or enhanced between matters of environmental significance and biodiversity values.~~

~~8.2.45~~

~~8.2.46 Assessment benchmarks~~

~~8.2.47~~

~~8.2.48 Table 8.2.6.3.1 – Benchmarks for accepted and assessable development~~

8.2.49 Performance Outcomes		8.2.50 Acceptable Outcomes	
8.2.51 All development			
8.2.52	8.2.53 Development avoids significant impacts on matters of environmental significance.	8.2.54	8.2.55 Development: 8.2.56 does not result in a significant impact on identified environmental values; or 8.2.57 is located, designed and operated to avoid or mitigate significant impacts on the identified environmental values. 8.2.58 8.2.59 Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
8.2.60	8.2.61 Development avoids significant impacts on areas designated as a Protected or Legally secured offset areas.	8.2.62	8.2.63 Development is wholly situated outside of an area designated as a Protected or Legally secured offset areas. 8.2.64 8.2.65 Editor's Note – For guidance of offset areas refer to the *Environmental Offsets Act 2014*.

8.2.49 Performance Outcomes		8.2.50 Acceptable Outcomes	
8.2.66	8.2.67 Development does not result in the short or long-term degradation of ecological values of Protected areas due to edge effects.	8.2.68	8.2.69 Development provides for buffer(s) of: 8.2.70 not less than 25m width, between the development and Protected areas; or 8.2.71 dimensions and characteristics that protect the long-term viability of matters of environmental significance located on and/or adjacent to the site. 8.2.72 8.2.73 Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
8.2.74	8.2.75 Development protects and enhances ecological connectivity and/or habitat extent.	8.2.76	8.2.77 Development retains vegetation in areas large enough to maintain ecological values, functions and processes. 8.2.78 8.2.79 Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
8.2.80 Where development is within an urban area			

8.2.49 Performance Outcomes		8.2.50 Acceptable Outcomes	
8.2.81	8.2.82 Development does not result in the short or long-term degradation of ecological values of Wildlife habitat and Regulated vegetation areas due to edge effects.	8.2.83	8.2.84 Development provides for a buffer(s): 8.2.85 along the boundary adjoining Wildlife habitat and Regulated vegetation areas; or 8.2.86 of dimensions and characteristics that protect the long-term viability of the matters of environmental significance located on and/or adjacent to the site. 8.2.87 *8.2.88* Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
8.2.89 Where development is within a non-urban area			
8.2.90	8.2.91 Development avoids significant impacts on Wildlife habitat and Regulated vegetation areas.	8.2.92	8.2.93 Development is: 8.2.94 wholly situated outside of a Wildlife habitat and Regulated vegetation area; and 8.2.95 setback 25m or 1.5 times the height of the vegetation, whichever is the greater.

8.2.49 Performance Outcomes		8.2.50 Acceptable Outcomes	
8.2.96	8.2.97 Development provides for the long-term management and maintenance of the stream protection zone.	8.2.98	8.2.99 The stream protection zone is protected through a covenant for environmental purposes.
8.2.100	8.2.101 Development of premises adjoining or containing Regulated vegetation intersecting a watercourse must not adversely affect the integrity of the riparian corridor.	8.2.102	8.2.103 Proposed roads and vehicle crossings must not be located within areas designated as Regulated vegetation intersecting a watercourse.
		8.2.104	8.2.105 Development: 8.2.106 maintains hydrological processes and the physical integrity of watercourses, lakes and springs; 8.2.107 ensures that impacts from works on the long-term sustainable use of the watercourse or lake or spring are avoided; and 8.2.108 the stability of beds and banks of watercourses and the condition and natural functions of water bodies is maintained.

~~8.2.109~~8.2.8 Extractive resources overlay code

~~8.2.109.1~~8.2.8.1 Application

This code applies to accepted and assessable development:

(a) subject to the Extractive resources overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Extractive resources overlay code by the tables of assessment in Part 5 (Tables of assessment).

~~8.2.109.2~~8.2.8.2 Purpose and overall outcomes

(1) The purpose of the Extractive resources overlay code is to protect and maintain the sustainable and viable use of extractive resources within the Region by preventing incompatible development and land uses from encroaching on the extractive resource/processing areas, the associated separation areas and transport routes.

(2) The purpose of the Extractive resources overlay code will be achieved through the following overall outcomes:

(a) development occurring within, or adjacent to, extractive resource areas does not adversely affect or impair the ability of existing or future extractive industries to viably win the resource;

(b) development occurring within, or adjacent to, transport routes for extractive resources does not constrain, or otherwise conflict with, the ongoing safe and efficient transportation of the extractive resource; and

(c) the potential negative impacts of extractive industries on sensitive uses within, or adjacent to, extractive resource areas and associated transport routes is mitigated to maintain high levels of safety and amenity.

~~8.2.109.3~~8.2.8.3 Assessment benchmarks

Table 8.2.8.3.1 Benchmarks for accepted and assessable development

Performance Outcome		Acceptable Outcome	
Development within a Local resource or Key resource area (KRA) resource/processing area			
PO1	Development does not constrain, prevent or otherwise interfere with the current or future viability of the winning, or processing of, extractive resources.	**AO1.1**	Development is limited to: (a) extractive industry uses; (b) uses that are directly associated with an extractive industry; or (c) temporary or non-intensive development that is compatible with future extractive industry operations, for example forestry for wood production.
Development within a KRA separation area			
PO2	Development does not materially increase the number of people living within a KRA separation area.	**AO2.1**	Development does not result in an increase in residential density.
		AO2.2	Reconfiguring a lot: (a) does not result in the creation of additional lots used, or capable of being

Performance Outcome		Acceptable Outcome	
			used, for Accommodation activities; and (b) where realigning boundaries, does not worsen the existing situation with respect to the distance between available house sites and the resource processing area.
PO3	Development minimises the potential adverse impacts, including noise, dust, vibration and blasting, from existing or future extractive industry operations upon people working or congregating within a KRA separation area, given the proposed development's location.	**AO3.1**	Development ensures that: (a) the number of people working or congregating is not increased; (b) it is compatible with the potential adverse impacts arising from existing or future extractive industry operations; or (c) incorporates design, orientation and construction measures that mitigate the potential adverse effects from existing or future extractive industry operations to acceptable levels. Note — In order to demonstrate compliance with AO3 applicant should demonstrate the regulations of Environmental Protection Act and relevant policies (i.e. EPP Noise) can be achieved.
PO4	Extractive industry development maintains the function and integrity of a KRA separation area as an efficient and effective buffer between extractive/processing operations and incompatible uses beyond the separation area.	**AO4.1**	Development for an extractive industry use is not located within a KRA separation area.
Development within a Transport route or Transport route separation area			
PO5	Development does not materially increase the number of people living within a Transport route separation area.	**AO5.1**	Development does not result in an increase in residential density.
PO6	Development involving a sensitive use, other than for an Accommodation activity, maintains an acceptable level of amenity.	**AO6.1**	Development involving a sensitive use, other than an Accommodation activity, ensures an acceptable level of amenity by incorporating mitigation measures, such as landscape buffer strips and maintaining adequate separation distances.
PO7	Development does not adversely affect the safe and efficient movement and operation of vehicles transporting extractive materials along a Transport route.	**AO7.1**	Development ensures that: (a) the number of premises with access points to an identified Transport route is not increased; or (b) access points are designed to avoid adversely affecting

Performance Outcome		Acceptable Outcome	
			the safe and efficient operation of vehicles transporting extractive materials along a Transport route.

8.2.1108.2.9 Flood hazard overlay code

8.2.110.18.2.9.1 Application

This code applies to accepted and assessable development that is:

(a) subject to the Flood hazard overlay maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Flood hazard overlay code by the tables of assessment in Part 5 (Tables of assessment).

Note – Where flood hazard is mapped from more than one flood source for a single property, or is also identified in the Coastal hazard overlay map, the assessment benchmark that provides the highest level of protection from any source of flooding applies.Editor's Note - Council will make available (where flood modelling has been received by Council) the height of the defined flood level for any particular location upon request. Applicants should be aware that coastal hazards, such as storm tide inundation, may also affect the land. Where affected by multiple overlays, the overlay that provides the highest level (in AHD) from any source of inundation applies.

Council may not have detailed flood modelling for areas within the Planning Scheme that are be affected by local flooding. In this instance, applicants are required to undertake their own investigations prior to undertaking development through the preparation of a Flood Hazard Assessment Report (Planning Scheme Policy SC6.5.6).

8.2.110.28.2.9.2 Purpose and overall outcomes

(1) The purpose of the Flood hazard overlay code is to:

(a) provide for the assessment of the suitability of development in the Flood hazard overlay area, to ensure that risk to life, property, community, economic activity and the environment during flood events is minimised; and

(b) ensure that development does not increase the potential for flood damage on-site or to other property, both upstream and downstream.

(2) The purpose of the Flood hazard overlay code will be achieved by the following outcomes:

(a) storage capacity of floodplains and the flood conveyance ~~capacity~~ of waterways are protected;

(b) development does not require complex engineering solutions, such as floodgates or extensive earthworks to mitigate adverse impacts;

~~(b)~~(c) incompatible uses are not located in areas susceptible to flood hazard;

~~(c)~~(d) development location, siting, layout, and access ~~responds to~~ is designed to minimise the risk of the flooding and ~~minimises~~ risk to personal safety and property;

~~(d)~~(e) development ~~supports and~~ does not compromise the ability of the disaster management response or recovery capacity and capabilities;

~~(e)~~(f) development provides for:

i. efficient evacuation and emergency services access during flooding events; or

ii. otherwise plans for the prospect and impact of isolation or hindered evacuation during flooding;

~~(f)~~(g) development directly, indirectly and cumulatively avoids an ~~unacceptable~~ increase in severity of the flood event and does not materially increase the extent or impact of the flood event on the site or to other properties;

~~(g)~~(h) development ensures that urban services are designed, located and operated to minimise damage to the environment, infrastructure, property, disruption to building function and recovery time after a flood event;

~~(h)~~(i) natural processes and the protective function of landforms and/or vegetation are maintained where possible in Flood hazard areas;

~~(i)~~(j) where practical, community infrastructure is located and designed to function effectively during, and immediately after, flood events; and

~~(j)~~(k) development ~~for new premises~~ mitigates the impacts of predictable future increases in flood hazards.

~~8.2.110.3~~8.2.9.3 Assessment benchmarks

Table 8.2.9.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
All Flood hazard areas			
PO1	Development is: (a) located and designed to ensure the safety of persons and property from known flood hazards; and (b) located to minimise, disruptions to residents, recovery time, rebuilding and restoration costs after a flood event.	**AO1.1**	Where development is located in a Low risk flood hazard area or Identified flood hazard area: (a) the finished floor level of all habitable rooms is a minimum of 300mm above the defined flood event (DFE); (b) the finished floor level of enclosed non-habitable rooms is above the DFE; (c) where non-habitable rooms are not enclosed, they are only below the DFE, if the structure allows for the unimpeded flow-through of flood water; (d) is not less than the floor levels of the existing habitable room(s) where involving an extension for no greater than 75m² to an existing building; and (e) underground parking is designed to prevent the intrusion of flood waters by the incorporation of a bund or similar barrier with a minimum height of 300mm above the defined flood level. Editor's note - Flood gates with pumps are not desired in underground parking due to noise issues. Editor's note – Information on potential flood levels is available from Council for certain properties where within Local Study areas as shown by the Flood hazard overlay mapping. Where no further

Performance Outcomes		Acceptable Outcomes	
			information is provided by Council the applicant must source the information independently from a qualified professional.
		AO1.2	Where located in an Identified flood hazard area and a DFE is not available: (a) a new, or extension to a, habitable building is: i. not located in the flood hazard area; ii. 300mm above the DFE; or iii. not less than the floor levels of the existing habitable room(s) where involving an extension for no greater than 75m² to an existing building; and (b) a new non-habitable building is: i. not located in the flood hazard area; ii. located on the highest part of the site to minimise entrance of floodwaters; or iii. must be built above the DFE. Note - The above requirements can be demonstrated through the development of a Flood Hazard Assessment Report (PSP SC6.5.6). Editor's note – Information on potential flood levels is available from Council for certain properties where within Local Study areas as shown by the Flood hazard overlay mapping. Where no further information is provided by Council the applicant must source the information independently from a qualified professional.
		AO1.3	A Class 10 structure located within a Low risk flood hazard area or Identified flood hazard area is designed to suit class H soil classification with 100kpa bearing capacity and is: (a) designed to allow for the flow through of flood water up to the DFE; and (b) setback 10m from drainage paths; or (c) an RPEQ certifies the development is structurally designed to resist hydrostatic and hydrodynamic loads

Performance Outcomes		Acceptable Outcomes	
			associated with flooding up to and including the DFE.
PO2	Development is limited to particular uses in Medium or High risk flood hazard areas to ensure no increased risk to life or property.	AO2.1	Development does not occur in High or Medium risk flood hazard areas except for the uses of animal husbandry, cropping, environment facility, extractive industry, landing, outdoor sports and recreation, park, parking station, substation, utility installation and major electricity infrastructure.
		AO2.2	Development: (a) prevents potential debris from blocking natural drainage flow; and (b) does not affect the natural functions of the catchment.
Infrastructure			
PO3	Essential network infrastructure (on-site electricity, water supply, reticulated and on-site sewerage systems and telecommunications) functions effectively during and after flood events.	AO3.1	Essential network infrastructure is: (a) located above the DFE; or (b) designed, constructed and certified by an RPEQ to avoid floodwater intrusion and resist hydrostatic and hydrodynamic forces as a result of inundation above the DFE; and (c) does not impact on the hydrology of the surrounding area.
Hazardous materials			
PO4	Development avoids the release of hazardous materials into floodwaters.	AO4.1	The manufacturing or storage of hazardous materials: (a) are not located in the flood hazard area; or (b) the structure is: (i) located 300mm above the DFE level; or (ii) designed to prevent the intrusion of floodwaters. Note - Refer to the *Work Health and Safety Act 2011* and associated Regulation and Guidelines, the *Environmental Protection Act 1994* and the relevant building assessment provisions under the *Building Act 1975* for requirements related to the manufacture and storage of hazardous substances. Note - The above requirements can be demonstrated through the development of a Flood hazard assessment report (PSP SC6.5.6).
Design Outcomes			
PO5	Appropriate resilient constructions solutions are provided to:	AO5.1	Development for a residential use in Low and Identified flood hazard areas ensure:

Performance Outcomes		Acceptable Outcomes	
	(a) mitigate potential flood impacts; (b) development maintains drainage paths and avoids any direct, indirect or cumulative increase in water flow velocity or flood level; and (c) does not increase the potential for flood damage either on-site or on other properties.		(a) fences and landscaping are permeable to flood water; (b) where requiring raised finished habitable floor levels, pier and pole construction is used to allow the flow through of flood water; or (c) meets AO5.2.
		AO5.2	Development within any Flood hazard area involving more than 100m³ of material that is imported to or removed from the site, only occurs where a Registered Professional Engineer Queensland (RPEQ) certifies that the works will not result in: (a) a direct, indirect or cumulative increase in water flow velocity or level; (b) existing overland flow paths not being maintained; (c) piped or complex engineering solutions to manage major flows; (d) an increase in the potential for erosion, scour or flood damage, either on the premises or off the premises; (e) a change in the timing of the flood wave or reduction in flood warning times; (f) adverse impacts on the local drainage or the velocity of a waterway; (g) increased flood inundation of surrounding properties; and (h) any reduction in the flood storage capacity of the floodplain by clearing of native vegetation. Note— This may be demonstrated by preparing a Flood hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
Waterways			
PO6	Development maintains the ecological functions of waterways.	**AO6.1**	Buildings and infrastructure in all areas are set back as per Table 8.2.9.3.32 – Minimum riparian buffers and setbacks for biodiversity, waterways and wetlands.
Community infrastructure			
PO7	The development supports, and does not unduly burden, disaster management response or recovery capacity and	**AO7.1**	Essential community uses outlined within Table 8.2.9.3.3 meet the desired level of flood

Performance Outcomes		Acceptable Outcomes	
	capabilities, including disruptions to residents, recovery time, rebuilding and restoration costs after a flood event.		immunity within the Table, ensuring: (a) it is designed, sited and operated to avoid adverse impacts on the community or the environment due to the impacts of flooding on infrastructure, facilities or access and egress routes; (b) it retains essential site access during a flood event; and (c) it is able to remain functional even when other infrastructure or services may be compromised in a flood event. Note – This may be demonstrated by preparing a Flood hazard assessment report in accordance with PSP SC6.5 (Natural hazards). Editor's note – Information on potential flood levels is available from Council for certain properties. Where no further information is provided by Council the applicant must source the information independently from a Registered Professional Engineer Queensland (RPEQ).
Vulnerable Uses			
PO8	Development siting and layout responds to flood hazards and maintains personal safety at all times.	**AO8.1**	Vulnerable uses or community infrastructure that must operate during and immediately after a flood event have direct access to evacuation routes.
		AO8.2	Developments that involves vulnerable uses, are not located in an isolated area or flood island area on the Flood hazard overlay map.
~~Performance Outcomes~~		~~Acceptable Outcomes~~	
~~(a)~~	~~Development involving any habitable and non-habitable part of the building is:~~ ~~(d) located and designed to ensure the safety of all persons and buildings from flood hazards; and~~ ~~(e) located to minimise amenity impacts, disruptions to residents, recovery time, rebuilding and restoration costs after a flood event.~~	~~(c)~~	~~Development of a habitable building:~~ ~~(e) is not located on land in a Flood hazard area;~~ ~~(f) ensures the finished floor level of a new building is located at a minimum 300mm above the defined flood level (DFL) for all habitable rooms; or~~ ~~(g) is not less than the floor level of existing habitable room(s) where~~

Performance Outcomes		Acceptable Outcomes	
			involving an extension for no greater than 75m² to an existing building. Editor's Note – Refer to Council's Flood hazard map on the website for further detail. The maps do not provide information about the depth or speed of flood water. Information on potential depth levels for a property can be found by contacting Council.
		AO7.2	Buildings are only located within the Flood hazard area, if a registered professional engineer Queensland (RPEQ) certifies that the development is structurally designed to be able to resist hydrostatic and hydrodynamic loads associated with flooding up to and including the DFL. Editor's Note – If part of the site is outside the Flood hazard overlay area, this is the preferred location for all buildings.
		AO7.3	Development within a Flood hazard area ensures storage of hazardous materials are located above the DFL.
(b)	Development directly, indirectly and cumulatively avoids any increase in water flow velocity or flood level, and does not increase the potential for flood damage either on site or on other properties. Note – Where assessable development PO2 may be achieved by demonstrating that development will not: PO1 result in any reductions of on-site flood storage capacity and contain within the subject site any changes to depth/duration/velocity of flood waters; PO2 change flood characteristics outside the subject site in ways that result in: ss of flood storage; ss of/changes to flow paths; or	AO8.1	Buildings and infrastructure in non-urban areas are set back 50m from natural riparian corridors to maintain their natural function of reducing velocity of flood waters.
		AO8.2	Development does not involve a net increase in filling greater than 50m³ in urban areas or 500m³ in non-urban areas within a Flood hazard area. Editor's Note – Berms/mounds are

Performance Outcomes		Acceptable Outcomes	
	~~celeration or retardation of flows; or~~ ~~**PO3** increase stormwater ponding on sites upstream, downstream or in the general vicinity of the subject site.~~		~~considered to be an undesirable built form outcome and are not supported.~~
		~~**AO8.3**~~	~~The design and layout of buildings within a Flood hazard area provides:~~ ~~(a) non-habitable uses at ground level; and~~ ~~(b) allows for the flow through of flood water below the DFL.~~ ~~Editor's Note - The highset 'Queenslander' style house is a resilient low-density housing solution in floodplain areas. Higher density residential development should ensure only non-habitable rooms, such as garages and laundries, are located on the ground floor.~~ ~~Businesses should ensure that they have the necessary continuity plans in place to account for the potential need to relocate property prior to a flood event, for example allow enough time to transfer stock to the upstairs level of a building or off site.~~ ~~The relevant building assessment provisions under the *Building Act 1975* apply to all building work within the Flood hazard area and need to take account of the flood potential within the area.~~

Table 8.2.9.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
ROL Requirements			
PO1	Development does not materially increase the number of people at risk of flood hazard through the subdivision of unsuitable flood affected land.	**AO1.1**	For Reconfiguring a lot, additional lots, if within a Low risk flood hazard area or Identified flood hazard area: (a) provide habitable building envelopes outside the Flood hazard area; (b) provide finished ground levels of urban purpose lots a minimum of 300mm above the DFE; or (c) within Rural and Rural Residential zones, lots have a minimum building envelope,

Performance Outcomes		Acceptable Outcomes	
			above the DFE, with a usable area of 2000m². Note – This may be demonstrated by preparing a Flood hazard assessment report in accordance with PSP SC6.5 (Natural hazards). Editor's note – Information on potential flood levels is available from Council for certain properties. Where no further information is provided by Council the applicant must source the information independently from a Registered Professional Engineer Queensland (RPEQ).
PO2	The development of additional lot(s) with new roads appropriately mitigates flood risks by: (a) appropriately locating roads, infrastructure and house pads; and (b) providing a safe evacuation route.	**AO2.1**	Development of additional lots with new roads affected by any Flood hazard area have: (a) adequate evacuation routes provided to safe ground, being land outside the Flood hazard area or an evacuation centre is able to be reached in a timely manner; (b) entry points to the reconfiguration are above the DFE and avoid cul-de-sacs or non-permeable layouts; (c) safety of people and property is prioritised; and (d) natural hydrological processes are maintained. Note – This may be demonstrated by preparing a Flood hazard assessment report in accordance with PSP SC6.5 (Natural hazards)
PO3	Appropriate road signage for flood depths is installed.	**AO3.1**	The creation of new roads provides signage and depth indicators at each key hazard point, e.g. waterway crossing.
Additional requirements for Medium or High risk flood hazard areas			
PO4	Reconfiguration of a lot does not create additional lots within a flood affected area, except for the uses of animal husbandry, cropping, environment facility, extractive industry, landing, outdoor sports and recreation, park, parking station, substation, utility installation and major electricity infrastructure.	**AO4.1**	Land partially affected by Medium or High risk flood hazard area must demonstrate that each additional lot has an appropriately sized building footprint and flood free access outside of the Medium and High risk flood hazard area. Note – A covenant or reserve may be required to ensure that no development occurs in the flood affected area.
		AO4.2	Land entirely affected by Medium or High risk flood hazard area does not create additional lots within the flood affected area, except for the uses of animal husbandry, cropping, environment facility, extractive

Performance Outcomes		Acceptable Outcomes	
			industry, landing, outdoor sports and recreation, park, parking station, substation, utility installation and major electricity infrastructure.

Table 8.2.9.3.3 Flood immunity for community infrastructure and services

Development	Level of immunity Annual exceedance probability (AEP)
Development involving: (a) emergency services; (b) hospitals and associated facilities; ~~and~~ (c) retirement facilities and residential care facilities; (d) educational establishment; (e) facilities utilised as an evacuation or recovery facility in addition to their normal function (e.g. sporting facility, community centre, meeting hall); and ~~(c)~~(f) major electricity infrastructure.	0.2% AEP flood event
Development involving: (a) emergency/evacuation shelters; (b) the storage of valuable records or items of historic/cultural significance (e.g. libraries, galleries); (c) telecommunication facilities; (d) substations; (e) water treatment plants; (f) regional fuel storage; and ~~(g)~~ food storage warehouses.~~; and~~ ~~(h)~~(g) ~~retirement facilities and residential care facilities.~~	0.5% AEP flood event
Development involving: (a) Sewerage treatment plants (requiring licensing as an environmentally relevant activity). (b) cemetery and crematorium (c) waste management facilities (d) sporting facility, community centre, meeting hall (where not used as an evacuation or recovery facility) ~~(a)~~(e) storage and works depots and similar facilities, including administrative facilities associated with the provision or maintenance of the community infrastructure mentioned in this part	1% AEP flood event

8.2.1118.2.10 Heritage overlay code

Editor's nNote – This code does not apply to indigenous cultural heritage which is protected under the *Aboriginal Cultural Heritage Act 2003*. In accordance with this legislation, a person who carries out an activity must take all reasonable and practical measures to ensure the activity does not harm Aboriginal cultural heritage ("the cultural heritage duty of care").

Editor's note - Sites included in the Heritage overlay include Queensland and Commonwealth Heritage places. These are governed by their own relevant heritage legislation.

8.2.111.18.2.10.1 Application

This code applies to accepted and assessable development:

(a) subject to the Heritage overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Heritage overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.111.28.2.10.2 Purpose and overall outcomes

(1) The purpose of the Heritage overlay code is to ensure development on a Heritage place is compatible with the cultural heritage significance of the place outlined in the place card.

Editor's Note – Heritage place cards are identified and explained on the Whitsunday Regional Council website under the Local Heritage Register.

(2) The purpose of the Heritage overlay code will be achieved through the following overall outcomes:

(a) the cultural heritage significance of the Heritage place is conserved;

(b) development of the Heritage place is compatible with the cultural heritage significance of the place by:

(i) preventing the demolition or removal of Heritage places, unless there is no prudent and feasible alternative to its demolition or removal; and

(ii) maintaining or encouraging, as far as practical, the appropriate use, or adaptive re-use of Heritage places;

(iii) protecting, as far as practical, the materials and setting of the Heritage place;

(iv) ensuring, as far as practical, development on a Heritage place is compatible with the cultural heritage significance of the place; and

(c) development is compatible with the conservation and management of the cultural heritage significance of the Heritage place.

8.2.111.38.2.10.3 Assessment benchmarks

Table 8.2.10.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
PO1	Development of the Heritage place is:	**AO1.1**	Development: (a) conserves and does not alter, damage, remove or conceal significant features,

Performance Outcomes		Acceptable Outcomes	
	~~(a) subservient to the features and values of the Heritage place; and~~ (a) is compatible with the conservation and management of the cultural heritage significance of the Heritage place; and (b) protects the fabric and setting of the heritage place.		fabric or contents as described in the physical or historical significance description of the local heritage place or area, as written in the statements on each Heritage Placecard; or ~~(a)~~ protects, as far as practicable, the fabric and setting of a local heritage place or area; or~~does not alter, remove or conceal significant attributes of the Heritage place; or~~ (b) (c) is minor and necessary to maintain a significant use for the Heritage place. Editor's note - Fabric means all the physical material of the place including elements, fixtures, contents and objects (the *Burra Charter 2013*).
		AO1.2	Development of the Heritage place is undertaken with reference to the ICOMOS Charter for the conservation of places of cultural heritage (*Burra Charter 2013*). Note – This may be demonstrated by undertaking a Heritage impact assessment report in accordance with PSP SC6.3 (Heritage).
	~~The Heritage place or part of the Heritage place may not be demolished and/or removed unless it can be demonstrated that:~~ ~~there is no prudent or feasible alternative; or~~ ~~the Heritage place, or part of the Heritage place is not of local cultural heritage significance.~~		~~Prior to the demolishing or removal of a Heritage place, it must be demonstrated that:~~ ~~(a) beyond reasonable doubt there is no prudent or feasible alternative to the demolition, or removal, of part or all of the Heritage place. The proposal must be supported by a report from an appropriate expert; and~~ ~~(b) where the Heritage place or part of the Heritage place is to be demolished or removed, a Heritage management plan outlining the removal/demolition process must be developed by an appropriate expert having regard for the *Burra Charter 2013*.~~ ~~Note – This may be demonstrated by undertaking a Heritage management plan in accordance with PSP SC6.3 (Heritage).~~

Performance Outcomes		Acceptable Outcomes	
	~~Changes to a Heritage place are appropriately managed and documented on the place card of the Heritage place.~~		~~Development is compatible with a Conservation management plan prepared in accordance with the Australian ICOMOS Charter for places of cultural significance (*Burra Charter 2013*).~~
			~~Any development is appropriately documented on the place card of the Heritage place.~~
PO2	The identified archaeological significance or potential archaeological significance of the Heritage place is conserved.	**AO2.1**	Where a ground breaking activity is required within the boundary of the Heritage place that has been identified as an archaeological place, a suitably qualified and experienced archaeologist must be appointed to assess the impact of the ground breaking activity on any identified and/or potential archaeological artefacts and features. The archaeologist must develop and, where required by Council, oversee the implementation of an Archaeological management plan that outlines how the project will manage impacts to the archaeological significance and potential of the place. Note – This may be demonstrated by undertaking an Archaeological management plan in accordance with PSP SC6.3 (Heritage).
Alteration or a Heritage Place or Area			
PO3	The Heritage place or part of the Heritage place may not be significantly altered unless it can be demonstrated: (a) it is not capable of structural repair; or (b) there are any other relevant justifications.	**AO3.1**	Retaining a heritage item must be priority, unless it can be demonstrated that: (a) it is not capable of structural repair; and (b) repair is not feasible having regard to economic or health and safety considerations. Note – Refer to Council's Local Heritage Register Policy for further information regarding removal of a heritage place. Note - This may be demonstrated by undertaking a Heritage impact assessment report in accordance with PSP SC6.3 (Heritage). Note - This may be demonstrated by undertaking a Heritage management plan in accordance with PSP SC6.3 (Heritage).

~~8.2.11~~28.2.11 Infrastructure overlay code

~~8.2.11.1~~8.2.11.1 Application

This code applies to accepted and assessable development:

(a) subject to the Infrastructure overlay shown on the overlay maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Infrastructure overlay code by the tables of assessment in Part 5 (Tables of assessment).

~~8.2.11.2~~8.2.11.2 Purpose and overall outcomes

(1) The purpose of the Infrastructure overlay code is to ensure that development is compatible with, and does not adversely affect the viability, integrity, operation and maintenance of the following existing and planned infrastructure and facilities with the Whitsunday region:

(a) major roads (State controlled roads);

(b) railways;

(c) major electricity infrastructure;

(d) substations;

(e) bulk water supply infrastructure;

(f) gas pipelines;

(g) strategic ports;

(h) public passenger transport facilities;

(i) wastewater treatment facilities; and

(j) waste management facilities.

(2) The purpose of the Infrastructure overlay code will be achieved through the following overall outcomes:

(a) existing and planned infrastructure facilities, networks and corridors are protected from incompatible development;

(b) development in proximity to existing and planned infrastructure facilities, networks and corridors is appropriately located, designed, constructed and operated to:

(i) avoid compromising the integrity, operational efficiency and maintenance of infrastructure and facilities; and

(ii) protect the amenity, health and safety of people and property.

~~8.2.112.3~~8.2.11.3 Assessment benchmarks

Table 8.2.11.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Infrastructure Map ~~1~~ – Transport infrastructure ~~(Overlay map - INF1 - 01:29)~~			
Road noise corridor and Railway buffers			
PO1	Sensitive uses are located, designed and constructed to ensure that noise emissions from major road corridors and railway corridors do not adversely affect: (a) the development's primary function; or (b) the wellbeing of occupants including their ability to sleep, work or otherwise undertake quiet enjoyment without unreasonable interference from road traffic or railway noise.	**AO1.1**	Development of sensitive uses: (a) does not occur within a Railway buffer; or (b) where within a Railway buffer complies with the acoustic noise quality objectives specified in Environmental Protection (Noise) Policy 2008.
		AO1.2	Development of sensitive uses located within a Road noise corridor, are sited and designed to comply with the QDC MP4.4 (Buildings in a transport noise corridor).
PO2	Development within a Road noise corridor or Railway buffer does not adversely impact on the associated infrastructure.	**AO2.1**	Development within a Road noise corridor or Railway buffer maintains and, where practicable, enhances the safety, efficiency and effectiveness of the infrastructure.
Strategic port areas and buffers			
PO3	Development within a Strategic port area or buffer does not interfere with an aid to navigation or associated signals.	**AO3.1**	Development does not result in significant electrical or electro-magnetic emissions which may impede the operation of aids to navigation.
		AO3.2	All lights on or above the development site: (a) are shielded to prevent glare or reflection; (b) do not include flood lights; (c) do not involve flashing or flickering lights which may be confused with aids to navigation; and (d) are not coloured lights such as green, blue or red lights which may be confused with aids to navigation.
		AO3.3	Lighting complies with AS 4282-1997(Control of the obtrusive effects of outdoor lighting).
Public passenger transport facilities and buffers			
PO4	Development supports a road hierarchy which facilitates efficient, safe and accessible bus services connecting to existing and future Public passenger transport facilities.	**AO4.1**	Roads catering for buses are major collector, arterial or sub-arterial roads or their equivalent.
		AO4.2	Roads catering for buses provide convenient connections to existing and future Public passenger transport facilities.

Performance Outcomes		Acceptable Outcomes	
		AO4.3	Development on bus routes does not impact bus stop infrastructure or the efficient running of bus services.
		AO4.4	Roads catering for buses are designed and constructed in accordance with PSP SC6.8 (WRC development manual).~~Part 2 of the Transport Planning and Coordination Regulation 2005 (Code for IDAS).~~
PO5	Development enhances connectivity between existing and future Public passenger transport facilities and other transport modes.	**AO5.1**	The road network supports modal interchange by integrating with existing and future Public passenger transport facilities.
		AO5.2	Development provides direct linkages for passengers between existing and future Public passenger transport facilities and other transport modes.
		AO5.3	Development provides way-finding information for existing Public passenger transport facilities and interconnecting transport modes.
PO6	Development optimises the walkable catchment to existing and future Public passenger transport facilities.	**AO6.1**	Development connects to an existing or planned pedestrian/cycle network that links to existing and future Public passenger transport facilities.
		AO6.2	Development provides convenient through-site connections for pedestrians and cyclists to existing and future Public passenger transport facilities.
PO7	Development provides direct and safe access to and use of Public passenger transport facilities.	**AO7.1**	Through-site pathway connections to Public passenger transport facilities are provided in accordance with Part 6A of Austroads guide to road design (Pedestrian and cyclist paths).
		AO7.2	Pathway connections are available at all times.
		AO7.3	Direct and legible pedestrian and cycle paths and crossings provide connections to existing and future Public passenger transport facilities.
		AO7.4	Development incorporates landscaping, boundary treatments and lighting that enhances the safety of

Performance Outcomes		Acceptable Outcomes	
			pedestrians and cyclists accessing Public passenger transport facilities by providing for casual surveillance.
		AO7.5	Development of Business activities provides active frontages oriented towards Public passenger transport facilities.
		AO7.6	Accommodation activities address street frontages and provide casual surveillance of Public passenger transport facilities.
Infrastructure Map 2 – Utility infrastructure (Overlay map - INF2 - 01:29)			
Major electricity infrastructure and substation buffers			
PO8	Development involving a sensitive use is sufficiently separated from major electricity infrastructure or substations to minimise the likelihood of nuisance or complaint.	**AO8.1**	Sensitive uses maintain the following separation distances from the substation or easement for major electricity infrastructure: (c)(a) 20m for transmission lines up to 132kV; (d)(b) 30m for transmission lines between133kV and 275kV; and (e)(c) 40m for transmission lines exceeding 275kV.
PO9	Major electricity infrastructure on private land is included in an easement.	**AO9.1**	Existing infrastructure easements are maintained and where none currently exist, new easements are created which are sufficient for electricity provider's requirements.
Bulk water supply pipelines and buffers			
PO10	Development within a water supply infrastructure buffer: (a) is located, designed and constructed to protect the integrity of the water supply pipeline; and (b) maintains adequate access for any required maintenance or upgrading work to the water supply pipeline.	**AO10.1**	Buildings and structures are setback from water supply pipelines a minimum of: (a) 20m; or (b) 10m if for a dwelling house; i. where habitable rooms are out of the drainage path of immediately adjoining water supply pipeline if it burst; or ~~from a water supply pipeline.~~ ii. building footprint cannot be sited elsewhere on the premises. Editor's note – Habitable rooms in a dwelling house should be located outside or above the drainage path of an immediately adjoining water supply pipeline, such that if it burst, the lay of the land, stormwater drainage or roads direct water elsewhere.
PO11	Development is located and designed to maintain required	**AO11.1**	Development does not restrict access to bulk water supply

Performance Outcomes		Acceptable Outcomes	
	access to water supply infrastructure.		infrastructure of any type or size, having regard to: (a) buildings or structures; (b) gates and fences; (c) storage of equipment or materials; and (d) landscaping, earthworks, stormwater or other infrastructure.
Petroleum pipeline buffers			
PO12	Development within a Petroleum pipeline buffer reduces the risk of harm to sensitive uses, people and property.	**AO12.1**	Development within a Petroleum pipeline buffer provides and maintains adequate separation between the use or works and a Petroleum pipeline corridor so as to minimise risk of harm to sensitive uses, people and property.
PO13	Development and works within a Petroleum pipeline buffer does not adversely impact on associated infrastructure.	**AO13.1**	Uses and works within a Petroleum pipeline buffer are constructed and operated to avoid: (a) compromising the viability of the Petroleum pipeline corridor; or (b) damaging or adversely affecting the existing or future operation of major petroleum pipelines and the supply of petroleum.
Waste water treatment facilities and buffers			
PO14	Accommodation activities and other sensitive uses are not adversely affected by odour emissions from existing or planned Waste water treatment facilities.	**AO14.1**	A sensitive use involving an Accommodation activity is not located or intensified within a Waste water treatment facility buffer.
		AO14.2	Any sensitive use (other than an accommodation activity) located within a Waste water treatment facility buffer: (a) incorporates appropriate measures to minimise odour impacts; or (b) demonstrates that occupants and users will not be adversely affected by odour emissions from activities associated with the Waste water treatment facility.

Performance Outcomes		Acceptable Outcomes	
		AO14.3	Reconfiguring a lot within a Waste water treatment facility buffer: (a) does not result in the creation of additional lots used or capable of being used for Accommodation activities; and (b) where rearranging boundaries, does not worsen the existing situation with respect to the distance between available residential sites and the Waste water treatment facility.
Waste management facility buffer			
PO15	Accommodation activities and other sensitive uses are not adversely affected by noise emissions from existing or planned Waste management facilities.	**AO15.1**	A sensitive use involving an Accommodation activity is: (a) not located or intensified within a Waste management facility buffer; or (b) where located within a Waste management facility buffer complies with the following the acoustic quality design objectives specified in *Environmental Protection (Noise) Policy 2008*.
		AO15.2	Any sensitive use (other than an Accommodation activity) located within a Waste management facility buffer complies with the acoustic quality design objectives specified in *Environmental Protection (Noise) Policy 2008*.

~~8.2.113~~8.2.12 Landslide hazard overlay code

~~8.2.113.1~~8.2.12.1 Application

This code applies to accepted and assessable development:

(a) subject to the Landslide overlay maps contained within Schedule 2 (Mapping); or

(b) identified as requiring assessment against the Landslide overlay code by the tables of assessment in Part 5 (Tables of assessment).

~~8.2.113.2~~8.2.12.2 Purpose and overall outcomes

(1) The purpose of the Landslide overlay code is to:

(a) provide for the assessment of the suitability of development, in an area subject to landslide hazard, to ensure that risk to life, property, community, economic activity and the environment is minimised; and

(b) ensure that development does not increase the potential damage from landslide events on site or to other property.

(2) The purpose of the Landslide overlay code will be achieved through the following overall outcomes:

(a) development is compatible with the level of risk associated with the landslide hazard;

(b) development siting, design, layout and access responds to the risk of the landslide hazard and minimises risk to personal safety and property;

(c) development supports, and does not unduly burden, disaster management response or recovery capacity and capabilities;

(d) development avoids an unacceptable increase in severity of the landslide hazard and does not significantly increase the potential for damage on the site or to other properties;

(e) where practical, community infrastructure is located and designed to function effectively during and immediately after a landslide event;

(f) development avoids the release of hazardous materials, as a result of the landslide hazard; and

(g) natural processes and the protective function of landforms and/or vegetation are maintained in Landslide hazard areas.

~~8.2.113.3~~8.2.12.3 Assessment benchmarks

Table 8.2.12.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
PO1	Development maintains the safety of people, property and hazardous materials, manufactured or stored in bulk,	**AO1.1**	Development: (a) is not located on land identified in a Landslide hazard area or on land with a slope of 15% or greater; or

Performance Outcomes		Acceptable Outcomes	
	from the risk of a landslide hazard.		(b) if identified within a Landslide hazard area ensures: (i) buildings, infrastructure and associated works maintain the long-term stability of the site as Low or Very low risk in accordance *AGS 2007*~~the long-term stability of the site, including associated buildings and infrastructure~~; (ii) that the site will not be adversely affected by landslide activity originating from other land, including land above the site; and (iii) that landscaping, drainage, filling and excavation does not redirect the flow of, or concentrate surface water or groundwater on, the site or neighbouring sites. Note – This may be demonstrated by undertaking a site-specific Landslide hazard (geotechnical) assessment report in accordance with PSP SC6.5 (Natural hazards). The building assessment provisions must address the stability of buildings and structures in relation to landslide hazard. Editor's note – *AGS 2007* means *Australian Geomechanics Society 2007 Practice note guidelines for landslide risk management 2007.*
		AO1.2	The manufacture or storage of hazardous materials in bulk does not occur within a landslide hazard area.
		AO1.3	The siting, design and construction of works do not have a detrimental impact on slope stability or erosion potential on-site, adjoining premises or road reserves. Note – This may be demonstrated by undertaking a site-specific Landslide hazard (geotechnical) assessment report in accordance with PSP SC6.5 (Natural hazards).
PO2	Safe passage to evacuation centres or medical facilities is not at risk from being permanently impeded by a landslide event.	**AO2.1**	Reconfiguring of a lot ensures that new roads utilise appropriate retaining, slope setbacks and drainage measures to ensure the safety

Performance Outcomes		Acceptable Outcomes	
			and long-term stability of the road for emergency evacuation, including a detailed Management plan completed by a Registered Professional Engineer of Queensland (RPEQ) for engineering solutions likely to become Council assets. Note – This may be demonstrated by undertaking a site-specific Landslide hazard (geotechnical) assessment report in accordance with PSP SC6.5 (Natural hazards).
PO3	Community infrastructure maintains the safety of people and property and is not adversely affected by a landslide hazard.	AO3.1	Community facilities with a role in emergency management are not located on land within the landslide hazard area and are not at risk of impacts from potential landslide run-out areas. ~~Development of community infrastructure within an identified Landslide hazard area ensures:~~ ~~(a) the long-term stability of the site, including associated building and infrastructure;~~ ~~(b) that access to the site will not be impeded by a landslide event;~~ ~~(c) that the site will not be adversely affected by landslides originating from other land, including land above the site; and~~ ~~(d) the primary function of the community infrastructure is maintained during a landslide event.~~ ~~Note – A site specific landslide hazard (geotechnical) report is required to demonstrate compliance with PO2. The Landslide hazard (geotechnical) assessment report is to be prepared in accordance with PSP SC6.5 (Natural hazards).~~ ~~The building assessment provisions must address the stability of buildings and structures in relation to landslide hazard.~~
		AO3.2	Development of community infrastructure within an identified Landslide hazard area or on land with a slope of 15% or greater ensures: (a) the long-term stability of the site, including associated building and infrastructure; (b) that access to the site will not be impeded by a landslide event;

Performance Outcomes		Acceptable Outcomes	
			(c) that the site will not be adversely affected by landslides originating from other land, including land above the site; and (d) the primary function of the community infrastructure is maintained during a landslide event. Note – A site-specific landslide hazard (geotechnical) report is required to demonstrate compliance with PO3. The Landslide hazard (geotechnical) assessment report is to be prepared in accordance with PSP SC6.5 (Natural hazards). The building assessment provisions must address the stability of buildings and structures in relation to landslide hazard.

~~8.2.114 Waterways and wetlands overlay code~~

~~8.2.115~~

~~8.2.116 Application~~

~~8.2.117~~

~~8.2.118 This code applies to accepted and assessable development:~~

~~8.2.119~~

~~8.2.120 subject to the Waterways and wetlands overlay map contained within Schedule 2 (Mapping); and~~

~~8.2.121~~

~~8.2.122 identified as requiring assessment against the Waterways and wetlands overlay code by the tables of assessment in Part 5 (Tables of assessment).~~

~~8.2.123~~

~~8.2.124 Purpose and overall outcomes~~

~~8.2.125~~

~~8.2.126 The purpose of the Waterways and wetlands overlay code is to ensure that:~~

~~8.2.127~~

~~8.2.128 matters of environmental significance are protected;~~

~~8.2.129~~

~~8.2.130 ecological connectivity and habitat extent are maintained or enhanced;~~

~~8.2.131~~

~~8.2.132 wetlands and waterways are protected, maintained or enhanced; and~~

~~8.2.133~~

~~8.2.134 development in, or adjacent to, wetlands in a Great Barrier Reef catchment is planned, designed, constructed and operated to prevent the loss, or degradation of, the wetlands and their environmental values.~~

~~8.2.135~~

~~8.2.136 The purpose of the Waterways and wetlands overlay code will be achieved through the following overall outcomes:~~

~~8.2.137 development maintains or enhances the biodiversity values, and associated ecosystem services of, waterways and wetlands within the Whitsunday region;~~

~~8.2.138 development protects and establishes appropriate buffers to waterways and wetlands;~~

~~8.2.139 development protects known populations and supporting habitat of:~~

~~8.2.140 matters of national environmental significance, as listed in the *Environment Protection and Biodiversity Conservation Act 1999*;~~

~~8.2.141~~

~~8.2.142 endangered, vulnerable and near threatened flora and fauna species, as listed in the *Nature Conservation Act 1992*; and~~

~~8.2.143~~

~~8.2.144 regulated vegetation protected, under the *Vegetation Management Act 1999*;~~

~~8.2.145~~

~~8.2.146 development is planned, designed, constructed and managed to avoid, or mitigate, significant impacts on environmental values and processes of waterways and wetlands;~~

~~8.2.147 development ensures that viable connectivity is maintained or enhanced between matters of environmental significance and biodiversity values;~~

~~8.2.148~~

~~8.2.149 development protects the ecological values and processes, physical extent and buffering of waterways and wetlands;~~

~~8.2.150~~

~~8.2.151 development enhances existing wetland environmental values, or avoids adverse effects on, wetland environmental values;~~

~~8.2.152~~

~~8.2.153 Assessment benchmarks~~

~~8.2.154~~

~~8.2.155 Table 8.2.12.3.1 Benchmarks for accepted and assessable development~~

8.2.156 Performance Outcomes		8.2.157 Acceptable Outcomes	
8.2.158 All development			
8.2.159	8.2.160 Development avoids significant impacts on matters of environmental significance.	8.2.161	8.2.162 Development: 8.2.163 does not result in a significant impact on the identified environmental values; or 8.2.164 is located, designed and operated to avoid, or mitigate, significant impacts on the identified environmental values. 8.2.165 8.2.166 Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
8.2.167	8.2.168 Development protects and enhances ecological connectivity and/or habitat extent.	8.2.169	8.2.170 Development retains vegetation in areas large enough to maintain ecological values, functions and processes. 8.2.171 8.2.172 Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
8.2.173 Where development is within an urban area			
8.2.174 Plan to avoid/minimise new impacts			

8.2.156 Performance Outcomes		8.2.157 Acceptable Outcomes	
8.2.175	8.2.176 The development is planned and designed considering the land use constraints of the site for achieving stormwater design objectives.	8.2.177	8.2.178 A SQMP is prepared ensuring it: 8.2.179 is consistent with any local area stormwater management planning, and 8.2.180 provides for achievable stormwater quality treatment measures meeting design objectives listed in Table 8.2.12.3.2 (Stormwater management design objectives – Construction phase) and Table 8.2.12.3.3 (Stormwater management design objectives – Post construction phase), or 8.2.181 current best practice environmental management, reflecting land use constraints, such as: 8.2.182 erosive, dispersive and/or saline soil types; 8.2.183 landscape features (including landform); 8.2.184 acid sulfate soil and management of nutrients of concern; and 8.2.185 rainfall erosivity. 8.2.186 8.2.187 Editor's Note – Local area stormwater management planning may include Urban stormwater quality management plans, Catchment or waterway management plans, Healthy waters management plans, Water quality improvement plans or Natural resource management plans.
8.2.188	8.2.189 Development does not discharge wastewater to a waterway or off site unless demonstrated to be best-practice environmental management for that site.	8.2.190	8.2.191 A WWMP is prepared by a suitably qualified person and addresses: 8.2.192 wastewater type; 8.2.193 climatic conditions; 8.2.194 WQOs; and 8.2.195 best practice environmental management.

8.2.156 Performance Outcomes		8.2.157 Acceptable Outcomes	
		8.2.196	8.2.197 The WWMP provides that wastewater is managed in accordance with a waste management hierarchy that: 8.2.198 avoids wastewater discharges to waterways; or 8.2.199 if wastewater discharge to waterways cannot practicably be avoided, minimises wastewater discharge to waterways by re-use, recycling, recovery and treatment for disposal to sewer, surface water and groundwater.
8.2.200	8.2.201 Any non-tidal artificial waterway is compatible with the land use constraints of the site for protecting water environmental values in existing natural waterways.	8.2.202	8.2.203 If the proposed development involves a non-tidal artificial waterway: 8.2.204 environmental values in downstream waterways are protected; 8.2.205 any groundwater recharge areas are not affected; 8.2.206 the location of the waterway incorporates low lying areas of a catchment connected to an existing waterway; and 8.2.207 existing areas of ponded water are included.
		8.2.208	8.2.209 Non-tidal artificial waterways are located: 8.2.210 outside natural wetlands and any associated buffer areas; 8.2.211 to minimise the disturbance of soils or sediments; and 8.2.212 to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazardous areas.
8.2.213	8.2.214 Any non-tidal artificial waterway is compatible with existing tidal waterways.	8.2.215	8.2.216 Where a non-tidal artificial waterway is located adjacent to, or is connected to, a tidal waterway by means of a weir, lock, pumping system or similar: 8.2.217 there is sufficient flushing or a tidal range of >0.3 m; 8.2.218 any tidal flow alteration does not adversely impact on the tidal waterway; or 8.2.219 there is no introduction of salt water into freshwater environments.
8.2.220 Design to avoid/minimise new impacts			

8.2.156 Performance Outcomes		8.2.157 Acceptable Outcomes	
8.2.221	8.2.222 Stormwater does not discharge directly to a non-tidal artificial waterway without treatment to achieve stormwater quality management.	8.2.223	8.2.224 Any non-tidal artificial waterway is designed and managed for any of the following end-use purposes: 8.2.225 Amenity, including aesthetics, landscaping and recreation; 8.2.226 flood management; 8.2.227 stormwater harvesting as part of an integrated water cycle management plan; or 8.2.228 aquatic habitat.
		8.2.229	8.2.230 The end-use purpose of any non-tidal artificial waterway is designed and operated in a way that protects water environmental values.
8.2.231 Construct to avoid/minimise new impacts			
8.2.232	8.2.233 Construction activities avoid or minimise adverse impacts on stormwater quality.	8.2.234	8.2.235 An ESCP demonstrates that the release of sediment-laden stormwater is avoided for the nominated design storm and minimised when the nominated design storm is exceeded. 8.2.236 8.2.237 Editor's note – ESCP must address relevant design objectives outlined within SDAP Module 8. 8.2.238 8.2.239 Note – An Erosion and sediment control plan is to be prepared in accordance with PSP SC6.8 (WRC development manual).
		8.2.240	8.2.241 Erosion and sediment control practices, including any proprietary erosion and sediment control products, are designed, installed, constructed, operated, monitored and maintained. Any other erosion and sediment control practices are carried out in accordance with local conditions and appropriate recommendations from a suitably qualified person experienced with technical expertise in the field of Environmental engineering. 8.2.242 8.2.243 Note – An Erosion and sediment control plan is to be prepared in accordance with PSP SC6.8 (WRC development manual).

8.2.156 Performance Outcomes		8.2.157 Acceptable Outcomes	
		8.2.244	8.2.245 The ESCP demonstrates how stormwater quality will be managed in accordance with an acceptable regional or local guideline, so that target contaminants are treated. 8.2.246 8.2.247 Editor's note – ESCP must address relevant design objectives outlined within SDAP Module 8. 8.2.248 8.2.249 Note – An Erosion and sediment control plan is to be prepared in accordance with PSP SC6.8 (WRC development manual).
8.2.250 Operate to avoid/minimise new impacts			
8.2.251	8.2.252 Operational activities for the development avoids or minimises changes to waterway hydrology from adverse impacts of altered stormwater quality and flow.	8.2.253	8.2.254 Development (both construction and post-construction) incorporates stormwater flow control measures to achieve the design objectives set out in: 8.2.255 Table 8.2.12.3.2 (Stormwater management design objectives – Construction phase); and 8.2.256 Table 8.2.12.3.3 (Stormwater management design objectives – Post construction phase); or 8.2.257 current best practice environmental management, including management of frequent flows, peak flows, and construction phase hydrological impacts.
8.2.258	8.2.259 Wastewater discharge to a waterway is managed in a way that maintains ecological processes, riparian vegetation, waterway integrity and downstream ecosystem health.	8.2.260	8.2.261 Wastewater discharge to non-tidal artificial waterways is managed to avoid, or minimise, the release of nutrients of concern to minimise the occurrence, frequency and intensity of coastal algal blooms.

8.2.156 Performance Outcomes		8.2.157 Acceptable Outcomes	
		8.2.262	8.2.263 Development in coastal catchments avoids or minimises and appropriately manages soil disturbance or altering natural hydrology. 8.2.264 8.2.265 Note – Compliance with this outcome may be demonstrated by following the management advice in the guideline: Implementing policies and plans for managing nutrients of concern for coastal algal blooms in Queensland by the Department of Environment and Heritage Protection.
8.2.266	8.2.267 Any non-tidal artificial waterway is managed and operated by suitably qualified persons to achieve water quality objectives in natural waterways.	8.2.268	8.2.269 Any non-tidal artificial waterway is designed, constructed and managed under the responsibility of a suitably qualified registered professional engineer, Queensland (RPEQ) with specific experience in establishing and managing artificial waterways.
		8.2.270	8.2.271 Monitoring and maintenance programs adaptively manage water quality in any non-tidal artificial waterway to achieve relevant water-quality objectives downstream of the waterway.
		8.2.272	8.2.273 Aquatic weeds are managed in any non-tidal artificial waterway to achieve less than 10% of coverage of the water surface area. Pests and vectors, such as mosquitoes, are managed through avoiding stagnant water areas, providing for native fish predators and any other best practices for monitoring and treating pests.

8.2.156 Performance Outcomes		8.2.157 Acceptable Outcomes	
		8.2.274	8.2.275 Any non-tidal artificial waterway is managed and operated by a responsible entity under agreement for the life of the waterway. The responsible entity is to implement a deed of agreement for the management and operation of the waterway that: 8.2.276 identifies the waterway; 8.2.277 states a period of responsibility for the entity; 8.2.278 states a process for any transfer of, or responsibility for, the waterway; 8.2.279 states required actions under the agreement for monitoring the water quality of the waterway and receiving waters; 8.2.280 states required actions under the agreement for maintaining the waterway to achieve the outcomes of this code and any relevant conditions of a development approval; and 8.2.281 identifies funding sources for the above, including bonds, infrastructure charges or levies.
8.2.282 Where development is within or adjacent to waterways or Matters of state environmental significance (MSES) wetland			
8.2.283	8.2.284 Development ensures stormwater treatment is located clear of waterways and wetland areas.	8.2.285	8.2.286 Stormwater treatment devices are located entirely outside of waterways, waterway buffers and wetland areas.
8.2.287	8.2.288 Development: 8.2.289 retains, enhances and maintains the environmental values and functioning of waterways; and 8.2.290 provides and maintains adequate vegetated buffers and setbacks to waterways.	8.2.291	8.2.292 Cleared, degraded or disturbed waterway and waterway buffer areas within the site are rehabilitated. Such areas are rehabilitated along their full length to a suitable buffer width in accordance with expert ecological advice provided as part of the approved Ecological assessment report prepared in accordance with PSP SC6.2 (Environmental significance).
		8.2.293	8.2.294 Site layout does not impact upon the natural drainage systems associated with the waterway.

8.2.156 Performance Outcomes		8.2.157 Acceptable Outcomes	
		8.2.295	8.2.296 Development is undertaken in accordance with an approved Vegetation management plan prepared in accordance with PSP SC6.2 (Environmental features) that protects the waterway.
8.2.297	8.2.298 Bank stability, channel integrity and in-stream habitats are protected from degradation and maintained, or improved, at a standard commensurate with pre-development environmental conditions.	8.2.299	8.2.300 No direct interference or modification of waterway channels, banks or riparian and in-stream habitats occurs.
8.2.301	8.2.302 Existing natural flows of surface and groundwater are not altered through channelisation, redirection or interruption of flows.	8.2.303	8.2.304 Development ensures that the natural surface water and groundwater hydrologic regimes of waterways and associated buffers are maintained to the greatest extent possible.
8.2.305	8.2.306 Development on land adjacent to a waterway maintains an appropriate extent of public access to waterways and minimises edge effects.	8.2.307	8.2.308 Development adjacent to a waterway provides that: 8.2.309 no new lots directly adjoin the riparian area; and 8.2.310 a new road is located between the riparian buffer and the proposed development areas.
8.2.311	8.2.312 Development is not carried out in a wetland area.	8.2.313	8.2.314 Development is located outside: 8.2.315 the mapped boundary of a wetland area; or 8.2.316 an alternative mapped boundary of the wetland area, (submitted to Council and supported by a site assessment and analysis of the wetland to delineate its extent, in accordance with expert ecological advice provided as part of the approved Ecological assessment report prepared in accordance with PSP SC6.2 (Environmental features)).
8.2.317	8.2.318 Development does not result in the short or long-term degradation of environmental values of	8.2.319	8.2.320 Development, including associated infrastructure, provides for a buffer along the boundary adjoining wetland areas.

8.2.156 Performance Outcomes		8.2.157 Acceptable Outcomes	
	wetlands due to edge effects.	8.2.321	8.2.322 Development provides for buffer(s) of: 8.2.323 not less than 100m width, incorporating vegetated, representative of local native habitat, and degraded areas, requiring rehabilitation between the development and wetlands located on and/or adjacent to the site; or 8.2.324 dimension and characteristics that protect the long-term viability of the wetlands located on and/or adjacent to the site from negative impacts associated with the development on the site, in accordance with expert ecological advice provided as part of the approved Ecological assessment report prepared in accordance with PSP SC6.2 (Environmental significance).
8.2.325	8.2.326 The existing surface water hydrological regime of the wetland area is enhanced or maintained.	8.2.327	8.2.328 Development must: 8.2.329 provide a net ecological benefit and improvement to the environmental values and functioning of a wetland area; 8.2.330 rehabilitate the existing hydrological regime; or 8.2.331 restore the natural hydrological regime of the wetland area to enhance the ecological functions and biodiversity values of the wetland.

8.2.156 Performance Outcomes		8.2.157 Acceptable Outcomes	
		8.2.332	8.2.333 Development ensures the: 8.2.334 existing surface water hydrological regime of a wetland area does not change, including through channelisation, redirection or interruption of flows, as demonstrated in the approved Ecological assessment report prepared in accordance with PSP SC6.2 (Environmental features); or 8.2.335 extent of any change to the existing surface water hydrological regime is minimised to ensure wetland values and functioning are protected. The change is minimised if: 8.2.336 there is no change to the reference duration high flow and low flow duration frequency curves, low flow spells frequency curve and mean annual flow to and from the wetland; or 8.2.337 any relevant stream flows into the wetland comply with the relevant flow objectives of the applicable water resource plan for the area; or 8.2.338 for development resulting in an increase to the velocity or volume of stormwater flows into the wetland – the collection and re-use of stormwater occurs in accordance with (a) or (b).

8.2.339

8.2.340

8.2.341 Table 8.2.12.3.2 Stormwater management design objectives – Construction phase (Ref: SPP Appendix 2)

8.2.342 Issue	8.2.343 Design	8.2.344 Issue
8.2.345 Drainage control	8.2.346 Temporary drainage works	8.2.347 Design life and design storm for temporary drainage works: 8.2.348 disturbed area open for <12 months—1 in 2-year ARI event; 8.2.349 disturbed area open for 12–24 months—1 in 5-year ARI event; 8.2.350 disturbed area open for > 24 months—1 in 10-year ARI event. 8.2.351 Design capacity excludes minimum 150 mm freeboard. 8.2.352 Temporary culvert crossing—minimum 1 in 1-year ARI hydraulic capacity.
8.2.353 Erosion control	8.2.354 Erosion control measures	8.2.355 Minimise exposure of disturbed soils at any time. 8.2.356 Divert water run-off from undisturbed areas around disturbed areas. 8.2.357 Determine the erosion risk rating using local rainfall erosivity, rainfall depth, soil loss rate or other acceptable methods. 8.2.358 Implement erosion control methods corresponding to identified erosion risk rating.
8.2.359 Sediment control	8.2.360 Sediment control measures 8.2.361 8.2.362 Design storm for sediment control basins 8.2.363 8.2.364 Sediment basin dewatering	8.2.365 Determine appropriate sediment control measures using: 8.2.366 potential soil loss rate; or 8.2.367 monthly erosivity; or 8.2.368 average monthly rainfall. 8.2.369 Collect and drain stormwater from disturbed soils to sediment basin for design storm event: 8.2.370 design storm for sediment basin sizing is 80th% five-day event or similar. 8.2.371 Site discharge during sediment basin dewatering: 8.2.372 TSS < 50 mg/L TSS; 8.2.373 turbidity not >10% receiving waters turbidity; and 8.2.374 pH 6.5–8.5.
8.2.375 Water quality	8.2.376 Litter and other waste, hydrocarbons and other contaminants	8.2.377 Avoid wind-blown litter; remove gross pollutants. 8.2.378 Ensure there is no visible oil or grease sheen on released waters. 8.2.379 Dispose of waste containing contaminants at authorised facilities.
8.2.380 Waterway stability and flood flow management	8.2.381 Changes to the natural waterway hydraulics and hydrology	8.2.382 For peak flow for the 1-year and 100-year ARI event, use constructed sediment basins to attenuate the discharge rate of stormwater from the site.

8.2.383

8.2.384 Table 8.2.12.3.3 Stormwater Management Design Objectives - Post construction phase (Ref: SPP Appendix 2)

8.2.385 Climatic region	8.2.386 Design Objectives 8.2.387 Minimum reductions in mean and annual load from unmitigated development (%) 8.2.389 Total suspended solids	8.2.390 Total phosphorus	8.2.391 Total Nitrogen	8.2.392 Gross pollutants 8.2.393 > 5 mm	8.2.388 Application
8.2.394 Central Queensland (North)	8.2.395 75	8.2.396 60	8.2.397 40	8.2.398 90	8.2.399 Development for urban purposes within population centres greater than 3,000 persons.
8.2.400 All	8.2.401 N/A	8.2.402 N/A	8.2.403 N/A	8.2.404 N/A	8.2.405 Excludes development that is less than 25% impervious. 8.2.406 8.2.407 In lieu of modelling, the default bio-retention treatment area to comply with load reduction targets for all Queensland regions is 1.5% of the contributing catchment area.
	8.2.408 Waterway stability management 8.2.409 8.2.410 Limit the peak 1-year ARI event discharge within the receiving waterway to the pre-development peak 1-year ARI event discharge.				8.2.411 Catchments contributing to un-lined receiving waterway may not require compliance if the waterway is degraded. 8.2.412 8.2.413 For peak flow the 1-year ARI event, use co-located storages to attenuate site discharge rate of stormwater.

8.2.414

8.2.415

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Part 9 Development codes

9.1 Preliminary

(1) Development codes are codes for assessment where identified as an applicable code in Part 5 (Tables of assessment).

(2) The following codes and requirements apply to development under Schedule 6 of the Regulation, which are relevant for the Planning Scheme.

(3) Use codes and other development codes are specific to each Planning Scheme area.

(4) The following are the codes and requirements under the Regulation for development in the Planning Scheme area:

(a) Community residence code requirements applying to development that may not be made assessable development under the Planning Scheme

(b) Cropping involving forestry for wood production code applying to development that may not be made assessable development under the Planning Scheme

(c) Reconfiguring a lot (subdividing one lot into two lots) and associated Operational works code applying to development for which code assessment is required under Schedule 10, part 12 and Schedule 10, Part 14 Division 2 of the Regulation.

(5) The following are the use codes for the Planning Scheme:

(a) Business activities code

(b) Caretaker's accommodation code

(c) Child care centre code

(d) Dual occupancy code

(e) Dwelling house code

(f) Extractive industry code

~~(f)~~

(g) Home based business code

(h) Industry activities code

(i) Market code

~~(j) Multi-unit code~~

(j) Relocatable home park and tourist park code

(k) Renewable energy facilities code

(l) Residential care and retirement facility code

(m) Rural activities code

~~(m)~~(n) Rural tourism code

~~(n)~~(o) Sales office code

(p) Service station code

~~(o)~~(q) Short-term accommodation and multi-unit uses code

~~(p)~~(r) Telecommunication facility code

(6) The following are the other development codes for the Planning Scheme:

(a) Advertising devices code

(b) Construction management code

(c) Excavation and filling code

(d) Healthy waters code

~~(c)~~

~~(d)~~(e) Infrastructure code

~~(e)~~(f) Landscaping code

~~(f)~~(g) Reconfiguring a lot code

~~(g)~~(h) Transport and parking code

9.2 Development that cannot be made assessable in accordance with Schedule 6 of the Planning Regulation 2017

9.2.1 Community residence requirements

Development for a community residence that complies with the acceptable outcomes in Table 9.2.3.1 is accepted development.

Table 9.2.3.1 Community residence for accepted development only

Requirements	
1.	The premises are in a residential zone or rural residential zone.
2.	No more than 7 support workers attend the residence in a 24-hour period.
3.	At least 2 car parks are provided on the premises for use by residents and visitors.
4.	At least 1 of the car parks stated in (3) is suitable for persons with disabilities.
5.	At least 1 car park is provided on the premises for use by support workers.

Editor's note—Schedule 6, Part 2, (6) of the Regulation states the development the Planning Scheme is prohibited from making assessable development for a material change of use for community residence.

9.2.2 Requirements for Cropping involving forestry for wood production code for accepted development

Table 9.2.2.1 Code for accepted development that is a material change of use for cropping (involving forestry for wood production) or operational work for harvesting trees for wood production.
~~**Table 9.2.3.11 Code for accepted development that is a material change of use for cropping involving forestry for wood production or operational work for harvesting trees for wood production.**~~

Requirements	
Setbacks	
1	The use or work is at a distance of at least the separation distance stated in Table 9.2.2.2 **- Separation distances** ~~Table 9.2.3.12~~ below taken from the Regulation Schedule 13 Part 2 Table 1, column 2 Separation distances.
2	Seedlings within the separation distance stated in requirement (1) are removed if the seedlings: (i) are the same species as the trees to be harvested; and (ii) are not native to the local area.
Impacts on soil structure, fertility and stability	
3	For land with a slope of more than 10% but less than 25% - the development uses only— (a) mechanical strip cultivation on the contour; (b) spot cultivation; or (c) manual cultivation.
4	For land with a slope of 25% or more – the development uses only— (a) spot cultivation; or (b) manual cultivation.
5	The construction, operation or maintenance of a track or road for the development does not adversely affect – (a) a natural drainage feature on the land; or (b) land that is subject to erosion or landslide.
6	A track or road for the development – a) is appropriately drained; and b) has a stable surface.
7	Drainage structures for a track or road for the development are regularly maintained.
8	Drainage water from a track or road for the development is directed away from exposed soils, and onto undisturbed ground or other areas with a stable surface.
Fire risk	
9	For development involving a forest for wood production that is less than 40ha - a fire break that is at least 7m wide, measured from the base of the outermost tree in the forest to be harvested, is established and maintained.
10	For development involving a forest for wood production that is at least 40ha, but less than 100ha — a fire break that is at least 10m wide, measured from the base of the outermost tree in the forest to be harvested, is established and maintained.
11	For development involving a forest for wood production that is 100ha or more—

	(a) a fire break that is at least 20m wide, measured from the base of the outermost tree in the forest to be harvested, is established and maintained; or (b) both of the following things are established and maintained— (i) a fire break that is at least 10m wide, measured from the base of the outermost tree in the forest to be harvested; and (ii) a fuel reduction area immediately behind the fire break that is at least 10m wide.
12	Trees to be harvested in the fuel reduction area are pruned to a minimum height of 5m when the trees reach a height of 10m.
13	Fire breaks are kept clear of flammable material with a height of more than 1m.
14	Fire access tracks and roads with a minimum width of 4m wide are established and maintained on the premises.
15	Each part of the forest for wood production is within 250m of a fire access track or road.
16	Despite requirement (1), the following works may be carried out within the separation distance mentioned in Table 9.2.2.2 **- Separation distances** ~~Table 9.2.3.12~~ - Separation distances— a) the construction of roads and tracks for the development; or b) maintenance works for the development.

Table 9.2.2.2 - Separation distances

Column 1 Structure or thing	Column 2 Separation distance
1 A watercourse shown on the regulated vegetation management map (1:100,000) and classified as stream order 1 to 2 under the Strahler stream order classification system	5m from the defining bank of the watercourse.
2 A watercourse shown on the regulated vegetation management map (1:100,000) and classified as a stream order 3 to 5 under the Strahler stream order classification system	10m from the defining bank of the watercourse.
3 A watercourse shown on the regulated vegetation management map (1:100,000) and classified as a stream order 6 under the Strahler stream order classification system	20m from the defining bank of the watercourse.
4 A State-owned protected area or forest reserve under the *Nature Conservation Act 1992*	10m from the boundary of the protected area or forest reserve.
5 category A area, category B area, category C area or category R area	10m from the boundary of the area.
6 A dwelling	100m from the dwelling, or another distance that complies with the Building Code and AS 3959-2009 *'Construction of buildings in bushfire prone areas".*
7 A machinery shed	A distance that is the greater of the following: (a) 25m from the machinery shed; or (b) A distance from the structure that equals 1.5 times the maximum height of the trees to be harvested
8 A transmission grid, supply network or above-ground pipeline, that services more than 1 premises and is not the subject of an easement.	A distance that is the longer of the following: (a) 25m from the structure; or (b) A distance from the structure that equals 1.5 times the maximum height of the trees to be harvested

9.2.3 Reconfiguring a lot (subdividing one lot into two lots) and associated operational works code

9.2.3.1 Purpose

The purpose of the Reconfiguring a lot (subdividing one lot into two lots) and associated operational works code is for assessing applications for development for reconfiguring a lot that requires assessment as regulated in Part 5, Section 5.4 under Table 5.4.2 (Regulated categories of assessment: reconfiguring a lot).

Editor's note—Schedule 12 (3) of the Regulation sets out the assessment benchmarks for the reconfiguring a lot.

This code applies to a reconfiguring of a lot if:

(a) The lot is in an industrial zone or residential zone (other than a park residential zone or rural residential zone);
(b) The reconfiguration is the subdivision of 1 lot, other than a rear lot, into 2 lots (each a created lot);
(c) Each created lot is at least the minimum lot size for the relevant zone stated in a local instrument; and
(d) the reconfiguration is consistent with the purpose statement for the relevant zone stated in a local instrument.

However, this code does not apply if:

(a) all or part of the premises, is in an erosion prone area or any of the following areas under a local instrument:
    (i) a flood hazard area;
    (ii) a bushfire hazard area;
    (iii) a landslide hazard area;
    (iv) a storm tide inundation area; or
(b) an overlay in a local instrument applies to all or part of the premises or any part of the premises.

For this section –

Industrial zone means area, (however described), designated in a local categorising instrument as industrial.
Relevant zone means the zone applying to premises under a local instrument.

A reference to a local instrument is a reference to a local instrument applying to the premises.

Table 9.2.3.1 Reconfiguring a lot (subdividing one lot into two lots) and associated operational works requiring code assessment

Requirements	
1.	The frontage of each created lot complies with the minimum frontage requirements for the relevant zone stated in a local instrument.
2.	The building envelope of each created lot complies with the building envelope requirements for the relevant zone stated in a local instrument.
3.	The reconfiguration involves the creation of a rear lot, only if the local instrument states that a rear lot is consistent with the relevant zone.
4.	The number of lots, including rear lots adjoining each created lot, complies with the maximum number of adjoining lots of the relevant zone stated in a local instrument.
5.	If the reconfiguration creates a rear lot: (i) an access strip for the rear lot does not adjoin the access strip of more than 1 other rear lot; and (ii) no more than 2 rear lots are accessed from the head of a single cul-de-sac

6.	If a local instrument states minimum setback distances for the relevant zone, the distance of a building or structure from a boundary of a created lot complies with the minimum distances stated in the local instrument.
7.	If the reconfiguration is in a residential zone and a local instrument does not state minimum setback distances for the zone, the distance of an existing building or structure from a boundary of a created lot complies with the minimum setback distances stated in the Queensland Development Code, Parts 1.1 to 1.3
8.	A new building or structure on the premises: (i) will comply with the Queensland Development Code, Part 1.4; and (ii) will be outside of an existing or planning infrastructure easement.
9.	Each created lot has access to the road network through: (i) direct road frontage; (ii) an access strip; or (iii) an access easement, if a local instrument states that an access easement is consistent with the relevant zone.
10.	Access from each created lot to the road network is: (i) lawful, safe and practical; and (ii) designed and built in accordance with requirements for the relevant zone stated in a local instrument, including requirements about width, length or gradient.
11.	If a local instrument does not state a minimum width requirement for an access strip or access easement in the relevant zone, an access strip or access easement for a created lot has a minimum width of: (i) for reconfiguring a lot in a residential zone—5m; or (ii) for reconfiguring a lot in an industry zone—8m.
12.	If a local instrument does not state a maximum length requirement for an access strip or access easement in the relevant zone, an access strip or access easement for a created lot has a maximum length of 50m.
13.	If the premises are in a reticulated water area, each created lot is connected to the reticulated water supply system.
14.	If the premises are not in a reticulated water area, each created lot has an alternative potable water supply source that complies with the minimum storage capacity requirements for the relevant zone stated in a local instrument.
15.	If the premises is in an area with a sewerage service, each created lot is connected to the sewerage service.
16.	If the premises is not in an area with a sewerage service, each created lot has an effluent treatment and disposal system designed and built in accordance with the requirements stated in a local instrument.
17.	Each lot is connected to a supply network and telecommunication network, if required under a local instrument.
18.	Any other infrastructure necessary to service the lots will be provided, designed and built in accordance with the requirements stated in a local instrument.
19.	The release of sediment from the premises, including from erosion and sediment-laden stormwater runoff: (i) is minimised during and after construction; and (ii) complies with the requirements stated in a local instrument.
20.	Filling and excavation on the premises: (i) does not cause a vertical change to the natural ground level of more than 1m; and (ii) does not result in ponding on the premises or adjoining land; and (iii) complies with the requirements stated in a local instrument.

9.3 Use codes

9.3.1 Business activities code

9.3.1.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Business activities code by the tables of assessment in Part 5 (Tables of assessment).

9.3.1.2 Purpose and overall outcomes

(1) The purpose of the Business activities code is to ensure that Business activities:

(a) are developed in a manner consistent with the Whitsunday regions hierarchy of centres; and

(b) are of a high quality design which reflects good centre design principles and appropriately responds to local character, environment and amenity considerations.

(2) The purpose of the Business activities code will be achieved through the following overall outcomes:

(a) a Business activity is of a type, scale and intensity that is consistent with and reinforces the Whitsunday regions hierarchy of centres;

(b) a Business activity incorporates building and landscape design that responds to the Region's tropical climate as well as the character of the particular local area;

(c) a Business activity is integrated into its surrounds and reflects high quality town centre design, streetscape and landscaping principles; and

(d) a Business activity avoids or mitigates adverse impacts upon the amenity, privacy or environmental quality of nearby Accommodation activities.

9.3.1.3 Assessment benchmarks

Table 9.3.1.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Relationship of buildings to streets and public spaces			
PO1	The Business activity is in a building that clearly defines frames or encloses the street and other useable public and semi-public open space.	**AO1.1**	The building is located close to the street frontage and other urban spaces for all or most of its length to create a continuous or mostly continuous edge.
		AO1.2	The building is sited and designed, such that: (a) the main pedestrian entrance to the building, or group of buildings, is located on the primary street frontage; (b) pedestrian access to the entrance of the building(s) or individual dwellings is easily discerned by

Performance Outcomes		Acceptable Outcomes	
			landscaping, lighting, signage or architectural elements from the primary street frontage; and (c) the building addresses the street and has its pedestrian entrances fronting the street.
		AO1.3	Car parking areas, service areas and driveways: (a) are located and configured so that they do not dominate the streetscape; and (b) are separate from the pedestrian access.
PO2	The Business activity provides for footpaths, walkways and other spaces intended primarily for pedestrians to be comfortable to use and adequately sheltered from excessive sunlight and inclement weather.	**AO2.1**	Any building provides adequate and appropriate shelter along or around the street in the form of an awning, colonnade, verandah or the like with a width: (a) that is 3m wide or to within 1m of any kerb, whichever is less; or ~~(a)~~ if awnings on adjoining premises are greater than 3m in width, awnings provided are consistent with the width and height of the adjoining awning, to within 1m of any kerb. ~~(b) of 3.2m to 4m; or~~ ~~(c)~~(b) ~~consistent with the width of shelter provided to adjoining premises.~~
PO3	The Business activity is in a building which is designed to create vibrant and active streets and public spaces.	**AO3.1**	Development provides for a minimum of 65% of the building frontage to a public street or other public space to present with clear or relatively clear windows and glazed doors.
		AO3.2	The building incorporates activities that are likely to foster casual, social and business interaction for extended periods, such as shops, food and drink outlets and the like.
		AO3.3	Development minimises vehicular access across active street frontages.
Building mass and composition			
PO4	The Business activity is in a building that enhances the character and amenity of streets and neighbouring premises via a built form that:	**AO4.1**	Except where otherwise provided for in a zone or local plan code: (a) site cover of a building does not exceed:

Performance Outcomes		Acceptable Outcomes	
	(a) is closely related to streets, public spaces and pedestrian routes; (b) maintains some area free of buildings at ground level to facilitate pedestrian movement and other functions associated with the building; (c) ensures access to attractive views and prevailing cooling breezes; and (d) avoids excessively large building floor plates and building facades.		(i) 70% for that part of a building not exceeding 8.5m in height; and (ii) 50% for that part of a building exceeding 8.5m in height; (b) buildings are set back from street frontages: (i) not more than 3m for that part of a building not exceeding 8.5m in height; and (ii) at least 6m for that part of a building exceeding 8.5m in height; and (c) buildings are set back from other site boundaries: (i) 0m, if not exceeding 8.5m in height and adjoining an existing blank wall or vacant land on an adjoining site; (ii) at least 3m, if not exceeding 8.5m in height and adjoining an existing wall with openings on an adjoining site; and (iii) at least 6m for that part of a building exceeding 8.5m in height.
		AO4.2	Any projection above the podium level outside the boundaries of the building envelope is limited to balconies that do not project more than 1.5m into the setback.
		AO4.3	All storeys of a building above the third storey have a plan area that does not exceed 1,000m² in plan area with no horizontal dimension exceeding 45m.
Building features and articulation			
PO5	The Business activity is in a building, which: (a) provides visual interest through form and facade design; (b) provides outdoor or semi-enclosed public spaces that complement adjoining indoor spaces; and (c) responds to the character and amenity of neighbouring premises and the streetscape.	**AO5.1**	The building has articulated and textured façades that incorporate some or all of the following design features to create a high level of openness and visual interest and provide shading to walls and windows: (a) wide colonnades, verandahs, awnings, balconies and eaves; (b) recesses, screens and shutters; and/or (c) windows that are protected from excessive direct

Performance Outcomes		Acceptable Outcomes	
			sunlight during warmer months.
		AO5.2	Outdoor or semi-enclosed public spaces are sited to promote an attractive central core or entrance space, with plantings and seating arrangements that foster its function as a desirable meeting or resting point.
		AO5.3	The building is articulated and finished in ways that respond to significant built form elements of adjacent buildings and the streetscape, such as continuity of colonnades, verandahs, balconies, eaves, parapet lines and roof forms.
		AO5.4	The building incorporates vertical and horizontal articulation, such that no unbroken elevation is longer than 15m.
		AO5.5	The building has a top level and roof form that is shaped to: (a) provide a visually attractive skyline silhouette; and (b) screen mechanical plant and equipment from view.
PO6	~~Where the Business activity involves the development of a multi-storey building the building is designed to display the functional differences between the ground level and above ground level spaces~~ Development utilises podiums, awnings, articulation, an attractive roofline and landscaping to improve visual interest, visual amenity and reduce building bulk when viewed from the street or adjoining pedestrian pathway.~~.~~	**AO6.1**	A building, having a height of more than 8.5m, incorporates built form elements that help to differentiate between the podium and other building levels, including: (a) landscaping; (b) articulation; or ~~(a)~~(c) variations in building colour, material or trimmings~~.~~.
		AO6.2	Podium areas may be utilised as a private balcony, semi-public space or communal space and must be free of built form with the exception of: (a) awnings or shade structures over the useable podium level space; and (b) balcony fencing that is at least 50% transparent. Editor's note - 'Communal' and 'semi-public space' is defined within Schedule 1.2 Administrative definitions.
Environmental management and amenity of residential premises			
PO7	The Business activity does not unreasonably impact upon the amenity or environmental quality of its environs and	**AO7.1**	Undesirable visual, noise and odour impacts on public spaces and sensitive uses are avoided or reduced by:

Performance Outcomes		Acceptable Outcomes	
	especially any nearby sensitive uses.		(a) where appropriate, limiting the hours of operation of the Business activity to maintain acceptable levels of residential amenity relative to the site context and setting; (b) providing vehicle loading/unloading and refuse storage/collection facilities within enclosed service yards or courtyards that are not visible from the street; and (c) not locating site service facilities and areas along any frontage to a public street, sensitive uses or other urban space.
		AO7.2	Where the Business activity requires the use of acoustic attenuation measures to mitigate adverse impacts on nearby sensitive uses, such measures are designed and constructed to be compatible with surrounding development and the local streetscape.
		AO7.3	Glare conditions or excessive light spill onto adjacent sites and public spaces are avoided or minimised through measures, such as: (a) selection and location of light fixtures; (b) use of building design/architectural elements or landscape treatments to block or reduce excessive light spill to locations where it would cause a nuisance to residents or the general public; and (c) alignment of streets, driveways and servicing areas to minimise vehicle headlight impacts on adjacent residential premises.
PO8	Untreated trade waste contaminated water must not enter stormwater drains. Note -: Developments must comply with Council's Trade Waste Policy.	**AO8.1**	Backwash from commercial swimming pools, ornamental ponds and spas must be able to be connected to the reticulated sewer system and not to the environmental/stormwater network.
		AO8.2	Refuse disposal and recycling areas:

Performance Outcomes		Acceptable Outcomes	
			(a) are provided on-site; (b) are imperviously sealed, bunded and roofed; (c) contain a hose down area draining to the sewer network with appropriate pre-treatment; and (d) does not drain into the stormwater network.
		AO8.3	Wash down bays for vehicles and boats: (a) are on a hardstand area with a minimum 1:80 grade for wash water drainage; (b) are connected to the reticulated sewerage system; (c) prevent the intrusion of rainwater; and (d) pre-treatment equipment areas are within a roofed wash bay bund, or in a separate approved roofed and bunded area that drains to the pump chamber.
~~PO8~~PO9	The Business activity maintains the reasonable privacy and amenity of Accommodation activities, such that the use of indoor and outdoor living areas by residents is not unreasonably diminished.	~~AO8.1~~AO	Where the development is adjacent to an existing or approved building containing Accommodation activities, the reasonable privacy and amenity of such uses is maintained by: (a) siting and orienting buildings to minimise the likelihood of overlooking occurring; (b) having windows and outdoor areas, including balconies and terraces, located and designed to not look into dwellings or rooming units; and (c) incorporating screening over building openings.
~~PO9~~PO10	Where the Business activity is part of a mixed use development involving Accommodation activities in the same building, the development provides residents with reasonable levels of privacy and security.	~~AO9.1~~AO	Entry areas for the residents of, and visitors to, dwellings or rooming units are provided: (a) separately from entrances for other building users; and (b) for safe entry from streets, car parking areas and servicing areas.
		~~AO9.2~~AO	Clearly marked, safe and secure parking areas are provided for residents and visitors, which are separate from parking areas provided for other building users.
		~~AO9.3~~AO	Security measures are installed, such that other building users

Performance Outcomes		Acceptable Outcomes	
			do not have access to areas that are intended for the exclusive use of residents of, and visitors to, Accommodation activities.
		~~AO9.4~~AO	Buildings provide opportunities for casual surveillance of any adjoining street or other public space.
		~~AO9.5~~AO	All access points, footpaths, car parks, building entrances and foyers are illuminated.
		~~AO9.6~~AO	The Business activity achieves the environmental values for the acoustic environment and acoustic quality objectives for sensitive receiving environments set out in the *Environmental Protection (Noise) Policy 2008*.
Requirements for a shop (corner store) in a residential zone			
~~PO10~~PO	Where the Business activity involves the establishment of a corner store in a residential zone, the corner store is: (a) appropriately located in the residential zone taking into account the size and configuration of the neighbourhood and the location of other existing or approved retail facilities; and (b) compatible with the scale and intensity of development in the neighbourhood.	~~AO10.1~~A	The corner store is located on a site that is more than 400m radial distance from any: (a) existing shop; (b) site with a current approval for a shop; or (c) land included in a centre zone.
		~~AO10.2~~A	The building in which the corner store is located does not exceed a gross floor area of 150m².
Requirements for a Business activity in an industry zone			
~~PO11~~PO	Buildings and structures associated with the Business activity are: (a) of a scale and design which is appropriate to an industrial setting, whilst contributing positively to the visual character and streetscape of the area; and (b) designed to avoid or mitigate the potential for adverse amenity impacts on adjoining or nearby sensitive uses.	~~AO11.1~~A	Buildings and structures are setback a minimum of: (a) 9m to the primary street frontage; (b) 3m to any secondary street frontage; and (c) 10m from any side or rear boundary where adjoining a sensitive land use or land in a residential zone or the Community facilities zone; or (d) 0.75m from any side or rear boundary, where not adjoining a sensitive land use, land in a residential zone or the Community facilities zone; or

Performance Outcomes		Acceptable Outcomes	
			(e) where less than 0.75m to the boundary, maintenance free.
Requirements for a Business activity in the Tourist accommodation zone			
PO13	A Business activity in the Tourist accommodation zone is: (a) appropriately located, taking into account the size and configuration of the area and the location of other existing or approved Business activities; and (b) compatible with the scale and intensity of development in the neighbourhood.	**AO13.1**	The Food and drink outlet is located more than 400m radial distance from any: (a) existing Food and drink outlet; (b) site with a current approval for a Food and drink outlet; or (c) land included in a Centre zone.
		AO13.2	The Shop is located more than 400m radial distance from any: (a) existing shop; (b) site with a current approval for a shop; or (c) land included in a Centre zone.
		AO13.3	The Business activity does not exceed a gross floor area of 150m².

9.3.2 Caretaker's accommodation code

9.3.2.1 Application

This code applies to accepted and assessable development:

(a) being a material change of use for caretaker's accommodation; and

(b) identified as requiring assessment against the Caretaker's accommodation code by the tables of assessment in Part 5 (Tables of assessment).

9.3.2.2 Purpose and overall outcomes

(1) The purpose of the Caretaker's accommodation code is to provide for the development of caretaker's accommodation use, which provides acceptable levels of amenity for occupants.

(2) The purpose of the Caretaker's accommodation code will be achieved through the following overall outcomes:

(a) caretaker's accommodation is used for genuine caretaking or property management purposes;

(b) caretaker's accommodation remains ancillary to non-residential premises on the same site;

(c) an acceptable level of residential amenity is provided for occupants of caretaker's accommodation; and

(d) caretaker's accommodation does not adversely impact upon the amenity of the local area.

9.3.2.3 Assessment benchmarks

Table 9.3.2.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Use requirements			
PO1	The caretaker's accommodation is used for genuine caretaking or property management purposes.	**AO1.1**	The caretaker's accommodation is occupied by a person or persons having responsibility for the security, maintenance or management of non-residential activities conducted on the same site and, if applicable, that person's immediate family.
PO2	The caretaker's accommodation is ancillary to the non-residential premises on the same site.	**AO2.1**	The caretaker's accommodation has a gross floor area not exceeding 70m².
		AO2.2	No more than one caretaker's accommodation is established on the site.
		AO2.3	The caretaker's accommodation does not have a separate land title from the balance of the site.
Protection of residential amenity			
PO3	The design of the caretaker's accommodation achieves an acceptable level of residential	**AO3.1**	Bedrooms and living rooms of the caretaker's accommodation face away from, and do not adjoin, noise generating

Performance Outcomes		Acceptable Outcomes	
	amenity for residents of the caretaker's accommodation.		activities conducted on the site or adjoining sites.
		AO3.2	Waste service areas are located at least: (a) 1m away from any adjacent side or rear property boundary; and (b) 3m from bedrooms, living rooms and private open space of the caretaker's accommodation.
PO4	The caretaker's accommodation is provided with adequate private open space that is useable and directly accessible from the caretaker's accommodation.	**AO4.1**	The caretaker's accommodation contains an area of private open space, which is directly accessible from a habitable room and: (a) if at ground level, has an area of not less than 16m², with no horizontal dimension of less than 4m; or (b) if a balcony, verandah or deck has an area of not less than 10m², with no horizontal dimension of less than 2.5m.
PO5	The design of the caretaker's accommodation is compatible with the preferred character of the zone in which it is located.	**AO5.1**	The caretaker's accommodation does not exceed the maximum building height for the zone in which it is located, as specified in the applicable zone code.
On-site car parking			
PO6	Sufficient on-site car parking is provided to satisfy the projected needs of the caretaker's accommodation and is appropriately designed to facilitate ease of use.	**AO6.1**	A minimum of 1 on-site parking space is provided for exclusive use by the occupants of the caretaker's accommodation.
		AO6.2	Development provides access driveways, internal circulation, manoeuvring areas and on site car parking areas in accordance with AS2890 (Parking facilities: Off-street car parking).

9.3.3 Child care centre code

9.3.3.1 Application

This code applies to assessable development:

(a) being a material change of use for a child care centre; and

(b) identified as requiring assessment against the Child care centre code by the tables of assessment in Part 5 (Tables of assessment).

9.3.3.2 Purpose and overall outcomes

(1) The purpose of the Child care centre code is to ensure child care centres are appropriately located and are designed in a manner which provides a safe environment for users and protects the amenity of surrounding premises.

(2) The purpose of the Child care centre code will be achieved through the following overall outcomes:

(a) a viable child care centre network is established and maintained for the Whitsunday region;

(b) child care centres are conveniently located close to residential communities or major employment nodes;

(c) the health and safety of children is not compromised by incompatible land use activities or poor design; and

(d) a child care centre does not have a detrimental impact on the amenity of surrounding residential premises.

9.3.3.3 Assessment benchmarks

Table 9.3.3.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	The child care centre is co-located with other compatible Community activities or Business activities to maximise accessibility.	**AO1.1**	The child care centre is located: (a) within 400m of, or is integrated with, another compatible Community activity; (b) on a conveniently accessible site at the entrance to a residential neighbourhood; or (c) in an activity centre or other employment area.
PO2	The child care centre is located on a road, which is accessible and safe but not predominately used by local residential traffic.	**AO2.1**	The child care centre is located on a site with access and frontage to a collector street.
PO3	The child care centre is located and designed to ensure that children and staff are not exposed to unacceptable levels of noise, unhealthy air emissions contaminants or other unacceptable risks, such	**AO3.1**	The child care centre is located on a site where: (a) soils are not contaminated by pollutants, which represent a health or safety risk to children and staff;

Performance Outcomes		Acceptable Outcomes	
	as gas, sewerage tanks, medium and high industry, and other nuisances.		(b) maximum concentrations of air pollutants are less than those recommended by the National Health and Medical Research Council; and (c) noise levels from external sources, measured at the maximum L10 [1 hour], are less than: (i) 35dB(A) within buildings; and (ii) 55dB(A) when measured at the centre of any outdoor play area.
PO4	The child care centre is located on a site that is capable of accommodating a well-designed, safe and integrated facility.	**AO4.1**	The child care centre is located on a site having: (a) a slope of not more than 10%; and (b) a regular shape.
Protection of residential amenity			
PO5	The child care centre is sited and designed to complement the local streetscape and reflect the character of the locality, while maintaining residential amenity and mitigating adverse impacts, such as noise and light nuisance.	**AO5.1**	All buildings, structures and outdoor play areas are setback at least 3m from all site boundaries adjoining an Accommodation activity or land, included in a residential zone.
		AO5.2	A 2m high acoustic screen fence is erected along the full length of all site boundaries adjoining an Accommodation activity or land included in a residential zone.
Services and utilities			
PO6	An appropriate level of water and sewerage infrastructure is provided to the child care centre to: (a) allow for the efficient functioning of the facility; and (b) maintain acceptable public health and environmental standards.	**AO6.1**	(a) The childcare centre is connected to the reticulated water supply and sewerage network; or (b) Where a reticulated water supply and sewerage network is not available: (i) satisfactory alternative means of potable water supply is provided; and (ii) an adequate standard of on site effluent treatment and disposal is provided.
Parking and access			
PO7	A safe set-down and pick-up area is provided, with all on site parking and vehicle manoeuvring areas located and designed to minimise conflicts	**AO7.1**	Set down and pick up areas: (a) provide an appropriate number of bays, with a drive through lane located at the front of the site; (b) provide good visibility; and

Performance Outcomes		Acceptable Outcomes	
	between private motor vehicles and pedestrians.		(c) are adequately covered to provide protection from weather elements.
		AO7.2	Convenient, safe and clearly visible pedestrian access is available within and to the site, which does not cross access driveways.

9.3.4 Dual occupancy code

9.3.4.1 Application

This code applies to accepted and assessable development:

(a) being for building work for a dual occupancy; and

(b) identified as requiring assessment against the Dual occupancy code by the tables of assessment in Part 5 (Tables of Assessment).

9.3.4.2 Purpose and overall outcomes

(1) The purpose of the Dual occupancy code is to ensure that development involving a dual occupancy achieves a high level of comfort and amenity for occupants, maintains the amenity and enjoyment of neighbouring premises and is compatible with the character of the streetscape and surrounding area.

(2) The purpose of the Dual occupancy code will be achieved through the following overall outcomes:

(a) a dual occupancy makes a positive contribution to the streetscape character of the area in which it is located;

(b) a dual occupancy is sited and designed to protect the amenity, privacy and access to sunlight of adjoining residential premises;

(c) a dual occupancy provides a high level of amenity and safety for residents of the dual occupancy; and

(d) a dual occupancy is provided with an acceptable level of infrastructure and services.

9.3.4.3 Assessment benchmarks

Table 9.3.4.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Site suitability			
PO1	The dual occupancy is located close to local services and public transport and has sufficient area to accommodate the dual occupancy and associated access, parking, landscaping and setback requirements.	**AO1.1**	The A dual occupancy is located on a lot in the Low-medium density residential zone, Mixed use zone or a Ccentre zone.
		AO1.2	The A dual occupancy is located on a lot having a minimum area of 800m².
Siting, design and layout			
PO2	A Dual occupancy facilitates residential amenity in line with the surrounding neighbourhood and residential character, through the siting, layout, landscaping and design of a development that is responsive to the size of the premises, including:	**AO2.1**	Car parking spaces may be in tandem, provided one space is behind the road setback.
		AO2.2	Garage openings facing the street do not exceed 6m or 50% of the street frontage, whichever is the lesser.
		AO2.3	Where fencing is not provided, street frontages are adequately landscaped, including shade trees, to visually define the

Performance Outcomes		Acceptable Outcomes	
	(a) adequate building setbacks from the front, side and rear boundary; (b) natural light and ventilation through the building; (c) site cover; (d) building height; (e) privacy and overlooking; (f) building maintenance setbacks; (g) sight lines on corner blocks; (h) private open space; and (i) on-site car parking.		boundary between private and public land.
		AO2.4	Development involving pier and pole construction includes Queenslander architectural design elements to reduce visibility of the underside of the building and minimise building bulk from the Street, including decorative features that cast shadows, such as timber battens or lattice screens and: (a) landscaping; or (b) verandahs or stairs fronting the street.
Domestic outbuildings			
PO3	Domestic outbuildings associated with a Dual occupancy are of a scale, location and built form that: (a) contributes positively to the streetscape; (b) have a design and built form that complements the residential character of the area; and (c) avoids negative impacts on the streetscape or adjoining properties.	**AO3.1**	Domestic outbuildings within a Residential zone or Mixed-use zone are of a scale and size that adheres to the surrounding residential character, including: (a) maximum combined floor area equivalent to 9% of the site area, or 72m², whichever is the least; (b) a maximum length of 12m in one plane; and (c) a maximum length-to-width ratio of 2:1. Editor's note – Domestic outbuildings are defined as non-habitable sheds or car ports. 'Liveable sheds' are defined as a Dwelling house. Residential zones are defined by Table 1.2.1 of the Planning Scheme.
~~**Road setbacks**~~			
~~**PO2**~~	~~The location of a building or structure facilitates an acceptable streetscape, appropriate for:~~ ~~Part 9 the bulk of the building or structure;~~ ~~Part 10 the road boundary setbacks of neighbouring buildings or structures;~~ ~~Part 11 the outlook and views of neighbouring residents; and~~ ~~Part 12 safety to the public.~~	~~**AO2.1**~~	~~The dual occupancy is setback in accordance with MP 1.3 A1 of the QDC.~~
		~~**AO2.2**~~	~~Garage openings facing the street do not exceed 6m or 50% of the street frontage, whichever is the lesser.~~
~~**Building and structures**~~			

Performance Outcomes		Acceptable Outcomes	
PO3	Buildings and structures: (1) provide adequate daylight and ventilation to habitable rooms; (2) allow adequate light and ventilation to habitable rooms of buildings on adjoining lots; and (3) do not adversely impact on the amenity and privacy of residents on adjoining lots.	AO3.1	The dual occupancy and associated structures have a side and rear boundary setback in accordance with MP 1.3 A2 of the QDC.
Site cover			
PO4	Adequate open space is provided for recreation, service facilities and landscaping.	AO4.1	The maximum site cover of the dual occupancy is provided in accordance with MP 1.3 A3 of the QDC.
Building height			
PO5	The height of a building does not unduly: (1) overshadow adjoining dwellings; (2) obstruct the outlook from adjoining lots; or (3) dominate the intended streetscape character.	AO5.1	The maximum building height of the dual occupancy is provided in accordance with MP 1.3 A4 of the QDC.
		AO5.2	The maximum building height of a garage, carport or shed is 5.5m above ground level to the highest point.
Visual privacy			
PO6	Buildings are sited and designed to provide adequate visual privacy for neighbours.	AO6.1	The dual occupancy is provided in accordance with MP1.3 A5 of the QDC.
Structure on corner sites			
PO7	The size and location of structures on corner sites provide for adequate sight lines.	AO7.1	The dual occupancy is provided in accordance with MP 1.3 A7 of the QDC.
Building maintenance			
PO8	The location of a building or structure facilitates normal maintenance.	AO8.1	A wall is set back in accordance with MP 1.3 A6 of the QDC.
On-site car parking			
PO9	Development provides sufficient space for on-site car parking to satisfy the projected needs of residents and visitors, appropriate for: (i) the availability of public transport; (ii) the availability of on-street parking; (iii) the desirability of on-street parking in respect to the streetscape; and (iv) the residents' likelihood to have or need a vehicle.	AO9.1	Parking is provided in accordance with MP 1.3 A8 of the QDC.
		AO9.2	Car parking spaces may be in tandem, provided one space is behind the road setback required in AO2.1.
PO10	Development ensures that the layout and design of vehicle access, on-site circulation	AO10.1	Development provides access driveways, internal circulation, manoeuvring areas and parking areas in accordance AS2890

Performance Outcomes		Acceptable Outcomes	
	systems and parking areas are safe, convenient and legible.		(Parking facilities: Off street car parking).
Private open space			
PO11	Each dwelling has private open space available, which is: PO1 a suitable size, dimension and slope to allow residents to extend their living activities outdoors; PO2 available for the sole use of the residents of individual dwellings; and PO3 adequately separated from each other to provide visual privacy.	AO11.1	Each dwelling has clearly defined private open space, which is provided in accordance with MP 1.3 A9 of the QDC.
Services and utilities			
PO12PO4	Development ensures that the layout and design of vehicle access, on-site circulation systems and parking areas are safe, convenient and legible.	AO12.1A(	Development provides access driveways, internal circulation, manoeuvring areas and parking areas in accordance AS2890 (Parking facilities: Off street car parking).
PO13PO5	The dual occupancy is provided with, and connected to, essential infrastructure and services.	AO13.1A(	The A dual occupancy is: (a) connected to reticulated water supply, sewerage and stormwater drainage infrastructure networks in accordance with PSP SC6.8 (WRC Development manual); and (a)(b) is connected to the electricity network.is connected to the reticulated water supply, sewerage and stormwater drainage infrastructure networks and has an electricity supplynetwork.
PO14PO6	The dual occupancy is provided with adequate areas for the storage of waste and recyclable items, in appropriate containers, which are convenient to use and service.	AO14.1A(	Waste storage areas are provided as: (a) separate areas for each dwelling to accommodate the permanent storage of waste and recyclable items in standard waste containers; or (b) shared areas over which each dwelling has control via access rights or ownership is provided to accommodate the

Performance Outcomes		Acceptable Outcomes	
			permanent storage of waste and recyclable items in standard waste containers.
		~~AO14.2A~~	Waste storage areas are screened from public view.
~~Flood immunity~~			
~~PO15~~	~~Development involving any habitable part of the building is located and designed to ensure the safety of all persons and buildings from flood hazards.~~	~~AO15.1~~	~~Development of a habitable building:~~ ~~(a) ensures the finished floor levels for all habitable rooms are a minimum of 300mm above the DFL; or~~ ~~(b) is not less than the floor level of existing habitable room(s), where involving an extension for no greater than 75m² to an existing building.~~ ~~Editor's Note – Refer to Overlay map - FH - 01:29 (Flood hazard overlay) for further detail.~~

~~12.3.5~~9.3.5 Dwelling house code

~~12.3.5.4~~9.3.5.1 Application

This code applies to accepted and assessable development:

(a) being for building work for a dwelling house; and

(b) identified as requiring assessment against the Dwelling house code by the tables of assessment in Part 5 (Tables of Assessment).

Editor's note – in accordance with Schedule 1 (Definitions), a reference to a dwelling house includes outbuildings and works normally associated with a dwelling, including a secondary dwelling.

~~12.3.5.5~~9.3.5.2 Purpose and overall outcomes

~~(4)~~(1) The purpose of the Dwelling house code is to ensure the design and siting of detached houses protects residential amenity and maintains streetscape character and that associated dwellings and outbuildings are of an appropriate scale and intensity.

~~(5)~~(2) The purpose of the Dwelling house code will be achieved through the following overall outcomes:

(a) the building form, siting design and use of the dwelling house is consistent with the desired amenity and character of the area;

(b) a dwelling house is sited and designed to protect the amenity, privacy and access to sunlight of adjoining residential premises;

(c) a dwelling house provides a high level of amenity and safety for residents of the dwelling house;

(d) a dwelling house is provided with an acceptable level of infrastructure and services;

(e) outbuildings are of an appropriate scale and intensity and are compatible with surrounding development;

(f) secondary dwellings are small in scale and ancillary to the principal use for a dwelling house; and

(g) a dwelling house is not at an unacceptable risk from natural hazards.

~~12.3.5.6~~9.3.5.3 Assessment benchmarks

Editor's note – an approved plan of development for a variation approval overriding the Planning Scheme or reconfiguring a lot may vary or specify alternative assessment benchmarks for a dwelling house. In such cases, compliance with these alternative assessment benchmarks will be deemed to represent compliance with the comparable provisions of the Dwelling house code.

Table 9.3.5.3.1 Benchmarks for acceptable and assessable development

Performance Outcomes		Acceptable Outcomes	
Building design			
PO1	A Dwelling house is of a scale, location and built form that: (a) contributes positively to the streetscape;	AO1.1	Dwelling houses, excluding domestic outbuildings, promote the local residential character, through variations in building façade and roof form, including:

Performance Outcomes		Acceptable Outcomes	
	(b) has a design and built form that complements the residential character of the area; and (c) avoids negative impacts on the streetscape or adjoining properties.		(a) eaves at least 0.5m from the wall edge, along Street fronting walls; (b) roof pitch of at least 5 degrees; (c) large windows, openings and variations in building footprint or articulation, such that no unbroken wall fronting a street is greater than 5m, vertically or horizontally; and (d) front façade treatments that differentiate between upper and lower levels. Editor's note – Domestic outbuildings are defined as non-habitable sheds or car ports. 'Liveable sheds' are defined as a Dwelling house.
		AO1.2	Domestic outbuildings within a Residential zone or Mixed-use zone are of a scale and size that adheres to the surrounding residential character, including: (a) maximum combined floor area equivalent to 9% of the site area or 72m², whichever is the least; (b) a maximum length of 12m in one plane; and (c) a maximum length-to-width ratio of 2:1.~~;~~ Editor's note – Domestic outbuildings are defined as non-habitable sheds or car ports. 'Liveable sheds' are defined as a Dwelling house. Residential zones are defined by Table 1.2.1 of the Planning Scheme.
		AO1.3	Where fencing is not provided, street frontages are adequately landscaped to visually define the boundary between private and public land.
		AO1.4	Development involving pier and pole construction includes Queenslander architectural design elements to reduce visibility of the underside of the building and minimise building bulk from the Street, including ~~:~~ decorative features that cast shadows, such as timber battens or lattice screens~~;~~ and: (a) landscaping; or (b) verandahs or stairs fronting the street.
~~**Building structures**~~			

Performance Outcomes		Acceptable Outcomes	
(1)	The location of buildings and structures: (a) provide adequate daylight and ventilation to habitable rooms; (b) allow adequate light and ventilation to habitable rooms on adjoining lots; and (c) does not adversely impact on the amenity and privacy of residents on adjoining lots.	PO1	Where on a lot less than 450m², the dwelling house and associated structures have a side and rear setback in accordance with MP 1.1 A2 of the QDC.
			Where on a lot greater than or equal to 450m² the dwelling house and associated structures have a side and rear setback in accordance with MP 1.2 A2 of the QDC.
Site cover			
(2)	Adequate open space is provided for recreation, service facilities and landscaping.	PO2	Where on a lot less than 450m² the maximum site cover of the dwelling house is provided in accordance with MP 1.1 A3 of the QDC.
			Where on a lot greater than or equal to 450m² the maximum site cover of the dwelling house is provided in accordance with MP 1.2 A3 of the QDC.
Building height			
(3)	The height of a dwelling house does not unduly: (a) overshadow adjoining detached dwellings; (b) obstruct the outlook from adjoining lots; and (c) dominate the intended streetscape character.	PO3	The maximum building height is for a dwelling house: (a) 8.5m above ground level where on a slope up to 15%; or (b) 10m above ground level where on a slope greater than 15%.
			The maximum building height for a garage, carport or shed is 5.5m above ground level to the highest point.
Visual privacy			
(4)	Buildings are sited and designed to provide adequate visual privacy for neighbours.	PO4	Where on a lot less than 450m², the dwelling house is provided in accordance with MP 1.1 A5 of the QDC.
			Where on a lot greater than or equal to 450m², and the dwelling house is provided in accordance with MP 1.2 A5 of the QDC.
Structures on corner sites			
(5)	The size and location of structures on corner sites provide for adequate sight lines.	PO5	Where on a lot less than 450m², the dwelling house is provided in accordance with MP 1.1 A7 of the QDC.
			Where on a lot greater than or equal to 450m², the dwelling house is provided in accordance with MP 1.2 A7 of the QDC.
On site car parking			

Performance Outcomes		Acceptable Outcomes	
(6)	Sufficient space for on site car parking to satisfy the projected needs of residents and visitors, appropriate for: (a) the availability of public transport; (b) the availability of on-street parking; (c) the desirability of on-street parking in respect to the streetscape; and (d) the resident's likelihood to have, or need, a vehicle.	PO6	Where on a lot less than 450m², parking is provided in accordance with MP 1.1 A8 of the QDC.
			Where on a lot greater than or equal to 450m², parking is provided in accordance with MP 1.2 A8 of the QDC.
			Development provides access driveways, internal circulation and manoeuvring areas and parking areas in accordance AS2890 (Parking facilities: Off street car parking).
Private open space (for lots less than 450m² only)			
(7)	A detached dwelling has its own individual outdoor living space, which: (a) has suitable size and slope to allow residents to extend their living activities outdoors; (b) is available for the sole use of the residents of individual dwellings; and (c) is adequately separated from each other to provide visual privacy.	PO7	Where on a lot less than 450m², private open space is provided in accordance with MP 1.1 A9 of the QDC.
Services and utilities			
PO4PO2	The dwelling house is provided with and connected to essential infrastructure and services.	AO1.1AO	The A ddwelling house in the PIA is: (a) connected to reticulated water supply, sewerage and stormwater drainage infrastructure networks in accordance with PSP SC6.8 (WRC Development manual); and (b) has is connected to thean electricity supplynetwork.
		AO1.2AO	The dwelling house, where in a Rural or Rural residential zone, has is connected toan the electricity supply network and is connected to a: (c)(a) reticulated water supply; or potable water supply and water storage collection system having: (i) a minimum storage capacity of 70,000 litres; and (ii) a first flush system; (d)(b) reticulated sewerage system or an alternative on site effluent and wastewater treatment

Performance Outcomes		Acceptable Outcomes	
			system consistent with the *Queensland Pplumbing and wWastewater Code code*.
PO5PO3	Development ensures that the layout and design of vehicle access, on-site circulation systems and parking areas are safe, convenient and legible.	AO2.1AO	Development provides access driveways, internal circulation and manoeuvring areas and parking areas in accordance AS2890 (Parking facilities: Off street car parking).
(8)			
Flood immunity			
(9)	Development involving any habitable part of the building is located and designed to ensure the safety of all persons and buildings from flood hazards.	PO8	Development of a habitable building: (a) ensures the finished floor levels for all habitable rooms are a minimum of 300mm above the DFL; or (b) is not less than the floor level of existing habitable room(s) where involving an extension for no greater than 75m² to an existing building. Editor's Note – Refer to Overlay map - FH - 01:29 (Flood hazard overlay) for further detail.
Secondary dwellings			
PO6PO4	A secondary dwelling is subordinate in bulk and scale to maintain the appearance of a dwelling house with ancillary buildings when viewed from the street.	AO3.1AO	Only one secondary dwelling is established in association with a dwelling house.
		AO3.2AO	A secondary dwelling has a maximum GFA of 70m² and a TUA of 100m², excluding car parking areas.
		AO3.3AO	A minimum of one on site car parking space is provided to service the secondary dwelling.

~~12.3.6~~9.3.6 Extractive industry code

~~12.3.6.1~~9.3.6.1 Application

This code applies to assessable development:

(a) being a material change of use for extractive industry; and

(b) identified as requiring assessment against the Extractive industry code by the tables of assessment in Part 5 (Tables of assessment).

Editor's note – The Extractive resource area overlay map also show mining lease areas located within the Planning Scheme area. Mining lease areas are shown for information purposes only with mining operations in these areas regulated under the *Mineral Resources Act 1989.*

~~12.3.6.2~~9.3.6.2 Purpose and overall outcomes

(1) The purpose of the Extractive industry code is to ensure that the exploitation of extractive resources is undertaken in a sustainable manner which protects environmental and landscape values, public safety and the amenity of surrounding premises.

(2) The purpose of the Extractive industry code will be achieved through the following overall outcomes:

(a) extraction of resources occurs in a sustainable manner;

(b) natural values and water quality are protected from any environmental degradation potentially arising from extractive industry operations;

(c) extractive industry operations are located, designed and constructed to avoid or effectively mitigate adverse impacts on any sensitive use, in particular, residential or rural residential premises;

(d) transport routes allow extractive materials to be transported with the least amount of impact on development along those roads and on the function of those roads; and

(e) land used for extractive industry operations is effectively rehabilitated.

~~12.3.6.3~~9.3.6.3 Assessment benchmarks

Table 9.3.6.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Site planning			
~~PO9~~PO1	The extractive industry is designed and established having regard to the availability of other appropriate infrastructure, characteristics of the natural environment and the proximity of sensitive land uses, to provide: ~~(d)~~(a) adequate separation distance to protect the surrounding area from significant noise, dust, vibration and visual impacts of operations;	**AO1.1**	The extractive industry is undertaken in accordance with an approved environmental management plan, which addresses environmental and social impacts of operations.

Performance Outcomes		Acceptable Outcomes	
	~~(e)~~(b) suitable vehicle access and haulage routes; ~~(f)~~(c) protection against erosion; ~~(g)~~(d) acceptable quality of water leaving the site; ~~(h)~~(e) public safety; ~~(i)~~(f) acceptable restoration measures; ~~(j)~~(g) protection of groundwater quality and quantity; ~~(k)~~(h) avoidance of land contamination; ~~(l)~~(i) effective stormwater management; and ~~(m)~~(j) waste management practices, which maximise recycling and reuse of wastes.		
~~PO10~~PO2	The extractive industry maintains suitable and sustainable landscaping on the extractions site.	**AO2.1**	The volumes of anticipated extraction are planned and staged, allowing for appropriate landscape form.
Vehicle access and manoeuvring			
~~PO11~~PO3	Vehicle access to, from and within the extractive industry site is provided to: ~~(d)~~(a) be adequate for the type and volume of traffic to be generated; ~~(e)~~(b) not create or worsen any traffic hazard; ~~(f)~~(c) not have adverse effects on the amenity of the locality; and ~~(g)~~(d) ensure disturbance to surrounding land uses is minor and that impacts from emissions are minimised.	**AO3.1**	The proposed transport route to and from the site is along sealed roads and does not require heavy vehicles to traverse residential or rural residential streets.
		AO3.2	All driveways are sealed, with internal manoeuvring and car parking areas suitably surfaced.
		AO3.3	Site ingresses and egresses are located to provide: ~~(e)~~(a) a minimum sight distance in all directions of 200m; ~~(f)~~(b) a maximum gradient of 1:10 (10%) on all roads, including haul roads, within 100m of such ingress or egress; ~~(g)~~(c) a minimum ingress/egress width of 12m; and ~~(h)~~(d) a minimum separation to any road intersection or property access of 50m.
		AO3.4	Acceleration and deceleration lanes, in accordance with Austroads guidelines, are

Performance Outcomes		Acceptable Outcomes	
			provided to site ingress and egress points.
		AO3.5	Rubble pad, wheel wash or other suitable method installed at heavy vehicle egresses to prevent material being carried onto roadway during bulk haulage.
		AO3.6	Vehicle access is provided in accordance with the standards specified PSP SC6.8 (WRC development manual).
Separation distances			
~~PO12~~PO4	The extractive industry is located on a site which has sufficient area to provide for adequate setback of operations from road frontages, site boundaries, surrounding sensitive uses, such that the extractive industry achieves an acceptable standard of visual amenity and control of noise, light, dust and vibration impacts.	**AO4.1**	Extractive industry involving blasting or crushing is not carried out within 1km of any sensitive use.
		AO4.2	Extractive industry not involving blasting or crushing is not carried out within 100m of any sensitive use.
		AO4.3	A mounded vegetated buffer strip having a minimum width of 10m is provided to all boundaries of the site.
Site drainage			
~~PO13~~PO5	The extractive industry provides on site drainage that is designed, constructed and maintained to: ~~(d)~~(a) prevent ponding in excavated areas; ~~(e)~~(b) avoid erosion; ~~(f)~~(c) prevent pollution of groundwater and surface water; ~~(g)~~(d) protect downstream water quality; and ~~(h)~~(e) provide opportunities to recycle water for reuse in processing, washing and/or screening materials, dust suppression and on product stockpiles, overburden stockpiles, revegetation or rehabilitation areas and wheel wash facilities.	**AO5.1**	Banks and channels are constructed to divert stormwater run-off away from excavated areas.
		AO5.2	Sediment basins are provided to detain stormwater run-off from disturbed areas, such that there is no off-site discharge likely to cause environmental harm.
		AO5.3	Bunding, treatment and disposal of industrial wastes are carried out, such that no environmental harm is caused.
		AO5.4	Lining or other suitable treatment of erosion-prone areas is established and maintained at discharge points.
Management of blasting and other operations			
~~PO14~~PO6	The extractive industry provides for blasting, crushing, screening and loading to be carried out safely and in accordance with best practice management standards, so that disturbance to surrounding land uses is	**AO6.1**	Blasting and other operations are confined to the periods identified in Table 9.3.6.3.2 (Extractive industry operations periods).
		AO6.2	Public signage to warn of operations and safety hazards

Performance Outcomes		Acceptable Outcomes	
	minor and impacts from emissions are minimised.		is provided to all boundaries of the site.
		AO6.3	Blasting and other operations are undertaken in a manner which complies with best practice approaches to vibration avoidance and management, such as those identified in AS2670.2 (Evaluation of human exposure to whole of body vibration - Continuous and shock induced vibration in buildings (1-80Hz)).
		AO6.4	Blasting operations are designed and planned to minimise risk of dust and fume emissions.
Safety fencing			
~~PO15~~PO7	Entry to extractive industry operational areas is restricted to authorised personnel and authorised vehicles.	**AO7.1**	A 2m high fence is erected and maintained around all extractive industry operations and associated infrastructure.
Site rehabilitation			
~~PO16~~PO8	Rehabilitation of the extractive industry site restores the environmental and economic values of the land and provides: (a) progressive/staged rehabilitation works; (b) appropriate clean-up works, particularly areas of possible soil contamination; (c) agreed landform and soil profiles; (d) suitable revegetation; and (e) establishment phase requirements.	**AO8.1**	The extractive industry provides for all rehabilitation works to be undertaken in accordance with an approved expected final landform design and site rehabilitation plan. Editor's note—the Council may require rehabilitation works to be bonded to ensure the affective return of disturbed areas to acceptable land use suitability.

Table 9.3.6.3.2 Extractive industry operation periods

Extractive industry activity	Hours of operation
Blasting operation	9am to 5pm Monday to Friday
	No operations Saturday, Sunday or public holidays
Other operations	6am to 6pm, Monday to Friday
	7am to 1pm Saturday
	No operations Sunday or public holidays

~~12.3.7~~9.3.7 Home based business code

~~12.3.7.1~~9.3.7.1 Application

This code applies to accepted and assessable development:

(a) being a material change of use for home based business; and

(b) identified as requiring assessment against the Home based business code by the tables of assessment in Part 5 (Tables of assessment).

~~12.3.7.2~~9.3.7.2 Purpose and overall outcomes

(1) The purpose of the Home based business code is to facilitate legitimate home based business, conducted in a manner which is appropriate to the preferred character of the area and protects the amenity of surrounding premises.

(2) The purpose of the Home based business code will be achieved through the following overall outcomes:

(a) a home based business is domestic in scale and operates in a manner that is subservient and ancillary to the Accommodation activity of the premises;

(b) a home based business is conducted in a manner that maintains the residential character and amenity of the locality; and

(c) a home based business is operated in a safe manner and does not impose an unreasonable load on infrastructure services.

~~12.3.7.3~~9.3.7.3 Assessment benchmarks

Table 9.3.7.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Operation of working from home activity			
PO1	The home based business is conducted as a genuine working from home activity.	**AO1.1**	~~Other than a bed and breakfast,~~ ~~t~~The home based business, ~~is~~ including a bed and breakfast, is conducted within a dwelling house, dual occupancy or multiple dwelling.
			~~For a home based business operating as a bed and breakfast, the bed and breakfast is conducted only within the dwelling house.~~
Scale of use and protection of amenity			
PO2	The home based business is limited in size and scale so that: (a) the amenity of the existing neighbourhood is protected; and (b) the home based business remains ancillary to the Accommodation activity of the premises.	**AO2.1**	For a home based business, other than a bed and breakfast, conducted in association with a dwelling house or dual occupancy: (a) the total area, both in and outside of the dwelling, used for the home based business does not exceed: (i) 40m² where the dwelling is located on a lot not more than 2,000m² in area; or

Performance Outcomes		Acceptable Outcomes	
			(ii) 80m² where the dwelling is located on a lot more than 2,000m² in area; (b) no more than 2 customers or clients are present at any one time and no more than 8 customers or clients are present in any one day; and (c) the home based business does not involve more than: (i) 2 persons, including residents of the dwelling; or (ii) where the site is in the Rural zone, 4 persons, including residents of the dwelling.
		AO2.2	For a home based business conducted within a multiple dwelling: (a) the total GFA used for the home based business does not exceed: (i) 20m²; or (ii) 10% of the area of any floor level on which the home based business is located; (b) the home based business does not involve outdoor use areas; (c) no more than 2 customers or clients are present at any one time and no more than 8 customers or clients are present in any one day; and (d) the home based business involves only the persons who are residents of the dwelling.
		AO2.3	For a home based business operating as a bed and breakfast: (a) the use is conducted from a dwelling house; (b) at least one bedroom within the dwelling house is excluded from use by guests; and (c) the maximum number of bedrooms used to accommodate guests is 3 and the maximum number of guests accommodated at any one time is 6.
		AO2.4	Not more than one home based business is conducted on the premises.

Performance Outcomes		Acceptable Outcomes	
PO3	The home based business does not involve any materials, equipment or processes that cause nuisance or detrimentally impact on residential amenity.	**AO3.1**	The home based business does not produce any dust emissions.
		AO3.2	The home based business does not produce any offensive odour emissions beyond the site boundaries.
		AO3.3	The home based business does not produce noise, which exceeds the background noise level plus 5 dB(A) from8.00am to 6.00pm, measured as an adjusted sound level.
		AO3.4	Glare conditions or excessive light spill into dwellings, adjacent sites and public spaces is avoided or minimised through measures, such as: (a) the use of building design and architectural elements or landscape treatments to block or reduce excessive light spill to locations where it would cause a nuisance to residents or the general public; and (b) the alignment of driveways and servicing areas to minimise vehicle headlight impacts on residential accommodation and private open space.
		AO3.5	Loading or unloading of goods is not undertaken by a vehicle larger than a SRV.
		AO3.6	A maximum of 1 commercial vehicle, not including a HRV or AV, associated with the home based business is parked/garaged on the premises.
		AO3.7	Not more than 2 customer vehicles are associated with the home based business at any one time.
		AO3.8	In addition to the parking required for a dwelling house or dual occupancy,~~the primary Accommodation activity,~~ the following onsite parking is provided, where applicable: (a) 1 space for customer parking; plus (b) 1 space per non-resident employee; plus (c) 1 space per guest room, where a Bed and breakfast.

Performance Outcomes		Acceptable Outcomes	
			Note – Any required on site parking spaces may be provided in tandem to the residential parking spaces.
		AO3.9	No vehicle is fuelled, serviced or repaired on the premises.
		AO3.10	Materials or equipment used, or goods manufactured, serviced or repaired, are stored within a building on the premises.
		AO3.11	Trade person's storage and activities are located at the rear of the dwelling and any vehicle, or stored equipment or materials, is screened from view from all public places and adjoining residential premise.
		AO3.12	Refuse and waste storage and service areas associated with the home based business are suitably screened from the street.
		AO3.13	Quantities of chemicals, gases or other hazardous materials do not exceed the limits normally associated with a residential activity.
		AO3.14	The home based business does not involve any activity defined as an environmentally relevant activity in the *Environmental Protection Regulation 2008*.
PO4	The hours of operation of the home based business do not cause a nuisance or detrimentally impact on residential amenity.	**AO4.1**	Where goods are offered for sale from the premises, there is no public display of such goods.
Signage			
PO5	Signage associated with the home based business is small, unobtrusive and appropriate to its location and setting.	**AO5.1**	Not more than 1 advertising device is erected on the premises and the sign: (a) includes only the name of the occupier, the business conducted on the premises and associated contact/address details; (b) has a maximum sign face area of 0.3m²; (c) is attached to a fence or wall; and (d) is not illuminated or in motion.
Services and utilities			
PO6	The home based business does not detrimentally impact on the capacity of infrastructure services.	**AO6.1**	No greater load is imposed on any public utility than would reasonably be expected from that normally associated with a residential activity.
Storage of chemicals			

Performance Outcomes		Acceptable Outcomes	
PO7	The risk to occupiers, employees and neighbouring residents from the storage of chemicals and hazardous substances is minimised.	**AO7.1**	Storage of flammable and combustible liquids complies with the minor storage provisions of AS1940 (The storage and handling of flammable and combustible liquids).
Additional requirements for bed and breakfast accommodation			
Temporary accommodation			
PO8	Bed and breakfast accommodation is provided for short-term stay only.	**AO8.1**	Guests stay no more than 14 consecutive nights.
Guest facilities			
PO9	An acceptable standard of facilities is provided for guests of the bed and breakfast.	**AO9.1**	Guests are provided with a bedroom capable of being enclosed to prevent visual or other intrusion by members of the host family or other guests.
		AO9.2	A separate bathroom and toilet facility is provided within the dwelling house for the exclusive use of guests.

~~12.3.8~~9.3.8 Industry activities code

~~12.3.8.1~~9.3.8.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Industry activities code by the tables of assessment in Part 5 (Tables of assessment).

~~12.3.8.2~~9.3.8.2 Purpose and overall outcomes

(1) The purpose of the Industry activities code is to ensure Industry activities are designed and operated in a manner which meets the needs of the Industry activity, protects public safety and environmental values and appropriately responds to amenity considerations.

(2) The purpose of the Industry activities code will be achieved through the following overall outcomes:

(a) the scale and intensity of an Industry activity is compatible with its location and setting;

(b) an Industry activity incorporates a site layout and building design that provides for the efficient and safe conduct of industrial activities and contributes to a well organised development that is attractive when viewed from the street;

(c) an Industry activity does not cause environmental harm or nuisance, including the contamination of land or water;

(d) an Industry activity avoids or effectively mitigates adverse impacts on the amenity of adjoining and nearby non-industrial activity where these activities are located in a zone other than an industry zone; and

(e) an Industry activity incorporates service areas and waste management processes that are efficient and maximise opportunities for reuse or recycling.

~~12.3.8.3~~9.3.8.3 Assessment benchmarks

Table 9.3.8.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Built form, streetscape character and protection of amenity			
PO1	Buildings and structures associated with the industrial activity are: (a) of a scale and design, which is appropriate to an industrial setting, whilst contributing positively to the visual character and streetscape of the area; and (b) designed to avoid or mitigate the potential for adverse amenity impacts on adjoining or nearby sensitive land uses.	**AO1.1**	The site cover of all buildings and structures on the site does not exceed 75%.
		AO1.2	Buildings and structures are setback a minimum of: (a) 9m to the primary street frontage; (b) 3m to any secondary street frontage; and (c) 10m from any side or rear boundary, where adjoining a sensitive land use, land in a residential zone or the Community facilities zone; or (d) 0.75m from any the side or rear boundary, where not

Performance Outcomes		Acceptable Outcomes	
			adjoining a sensitive use, land in a residential zone or the Community facilities zone; or (e) where less than 0.75m to the boundary, maintenance free.
		AO1.3	Where the site has a common boundary with a sensitive land use, land in a residential zone or the Community facilities zone: (a) no openings occur in walls facing a common boundary; (b) acoustic screening is provided to all areas where work could be conducted outside of the building, including waste storage and refuse areas, so that off-site noise emissions are avoided or do not cause a nuisance; and (c) noise emitting services, such as air conditioning equipment, pumps and ventilation fans, are located as far away as possible from residential areas.
		AO1.4	The main entry to any building is easily identifiable and directly accessible from the street or the primary street frontage, if the site has more than one street frontage.
		AO1.5	Where adjoining a sensitive land use, land included in a residential zone or the Community facilities zone, a minimum 2m high solid screen fence is provided for the full length of the common boundary.
PO2	The industrial activity is attractive when viewed from a major road.	**AO2.1**	Where the industrial activity has frontage to, or overlooks, a major road: (a) building design incorporates variations in parapet design, roofing heights and treatments; and (b) any security fencing is set within or located behind the landscaping strip rather than adjacent to the major road.
Services and utilities			
PO3	The industrial activity is provided with:	**AO3.1**	The industrial activity is connected to the reticulated

Performance Outcomes		Acceptable Outcomes	
	(a) a safe and reliable water supply; (b) a waste disposal system and stormwater drainage, which maintains acceptable public health and environmental standards; (c) electricity infrastructure; (d) appropriate frontage works; and (e) refuse storage areas that are suitably screened from the street.		water supply, sewerage, stormwater drainage and electricity infrastructure networks.
		AO3.2	Kerb and channel is constructed for the full length of the road frontage.
		AO3.3	The layout and design of the industrial activity provides for the on-site loading and unloading of goods and the storage of refuse to the rear of the site.
Environmental performance			
PO4	The industrial activity ensures that any emissions of odour, dust, air pollutants, noise, light or vibration does not cause nuisance to, or have an unreasonable adverse impact on, adjoining or nearby premises. Editor's note—development involving Industry activities will need to comply with relevant environmental legislation including the *Environmental Protection Act 1994* and subordinate legislation.	**AO4.1**	The industrial activity achieves the environmental values for the acoustic environment and acoustic quality objectives for sensitive receiving environments set out in the *Environmental Protection (noise) Policy 2008*.
		AO4.2	The industrial activity achieves the environmental values and air quality objectives set out in the *Environmental Protection (air) Policy 2008*.
		AO4.3	The industrial activity does not produce any offensive odour emissions beyond the site boundaries.
		AO4.4	The industrial activity ensures that any external lighting is provided in accordance with AS4282 (Control of the obtrusive effects of outdoor lighting).
		AO4.5	Vibrations resulting from the industrial activity do not exceed the maximum acceptable levels identified in AS2670.2 (Evaluation of human exposure to whole of body vibration - Continuous and shock induced vibration in buildings (1-80Hz)).
PO5	The industrial activity provides for the collection, treatment and disposal of all liquid waste, such that: (a) there is no off-site release of contaminants; (b) all wastes are collected and disposed of in accordance with relevant license and approval conditions and/or relevant government or industry standards; and	**AO5.1**	Sealed impervious surfaces, draining to receptors and/or storage containers are provided in areas where potential spills of contaminants can occur.
		AO5.2	Waste water associated with the industrial activity is disposed to Council's sewerage system or an on-site industrial waste treatment system.
		AO5.3	Liquid wastes that cannot be disposed to Council's sewerage system or the on-site industrial

Performance Outcomes		Acceptable Outcomes	
	(c) there are no adverse impacts on the quality of surface water or groundwater resources.		waste treatment system are disposed of off-site to an approved waste disposal facility.
		AO5.4	No discharge of waste occurs to local waterways (including dry waterways) or natural wetlands.
		AO5.5	Oil arrestor or other pre-treatment infrastructure is provided to remove contaminants from industrial waste water where discharged to the sewer or environment.
PO6	The industrial activity does not contaminate or pollute stormwater runoff from the site.	**AO6.1**	Areas where hazardous materials or potentially contaminating substances are stored or used are roofed.
		AO6.2	Provision is made for spills to be bunded and retained on-site for removal and disposal by an approved means.
		AO6.3	Stormwater is diverted away from contaminated areas.
On-site retail sales			
PO7	Any retail sales conducted from the premises are ancillary and subordinate to the industrial activity.	**AO7.1**	On-site retail sales are limited to goods manufactured, assembled on the premises or goods associated with those manufactured on the site.
		AO7.2	Parking for on-site retail sales is provided at the same rate as required for a shop (refer Table 9.4.87.3.3 Minimum on-site parking requirements).
Trade waste			
PO8	Untreated trade waste contaminated water must not enter stormwater drains. Note: Development must comply with Council's Trade Waste Policy.	**AO8.1**	Wash down bays for vehicles and boats: (a) are on a hardstand area with a minimum 1:80 grade for wash water drainage; (b) are connected to the reticulated sewerage system; (c) prevent the intrusion of rainwater; and (d) pre-treatment equipment areas are within a roofed wash bay bund or in a separate approved roofed and bunded area that drains to the pump chamber.

Table 9.3.8.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	The Industry activity is established on land included in an industry zone or another	**AO1.1**	The Industry activity is established on a site with sufficient area and dimensions

Performance Outcomes		Acceptable Outcomes	
	zone that is suitable having regard to: (a) the suitability of the land for an Industry activity; (b) the nature, scale and intensity of the Industry activity; (c) the infrastructure and service needs of the Industry activity; and (d) the preferred character of the local area.		to accommodate required buildings, machinery, parking and service areas, storage areas, vehicle access, on-site movement and landscaping.
Site layout			
PO2	The layout and design of the industrial activity is functional and compatible with surrounding development.	**AO2.1**	The industrial activity ensures that: (a) the premises are safe, secure and legible; (b) movement systems, including roads and pathways, and accessible on-site parking and manoeuvring areas, meet the needs of users and employees; (c) the premises addresses the street, with buildings integrated with landscaping and security fencing to provide a quality contemporary appearance; and (d) surplus areas that may become unsightly or difficult to manage, due to their size, configuration or access limitations, are not created.
Requirements for an Industry activity within a centre zone			
Built form			
PO3	The Industry activity is in a building that enhances the character and amenity of streets and neighbouring premises via a built form that: (a) is closely related to streets, public spaces and pedestrian routes; and (b) maintains some area free of buildings at ground level to facilitate pedestrian movement and other functions associated with the building.	**AO3.1**	Where within a centre zone: (a) Buildings are set back from street frontages: (i) not more than 3m for that part of a building not exceeding 8.5m in height; and (ii) at least 6m for that part of a building exceeding 8.5m in height; (b) buildings are set back from other site boundaries: (i) 0m, if not exceeding 8.5m in height and adjoining an existing blank wall or vacant land on an adjoining site; (ii) at least 3m, if not exceeding 8.5m in

Performance Outcomes		Acceptable Outcomes	
			height and adjoining an existing wall with openings on an adjoining site; and (iii) at least 6m for that part of a building exceeding 8.5m in height.
Relationship of buildings to streets and public areas			
PO4	The Industry activity is in a building that clearly defines frames or encloses the street and other useable public and semi-public open space.	**AO4.1**	The building is located close to the street frontage and other urban spaces for all, or most, of its length to create a continuous or mostly continuous edge.
		AO4.2	The building is sited and designed, such that: (a) the main pedestrian entrance to the building, or group of buildings, is located on the primary street frontage; and (b) pedestrian access to the entrance of the building(s) or individual dwellings are easily discerned from the primary street frontage.
		AO4.3	Car parking areas, service areas and driveways are located and configured, so that they do not dominate the streetscape.
		AO4.4	Vehicular access to the site is separate from the pedestrian access.
PO5	The Industry activity provides for footpaths, walkways and other spaces intended primarily for pedestrians to be comfortable to use and adequately sheltered from excessive sunlight and inclement weather.	**AO5.1**	Any building provides adequate and appropriate shelter along, or around, the street in the form of an awning, colonnade, verandah or the like, with a width of 3.2m to 4m or is otherwise consistent with the width of shelter provided to adjoining premises.
PO6	The Industry activity is in a building which is designed to create passive surveillance in ~~vibrant and active~~ streets. ~~and public spaces.~~	**AO6.1**	Development provides for a minimum of 65% of the building frontage to a public street or other public space to present with clear, or relatively clear, windows and glazed doors.
Requirements for an Industry activity in a Rural zone			
PO7	The Industry activity is located on a site which has sufficient area to accommodate the use.	**AO7.1**	Where within a Rural zone: (a) buildings are set back 50m from street frontages; and (b) buildings are setback 10m from other site boundaries.

~~12.3.9~~9.3.9 Market code

~~12.3.9.1~~9.3.9.1 Application

This code applies to accepted and assessable development:

(a) being a material change of use for a market; and

(b) identified as requiring assessment against the Market code by the tables of assessment in Part 5 (Tables of assessment).

~~12.3.9.2~~9.3.9.2 Purpose and overall outcomes

(1) The purpose of the Market code is to ensure markets are appropriately located and are operated in a manner, which is economically, environmentally and socially sustainable and appropriately responds to local amenity issues.

(2) The purpose of the Market code will be achieved through the following overall outcomes:

(a) markets are established in locations of community attraction;

(b) markets are established where infrastructure and services are available or can easily be provided to meet the needs of users;

(c) markets operate in a manner, which takes account of:

(i) the amenity of the local area; and

(ii) the viability of local businesses.

~~12.3.9.3~~9.3.9.3 Assessment benchmarks

Table 9.3.9.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	The market is operated at a location where attracting a large number of people is consistent with the preferred character of the local area.	**AO1.1**	The market use is not located in a residential zone.
PO2	The market minimises economic impacts on established businesses near the market.	**AO2.1**	Where market stalls are proposed to be located adjacent to existing shops, the market is not held on more than 2 days per week.
Site layout			
PO3	The market is designed to provide for: (a) convenient pedestrian access and movement; (b) legibility and accessibility between stalls and existing surrounding uses; and (c) pedestrian comfort and safety, including the	**AO3.1**	Pedestrian access or pathways are a minimum of 2m wide and provided between: (a) stall fronts; and (b) stalls and existing shop fronts.
		AO3.2	Public toilets: (a) are provided within the area of the market or are located within 250m of the market;

Performance Outcomes		Acceptable Outcomes	
	provision of public convenience facilities.		(b) remain open and accessible for use during market hours; and (c) are maintained in a clean, safe and tidy state.
		AO3.3	Directional signage is provided to identify the location of, and the entry to, public toilet facilities.
Operation and protection of amenity			
PO4	The market is operated in a manner that does not cause environmental nuisance or adverse amenity impacts to nearby residents and other sensitive uses having regard to the: (a) generation of noise, dust, odour and light; and (b) hours and frequency of operation.	**AO4.1**	The market is conducted, including setup and pack-up, between the hours of 5.00am and 10.00pm.
		AO4.2	The use of amplified music, megaphones, public address systems and noise generating plant equipment is avoided.
		AO4.3	Noise generated from the market complies with the level of noise emissions prescribed under the *Environmental Protection (Noise) Policy 2008* .
		AO4.4	Any outdoor lighting associated with the market is designed, installed, operated and maintained in accordance with AS4282 (Control of the obtrusive effects of outdoor lighting).
		AO4.5	Any temporary lighting is dismantled immediately on closure of the markets.
Waste management			
PO5	The market is established and operated to provide a safe and healthy environment and provides waste disposal facilities, which are appropriate to the type and scale of the market.	**AO5.1**	The area used for market purposes is maintained in a clean, safe and tidy state: (a) during market hours; and (b) at the conclusion of each day's trading.
		AO5.2	An appropriate number of waste containers are provided.
Access and parking			
PO6	The design and management of access, parking and vehicle movement protects the functioning of the road network and provides safe vehicular, pedestrian and cyclist access to and from the site.	**AO6.1**	Where the market is conducted on a footpath, and the adjoining road remains open to vehicle use, a minimum 1.2m clearance from the kerb to any market structure, or use area, is provided.
		AO6.2	Access is provided for emergency services vehicles.

~~12.3.10~~9.3.10 Relocatable home park and tourist park code

~~12.3.10.1~~9.3.10.1 Application

This code applies to assessable development:

(a) being a material change of use for a relocatable home park or tourist park ; and

(b) identified as requiring assessment against the Relocatable home park and tourist park code by the tables of assessment in Part 5 (Tables of assessment).

~~12.3.10.2~~9.3.10.2 Purpose and overall outcomes

(1) The purpose of the Relocatable home park and tourist park code is to ensure relocatable home parks and tourist parks are appropriately located and designed in a manner, which meets the needs of residents and visitors and protects the amenity of surrounding premises.

(2) The purpose of the Relocatable home park and tourist park code will be achieved through the following overall outcomes:

(a) a relocatable home park and tourist park is well designed, located and offers convenient access to the services and facilities required to support residents' and travellers' needs;

(b) a relocatable home park and tourist park provides high quality amenities and facilities commensurate with its setting, the types of accommodation supplied and the length of stay accommodated;

(c) a relocatable home park and tourist park is of a scale and intensity that is compatible with the preferred character of the local area;

(d) a relocatable home park and tourist park does not adversely impact on the amenity of rural and residential areas or the viable operation of Rural activities; and

(e) a relocatable home park and tourist park is provided with appropriate infrastructure services.

~~12.3.10.3~~9.3.10.3 Assessment benchmarks

Table 9.3.10.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Provisions for combined Relocatable home parks and tourist parks			
Location and site suitability			
PO1	The relocatable home park or tourist park is located so that residents and guests have convenient access to: (a) tourist attractions; (b) everyday commercial, community and recreation facilities; and (c) public transport services.	**AO1.1**	The relocatable home park or tourist park is located: (a) on a site within 1km of a centre zone; or (b) on a site within 400m walking distance of a public transport stop.
PO2	The relocatable home park or tourist park is located on a site	**AO2.1**	The site can sufficiently accommodate all the facilities prescribed in this code.

Performance Outcomes		Acceptable Outcomes	
	of an appropriate size and has suitable levels of accessibility.	**AO2.2**	Roads to which the site has access: (a) have a minimum reserve width of 20m; (b) in an urban area, are fully constructed with bitumen paving for the full frontage of the site; (c) in a non-urban area, are constructed to an acceptable all weather standard; and (d) can accommodate any projected increase in traffic generated by the development.
PO3	The relocatable home park or tourist park is located and designed so that residents and users are not exposed to unacceptable levels of noise, unhealthy air emissions or other nuisance.	**AO3.1**	The site is not within: (a) 250m of land included in the Medium impact industry zone; or (b) 500m of land included in the High impact industry or Special industry zone.
		AO3.2	The relocatable home park or tourist park is not located on land where: (a) soils are contaminated by pollutants, which may represent a health or safety risk to residents; or (b) where maximum concentrations of air pollutants exceed those recommended by the National Health and Medical Research Council.
Residential amenity and landscaping			
PO4	The relocatable home park or tourist park does not impact on the amenity of adjoining or nearby residential zones.	**AO4.1**	A 2m high solid screen fence is provided for the full length of any property boundary adjoining an existing Accommodation activity or land included in a residential zone.
		AO4.2	Pools and other potentially noisy activities or mechanical plant are not located where they adjoin an existing Accommodation activity.
Rural amenity and landscaping			
PO5	The relocatable home park or tourist park is designed to integrate into the surrounding rural landscapes and does not conflict with the operations of adjoining Rural activities.	**AO5.1**	Fencing and landscaping is complementary to the surrounding rural landscape, promoting integration.
		AO5.2	Living and activity areas within relocatable home park or tourist parks are adequately buffered by vegetation and space from adjacent intensive agricultural

Performance Outcomes		Acceptable Outcomes	
			uses in accordance with Table 9.3.10.3.2 Siting and setback requirements for intensive Rural activities.
Recreational open space			
PO6	The relocatable home park or tourist park provides communal open space that is: (a) provided to meet the needs of all residents; and (b) designed to promote resident safety through casual surveillance.	**AO6.1**	A minimum of 20% of the total site area, exclusive of landscape buffer strips, is provided as communal open space.
		AO6.2	50% of the required open space is provided in one area.
		AO6.3	Communal open space: (a) has a minimum dimension, length or width, of 80m; (b) contains one area of at least 150m^2 in size; (c) is located not more than 80m from any caravan or cabin site or 150m from any relocatable home park site; (d) includes a fenced children's playground; and (e) has adequate lighting for the safety of staff, visitors and/or residents.
		AO6.4	A communal recreation building is provided for the use of residents.
Site access and parking			
PO7	The design and management of access and entry parking arrangements facilitates the safe and convenient use of the relocatable home park or tourist park by residents and visitors.	**AO7.1**	Vehicle access is limited to 1 major entry/exit point on 1 road frontage.
		AO7.2	On-site visitor parking is located with direct access from the entry driveway and is located and sign-posted to encourage visitor use.
		AO7.3	No caravan or relocatable home site has direct access to any public road.
Internal access and circulation			
PO8	The design and management of internal vehicle and pedestrian access, parking and vehicle movement on the site facilitates the safe and convenient use of the relocatable home park or tourist park.	**AO8.1**	The design of internal access ways, footpaths and the location of visitor parking areas complies with the following: (a) vehicular access to each site is via shared internal access ways, which are designed to provide safe, convenient and efficient movement of vehicles and pedestrians; (b) access ways are designed to discourage vehicle speeds in excess of 15km/hr;

Performance Outcomes		Acceptable Outcomes	
			(c) the access way and footpath system provide adequate access for service and emergency vehicles to each site and connect sites with amenities, recreational open space and external roads; and (d) internal access ways comply with the following: (i) carriageway width is not less than 6m for two way traffic and not less than 4m for one way traffic; (ii) the verge width on both sides is not less than 1.5m; (iii) cul-de-sac have turning bays at the end capable of allowing conventional service trucks to reverse direction with a maximum of two movements; (iv) all internal access ways are sealed to the carriageway widths stated above; (v) internal footpaths are a minimum width of 1.2m, internal footpaths may be accommodated within the carriageway of internal access ways serving 10 sites or less; and (vi) are adequately lit and provide direct routes to recreation and amenity facilities.
Services and utilities			
PO9	The relocatable home park or tourist park is provided with: (a) a safe and reliable water supply; and (b) a sewerage disposal system, which maintains acceptable public health and environmental standards.	**AO9.1**	(a) each relocatable home, caravan or cabin site is connected to the reticulated water supply, sewerage and stormwater drainage infrastructure networks; or (b) the site has access to: (i) a potable water supply of adequate quantity and quality, capable of generating at least 800 litres per person per day at 100% occupancy, of which at least 250 litres per

Performance Outcomes		Acceptable Outcomes	
			person per day is potable; and (ii) an effective on-site effluent disposal system capable of accommodating anticipated maximum demand at 100% occupancy.
		AO9.2	Each relocatable home, caravan or cabin site is connected to underground electricity.
PO10	Caravan, tent and cabin sites are provided with adequate access to amenities for day-to-day living.	**AO10.1**	Except where private facilities are provided to each site, toilet, shower and laundry amenities are located: (a) within 100m of every caravan, tent or cabin site; and (b) not closer than 6m to any caravan, tent or cabin site.
		AO10.2	Laundry and clothes drying facilities are provided for guests.
PO11	The relocatable home park or tourist park provides on-site facilities for the storage and collection of refuse, with such facilities: (a) located in convenient and unobtrusive positions; and (b) capable of being serviced by the Council's refuse collection contractor.	**AO11.1**	Development: (a) where a tourist park, provides a central waste collection area for every 50 caravan sites; or (b) where a relocatable home park, provides refuse collection to every relocatable home park site.
Relocatable homes in tourist parks			
PO12	A proportion of a tourist park may be used as a relocatable home park, where: (a) the relocatable home park portion is subservient to that used as a tourist park. .	**AO12.1**	Not more than 40% of the total area of a tourist park is used to accommodate relocatable homes.
Provisions specific to relocatable home parks			
Density			
PO13	The relocatable home park has a density that is compatible with the preferred character of the local area in which it is located.	**AO13.1**	The maximum site density for the relocatable home park does not exceed 30 relocatable homes per hectare.
Privacy and separation			
PO14	A reasonable level of privacy and separation is available to all residents within the relocatable home park.	**AO14.1**	Individual relocatable home sites: (a) are at least 200m² in area; (b) are setback at least 6m from any external road frontage and 5m from any other property boundary;

Performance Outcomes		Acceptable Outcomes	
			(c) are setback 3 metres from any existing or proposed building on the subject land; (d) have a minimum frontage to any internal access way of 10m; (e) have a private open space area of 16m²; and (f) are clearly delineated and separated from adjoining sites by trees or shrubs.
		AO14.2	Relocatable homes are not sited within 1.5m of the side and rear boundaries or within 3m of the front boundary of the individual relocatable home site.
Services and utilities			
PO15	Relocatable home sites are provided with adequate private amenities.	**AO15.1**	Relocatable homes are provided with private kitchen and ablution facilities.
Provisions specific to tourist parks			
Density			
PO16	The tourist park has a density that is compatible with the preferred character of the local area in which it is located.	**AO16.1**	The maximum site density for the tourist park does not exceed 60 sites per hectare.
Privacy and separation			
PO17	A reasonable level of privacy and separation is available to all residents within the tourist park.	**AO17.1**	Individual sites: (a) are set back at least 12m from any external road frontage and 5m from any other property boundary; (b) are sited such that no part of any caravan is within 3m of any other caravan, tent, cabin or building; (c) have a frontage of at least 10m to any internal access way; (d) are clearly delineated and separated from adjoining sites by trees or shrubs; (e) contain a clear area of at least 2.5m by 2.5m for outdoor space; and (f) ensure that no part of any caravan or cabin is within 2m of any internal access way.
Site access and parking			
PO18	The design and management of entry parking arrangements facilitates the safe and convenient use of the tourist park by residents and visitors.	**AO18.1**	A short-term standing area, with a minimum of 2 bays, with the dimension of 4m by 20m, are provided either as separate bays or as part of a one-way entrance road.

9.3.11 Renewable energy facilities code

9.3.11.1 Application

This code applies to assessable development identified as requiring assessment against the Renewable energy facilities code by the tables of assessment in Part 5 (Tables of assessment).

9.3.11.2 Purpose and overall outcomes

(1) The purpose of the Renewable energy facilities code is to ensure renewable energy facilities are developed in a sustainable manner which conserves the productive characteristics of rural land, protects environmental and landscape values and preserves the amenity of surrounding premises.

(2) The purpose of the Renewable energy facilities code will be achieved through the following overall outcomes:

(a) Renewable energy facilities do not affect good quality agricultural land for present and future productivity;

(b) Renewable energy facilities are appropriately designed and sited to mitigate risks from natural hazards and minimise impacts on places of environmental or cultural significance;

(c) Renewable energy facilities mitigate environmental harm and impacts on roads, accesses, traffic and sensitive uses during construction and decommissioning; and

(d) Renewable energy facilities are appropriately designed, sited, operated and landscaped to mitigate amenity impacts, such as dust, noise, light, glare or glint on surrounding sensitive uses, major roads, airports and urban areas.

9.3.11.3 Assessment benchmarks

Table 9.3.11.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	A Renewable energy facility is appropriately designed and sited to minimise impacts on surrounding sensitive uses, Rural activities or rural amenity.	AO1.1	Solar farm facilities are located within a Rural or Industrial zone.
		AO1.2	Renewable energy facility visible from scenic corridors along Gregory Cannon Valley Road, Conway Road, Crystal Brook Road, or Bowen-Developmental Road between Bogie River and Strathmore Road, are designed and sited to be visually unobtrusive and: (a) if adjoining a scenic corridor, are setback 60m from the road frontage; and (b) are adequately visually buffered by a 5m wide landscaping strip.
PO2	Renewable energy facilities do not adversely impact on the	AO2.1	Renewable energy facility is not located on agricultural land

Performance Outcomes		Acceptable Outcomes	
	present or future operational efficiency and productive use of good quality agricultural land.		identified within the Agricultural land overlay. Note - See Agricultural Overlay maps AL – 01:29 for reference.
PO3	Renewable energy facilities avoid impacts on areas of environmental or cultural significance.	**AO3.1**	Places and objects of Aboriginal cultural significance, such as sites for story telling or other cultural activities, scarred trees, stone extraction sites, ceremonial sites, fireplaces, ochre, axe grinding grooves, rock art, fish traps, graves, old growth vegetation, shell middens and artefact scatters are appropriately preserved. Note – Under Section 23 of the *Aboriginal Cultural Heritage Act 2003*, a person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage. Information is available on www.datsip.qld.gov.au or by working with the relevant local Aboriginal group.
Design			
PO4	Renewable energy facilities mitigate potential visual impacts on sensitive uses and major roads through siting, design, and operation of the facility.	**AO4.1**	Where a Renewable energy facility is visible to sensitive uses or arterial roads, a visual impact assessment is conducted to ensure visual impact does not exceed 'moderate', as defined by Table SC 9.3.116.1 within PSP SC6.2.6 Renewable energy facility visual impact assessment. Note – This may be demonstrated by undertaking a Renewable energy facility visual impact assessment report in accordance with PSP 6.2.6 Renewable energy visual impact assessment.
PO5	Appropriate security and safety measures are installed.	**AO5.1**	Security lighting, CCTV and signage is installed at entrances and buildings to deter crime.
		AO5.2	Any fencing does not exceed 2.4m in height made of chain wire or materials of similar visual permeability is constructed around the development footprint.
Construction, operation and decommissioning			
PO6	Development maintains road safety by offsetting damage to roads utilised by heavy vehicles during construction and decommissioning phases.	**AO6.1**	Development completes: (a) an appraisal of roads to be utilised by heavy vehicles prior to construction and decommissioning phases; and (b) repairs to all damage to Council and public utility

Performance Outcomes		Acceptable Outcomes	
			assets as a result of construction or decommissioning processes, immediately after completion of the respective development phase.
PO7	Development provides appropriate design and controls in construction, operation and decommissioning to mitigate amenity impacts on surrounding uses and roads from noise, dust and lighting.	AO7.1	Construction and decommissioning shall occur between the hours of 6:30am and 6:30pm Monday to Saturday, with work on Sundays limited to a maximum of 10 workers on-site for safety inspections, checks and environmental work.
		AO7.2	A Construction Environmental Management Plan is completed and adhered to, outlining actions to be taken to mitigate potential amenity or environmental impacts, performance targets and monitoring processes in construction. Note – Environmental and amenity performance targets and monitoring shall be in accordance with *Environmental Protection Act 1994* and associated policies.
		AO7.3	An Operational Environmental Management Plan managing ongoing impacts during operation is completed and adhered to, outlining: (a) system and operational monitoring; (b) site management and maintenance responsibilities; (c) bio security, pest control and weed management; (d) landscaping and fencing maintenance; (e) complaint handling procedure; (f) emergency response plan; and (g) waste management plan. Note – Environmental and amenity performance targets and monitoring shall be in accordance with *Environmental Protection Act 1994* and associated policies.

Performance Outcomes		Acceptable Outcomes	
		AO7.4	All outdoor lighting is: (a) designed, sited, installed and tested to comply with tables 2.1 and 2.2 of Australian Standard 4282-1997 Control of the Obtrusive Effects of Outdoor lighting using a control level of 1; and (b) all lighting is of a type that give no upward component of light when mounted horizontally.
PO8	Where for the development of a solar farm, land is appropriately rehabilitated, guided by a rehabilitation and exit plan that is provided to Council 1 year prior to decommissioning for endorsement, prepared by a suitably qualified person.	AO8.1	Where for the development of a solar farm, a land rehabilitation and exit plan is provided to Council 1 year prior to decommissioning for endorsement: (a) prepared by a suitably qualified person; (b) demonstrating that the site will be restored to a standard capable of the level of productivity that was available prior to development; (c) identifying possible land uses following cessation of the approved use; (d) clearly establishing the objectives of the plan; (e) setting out performance criteria for rehabilitation efforts; (f) including an Action plan, with timing for remedial works, such as structure removal, removal of imported materials, soil erosion, pre-development drainage, vegetation cover works and weed and pest management to meet rehabilitation performance criteria; and (g) outlining a program for monitoring rehabilitation success using appropriate indicators.
Servicing			
PO9	Development is provided with and connected to essential infrastructure and services.	AO9.1	Development provides adequate potable water supply to service on-site personnel, having: (a) minimum storage capacity of 50,000L; and (b) a first flush system.

Performance Outcomes		Acceptable Outcomes	
		AO9.2	Reticulated sewerage system or an alternative effluent and wastewater treatment system is provided on-site and consistent with the *Queensland Pplumbing and wWastewater cCode*.
PO10	Adequate water supply and fire-fighting equipment is provided in accessible locations on-site suitable to deal with electric and electronic fires.	AO10.1	On-site bushfire equipment must include a minimum of 5,000L water supply, with a 50mm male camlock fitting for rural fire fighting connections.
		AO10.2	Appropriate firefighting equipment to deal with electrical fires is provided at locations at risk.

~~12.3.11~~9.3.12 Residential care facility and retirement facility code

~~12.3.11.1~~9.3.12.1 Application

This code applies to assessable development:

(a) being a material change of use for a residential care facility or retirement facility; and

(b) identified as requiring assessment against the Residential care facility and retirement facility code by the tables of assessment in Part 5 (Tables of assessment).

~~12.3.11.2~~9.3.12.2 Purpose and overall outcomes

(1) The purpose of the Residential care facility and retirement facility code is to ensure residential care facilities and retirement facilities:

(a) are appropriately located to meet the particular needs of residents;

(b) are designed in a manner which provides a comfortable and safe environment for residents; and

(c) protect the amenity of, and integrate with, surrounding premises.

(2) The purpose of the Residential care facility and retirement facility code will be achieved through the following overall outcomes:

(a) a residential care facility or retirement facility is located where residents can have easy and direct access to public transport, community services and facilities;

(b) a residential care facility or retirement facility provides a home-like, non-institutional environment that promotes individuality, sense of belonging and independence;

(c) a residential care facility or retirement facility achieves a balance between providing specialised housing for residents, whilst providing the opportunity for residents to participate in the wider community;

(d) a residential care facility or retirement facility is designed to be integrated with surrounding development;

(e) a residential care facility or retirement facility is sited, such that there is ease of movement, safety and legibility for residents and visitors; and

(f) a residential care facility or retirement facility is designed, such that the comfort, safety, security, individuality, privacy and wellbeing of residents are promoted.

~~12.3.11.3~~9.3.12.3 Assessment benchmarks

Table 9.3.12.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	The residential care facility or retirement facility is located so that residents have convenient access to:	**AO1.1**	The residential care facility or retirement facility is located: (a) on a site within 1km of a centre zone; or

Performance Outcomes		Acceptable Outcomes	
	(a) everyday commercial facilities; (b) community facilities and social services; and (c) regular public transport or facility specific transport that provides a comparable or better level of service.		(b) on a site within 400m walking distance of a public transport stop; or (c) where the residential care facility or retirement facility is not located close to an activity centre or public transport stop, a regular, convenient and affordable transport service is provided for residents by the facility operator to the nearest activity centre or public transport connection.
PO2	The residential care facility or retirement facility is on a site which: (a) is not exposed to unacceptable levels of noise, unhealthy air emissions or other nuisance; and (b) is not constrained by steep slopes or other physical limitations that may represent an impediment for residents and staff using the facility.	**AO2.1**	The site is not within: (a) 250m of land included in the Medium impact industry zone; or (b) 500m of land included in the High impact industry or Special impact industry zone.
		AO2.2	The residential care facility or retirement facility is not located on land where: (a) soils are contaminated by pollutants which may represent a health or safety risk to residents; or (b) maximum concentrations of air pollutants exceed those recommended by the National Health and Medical Research Council.
		AO2.3	The residential care facility or retirement facility is located on land: (a) with a slope not exceeding 10%; or (b) where located on land with a slope exceeding 10%, the facility is designed, such that any areas to be accessed by residents of the facility are not steeper than 5%.
Site area and dimensions			
PO3	The residential care facility or retirement facility is located on a site, which has an area and dimensions suitable to enable the development of a well-designed and integrated facility.	**AO3.1**	The design of the residential care facility or retirement facility needs to incorporate and take into account: (a) accommodation and support facilities; (b) vehicles access, parking and manoeuvring; (c) stormwater treatment areas; (d) open space areas and landscaping; and

Performance Outcomes		Acceptable Outcomes	
			(e) any necessary buffering to adjoining uses or other elements.
Integration of large sites with neighbourhoods and street networks			
PO4	The residential care facility or retirement facility is integrated with the neighbourhood and local transport network.	**AO4.1**	The residential care facility or retirement facility: (a) is connected to, and forms part of, the surrounding neighbourhood rather than establishing a separate private enclave; (b) is integrated with, and extends the, existing or proposed local transport network; (c) provides for legible and direct pedestrian, bicycle and vehicular access for all residents to nearby activity centres, community facilities and public open space; and (d) clearly defines the boundaries of public, communal and private open space.
Building scale and bulk			
PO5	The residential care facility or retirement facility is sited and designed in a manner, which: (a) results in a building scale that is compatible with surrounding development; (b) does not represent an appearance of excessive bulk to adjacent premises, the streetscape or other areas external to the site; (c) allows sufficient area at ground level of private and communal open space, site facilities, resident and visitor parking, landscaping and maintenance of a residential streetscape; and (d) facilitates on-site stormwater management and vehicle access.	**AO5.1**	Site cover does not exceed 50%.
		AO5.2	Building bulk is reduced by incorporating a combination of the following elements in building design: (a) verandahs; (b) recesses; (c) variation in materials, colours and/or textures, including between levels; and (d) variation in building form.
		AO5.3	The length of any unarticulated elevation of a building, fence or other structure visible from the street does not exceed 15m.
		AO5.4	Any building does not exceed 40m in length, with separation between buildings, for the purposes of cross ventilation, articulation and light, of at least 6m.
Building design and streetscape appearance			
PO6	The residential care facility or retirement facility is designed to: (a) create an attractive and functional living environment for residents; (b) take account of its setting and site context; and	**AO6.1**	The residential care facility or retirement facility incorporates a high standard of facility design that is responsive to the specific needs of its residents.
		AO6.2	Buildings are oriented to the street and provide casual surveillance of the street.

Performance Outcomes		Acceptable Outcomes	
	(c) make a positive contribution to the character of the street and local area.	**AO6.3**	Buildings and structures are setback a minimum of: (a) 6m from the front boundary; and (b) 4.5m from the side and rear boundaries.
		AO6.4	Screening of balconies is limited to the side and rear boundaries and the sides of balconies, where needed, to prevent noise and overlooking of other rooming units or dwellings and recreation areas.
		AO6.5	Services structures and mechanical plants are screened or designed as part of the building.
PO7	The site layout and design of buildings forming part of the residential care facility or retirement facility promote a domestic scale, individuality and sense of belonging.	**AO7.1**	Rooming units and dwellings are configured in clusters with each cluster clearly addressing the street and each rooming unit and dwelling having clearly defined private open space and a prominent front door.
		AO7.2	Clusters of rooming units and dwellings are supported by unique design features that help identify and individualise them.
		AO7.3	Rooming units and dwellings have clear addresses within a conventional address system of streets and dwellings.
		AO7.4	Logical, direct and separated pedestrian and vehicle routes are provided between rooming units, dwellings, communal buildings, other on-site facilities and facilities in the neighbourhood.
PO8	The residential care facility or retirement facility ensures that dwellings, rooming units, private open spaces and adjoining Accommodation activities are provided with a reasonable level of privacy.	**AO8.1**	Non-habitable room windows of a dwelling or rooming unit are not located opposite the non-habitable room windows of another dwelling or rooming unit, unless views are controlled by screening devices, distance, landscaping or design of the opening.
		AO8.2	Where habitable room windows look directly at habitable room windows in an adjacent dwelling or rooming unit, within 2m at the ground level or 9m at levels above the ground level, privacy is protected by: (a) window sill heights being a minimum of 1.5m above floor level; or

Performance Outcomes		Acceptable Outcomes	
			(b) fixed opaque glazing being applied to any part of a window below 1.5m above floor level; or (c) fixed external screens; or (d) if at ground level, screen fencing to a minimum height of 2m.
		AO8.3	For development up to and including 3 storeys in height, the outlook from private, communal or public areas is screened where direct view is available into private open space of an existing dwelling.
Open space			
PO9	The residential care facility or retirement facility incorporates communal and private open space areas that provide: (a) sufficient spaces for residents to engage in and enjoy outdoor activities; (b) high levels of residential amenity; (c) boundary fences and walls that do not visually dominate; and (d) promote casual surveillance and integration with the street.	**AO9.1**	At least 30% of the area of the site is provided as communal open space.
		AO9.2	Each ground floor rooming unit is provided with a courtyard, verandah or similar private open space area not less than 10m², with a minimum dimension of 2.5m directly accessible from the living area.
		AO9.3	Each rooming unit above ground floor level has a balcony or similar private open space area not less than 4.5m² with a minimum dimension of 1.7m directly accessible from the living area.
		AO9.4	A 2m high solid screen fence is provided along the full length of all side and rear boundaries of the site.
		AO9.5	Unless required to ameliorate traffic noise or headlight glare, high solid fences or walls are avoided along street frontages.
Management, residential care and social facilities			
PO10	The residential care facility or retirement facility provides appropriate management, social and care facilities on-site.	**AO10.1**	The residential care facility or retirement facility provides management, supervised care and social facilities in communal buildings.
		AO10.2	Communal buildings are easily accessible and centrally located, permitting residents to easily navigate the site on foot or with the assistance of mobility aids.
Accessibility			
PO11	The residential care facility or retirement facility incorporates easy and safe pedestrian access and movement.	**AO11.1**	No dwelling or rooming unit is more than 250m walking distance from a site entry or exit point.

Performance Outcomes		Acceptable Outcomes	
		AO11.2	All pathways and land used for outdoor recreation have grades of 5% or less, with paths having hard, slip resistant surfaces.
		AO11.3	Internal paths, ramps and hallways are capable of accommodating two wheelchairs (side by side) at any one time.
		AO11.4	Development complies with AS1428 (Design for access and mobility).
		AO11.5	Buildings exceeding one level in height incorporate lifts to each level and ramped access.
Safety and security			
PO12	The residential care facility or retirement facility provides a safe and secure living environment.	**AO12.1**	Buildings adjacent to public or communal streets or open space have at least one habitable room window with an outlook to that area.
		AO12.2	Entrances and exits to the site are clearly marked and well lit.
		AO12.3	Bollards or overhead lighting, which achieves lighting levels of at least category 2 as specified in AS1158 (Lighting roads and public spaces), is provided along: (a) all footways and roads; and (b) in all car parking areas.
Services and utilities			
PO13	The residential care and retirement facility is provided with: (a) a safe and reliable water supply; and (b) a sewage disposal system, which maintains acceptable public health and environmental standards.	**AO13.1**	The site is connected to the reticulated water supply, sewerage and stormwater drainage infrastructure networks.

~~12.3.12~~9.3.13 Rural activities code

~~12.3.12.1~~9.3.13.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Rural activities code by the tables of assessment in Part 5 (Tables of assessment).

~~12.3.12.2~~9.3.13.2 Purpose and overall outcomes

(1) The purpose of the Rural activities code is to facilitate rural uses and ensure Rural activities are developed in a sustainable manner, which conserves the productive characteristics of rural land and protects environmental and landscape values and the amenity of surrounding premises.

(2) The purpose of the Rural activities code will be achieved through the following overall outcomes:

(a) Rural activities are undertaken on a sustainable basis;

(b) agricultural land is conserved and not alienated or encroached upon by incompatible land uses;

(c) uses that support rural production are established on suitable sites where environmental and amenity impacts can be effectively managed; and

(d) adverse impacts on the surrounding or downstream environments or natural environmental processes are avoided.

~~12.3.12.3~~9.3.13.3 Assessment benchmarks

Table 9.3.13.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
General requirements			
PO1	The Rural activity is conducted on a lot that is of sufficient size to reasonably accommodate the use and mitigate potential nuisance arising from noise, dust, odour and other emissions or contaminants generated by the use.	**AO1.1**	The lot is of an adequate size to sufficiently support the intended Rural activity.
PO2	Buildings and structures associated with the Rural activity are sited and designed to avoid or minimise adverse visual impacts on the rural landscape.	**AO2.1**	Buildings and structures, other than a dwelling house, associated with the Rural activity are set back at least 10m from all site boundaries.
Requirements for permanent plantation			
PO3	The plantation forest is located, such that it conserves the productive characteristics of agricultural land.	**AO3.1**	The plantation forest is not located on agricultural land identified on the Overlay map – ~~AL - 01:29~~ Agriculture land overlay.
Requirements for roadside stall			
PO4	The roadside stall is limited in scale and appropriate to a rural area.	**AO4.1**	Produce sold at the roadside stall is limited to that which is grown or produced on the site.
		AO4.2	The roadside stall does not involve the sale of

Performance Outcomes		Acceptable Outcomes	
			manufactured goods, other than those manufactured on the site.
		AO4.3	Buildings and structures associated with the roadside stall: (a) are constructed along the property boundary; (b) occupy not more than 10m² GFA; and (c) are constructed of materials that can easily be dismantled following the cessation of the use.
		AO4.4	The roadside stall is ancillary to a Rural activity occurring on the same site.
PO5	The roadside stall does not have an adverse impact on the safety and functioning of the road network.	**AO5.1**	The roadside stall is located on a site adjoining a road other than a State controlled road.
		AO5.2	The location of the road side stall provides sufficient area for parking and for the safe entry and exit of vehicles from the site.
PO6	Signage associated with the roadside stall is small, unobtrusive and appropriate to a rural location.	**AO6.1**	Not more than 1 sign is erected on the premises and the sign: (a) has a maximum sign face area of 0.5m² per side; and (b) is not illuminated or in motion.

Table 9.3.13.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Requirements for intensive Rural activities (Animal keeping, Aquaculture, Intensive animal industry, Intensive horticulture and Rural industry)			
PO1	The intensive Rural activity is sited and designed on a lot of sufficient area to: (a) accommodate the use, including buildings, pens, ponds, other structures and waste disposal areas involved in the use; (b) provide for adequate setbacks to: (i) road frontages; (ii) site boundaries; (iii) sensitive uses on surrounding land; and (iv) waterways or wetlands; and (c) avoid or minimise adverse visual impacts on the rural landscape.	**AO1.1**	The intensive Rural activity is located on a site, which has a minimum area and setbacks complying with Table 9.3.13.3.3 Siting and setback requirements for intensive Rural activities unless for a: ~~(c)~~(a) Caretakers accommodation; or ~~(d)~~(b) Rural workers' accommodation.
PO2	The intensive Rural activity is located on a site, which is sufficiently separated from any	**AO2.1**	The intensive Rural activity is located on a site, which is not less than:

Performance Outcomes		Acceptable Outcomes	
	existing or planned residential, rural residential area or other sensitive activity, to avoid any adverse impacts with regard to noise, dust, odour, visual impact, traffic generation, lighting, radiation, other emissions or contaminants.		(a) 1km from land included in a residential zone; (b) 1km from land included in the Rural residential zone; and (c) 1km from any Community activity where people gather, such as educational establishment or child care centre; or (d) if the intensive Rural activity is a rural industry, the use is located on a site, which is not less than 5100m from a sensitive use.
PO3	The intensive Rural activity is located, such that it conserves the productive characteristics of agricultural land.	**AO3.1**	The intensive Rural activity: (a) is not located on agricultural land identified on the Overlay map – ~~AL - 01:29~~ Agriculture land overlay; or (b) where located on agricultural land identified on the Overlay map – ~~AL - 01:29~~ Agriculture land overlay, the use and associated activities conserves the productive characteristics of the agricultural land.
Environmental and amenity impacts			
PO4	The intensive Rural activity provides for the appropriate disposal of waste and contaminants.	**AO4.1**	The intensive Rural activity incorporates waste disposal systems and practices, which: (a) ensures that off-site release of contaminants does not occur; (b) ensures no significant adverse impacts on surface or ground water resources; and (c) complies with relevant Government or industry guidelines, codes and standards applicable to a specific use or on–site waste disposal.

Table 9.3.13.3.3 Siting and setback requirements for intensive Rural activities.

Rural activity	Min. site area (ha)	Min. boundary setbacks (m)	Min. distance from a sensitive use on a surrounding land (m)
Animal keeping	4ha	50m from any road frontage and 15m from any side or rear boundary.	300m
Aquaculture	5ha	50m from any road frontage and 15m from	100m

Rural activity	Min. site area (ha)	Min. boundary setbacks (m)	Min. distance from a sensitive use on a surrounding land (m)
		any side or rear boundary.	
Intensive animal industry, such as a piggery or feedlot.	20ha	200m from any road frontage and 15m from any side or rear boundary.	250m
Intensive animal industry, such as poultry farms.	50ha	100m from any road frontage and 100m from any side or rear boundary.	400m
Intensive animal industry, such as emu or ostrich hatching and brooding facility.	4ha	60m from any road frontage and 15m from any side or rear boundary.	400m
Intensive animal industry, where not previously specified.	20ha	200m from any road frontage and 15m from any side or rear boundary.	250m
Intensive horticulture	10ha	50m from any road frontage and 15m from any side or rear boundary.	100m
Rural industry	1ha	50m from any road frontage and 10m from any side or rear boundary	100m

9.3.14 Rural tourism code

9.3.14.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Rural tourism code by the tables of assessment in Part 5 (Tables of assessment).

9.3.14.2 Purpose and overall outcomes

(1) The purpose of the Rural tourism code is to ensure uses supporting the tourism industry are appropriately located and designed in a manner which meets the needs of visitors, preserves natural ecological systems and cultural heritage, promotes natural amenity, promotes the Whitsunday tourism brand and protects the on-going operation of surrounding Rural activities; and

(2) The purpose of the Rural tourism code will be achieved through the following overall outcomes:

(a) development is located in proximity of horticultural hubs, areas of high natural amenity, key natural assets and cultural or historic sites in the Region;

(b) development is designed and sited to minimise impacts on nearby dwellings and the productive use of agricultural land;

(c) development is of a scale and intensity that is compatible with, and subservient to, the rural or natural setting and the prevailing character of the local area; and

(d) development is provided with appropriate utilities and services for visitors.

9.3.14.3 Assessment benchmarks

Table 9.3.14.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Shop and food and drink outlet			
PO1	A shop or food and drink outlet is small in scale, and ancillary to the primary use of the premises.	AO1.1	A shop or food and drink outlet is ancillary to a Rural activity, Recreation activity, Low impact industry that is a brewery or coffee roastery, Environmental facility or Nature based tourism and does not exceed 150m² of TUA.

Table 9.3.14.3.2 Benchmarks for assessable development

Performance Outcomes	Acceptable Outcomes
Location and site suitability	

Performance Outcomes		Acceptable Outcomes	
PO1	Development does not impact on the amenity or privacy of adjoining or nearby residential or sensitive uses.	AO1.1	Development utilises landscaping to preserve amenity and privacy for adjoining sensitive uses and is setback at least: (a) 20 metres from any adjoining property boundary where for an Accommodation activity; or (b) 50 metres from any adjoining property boundary where for a Business or Recreation activity.
PO2	Development does not conflict with the operations of Rural activities.	AO2.1	Accommodation, kitchen and common areas within the development are adequately buffered by vegetation and are separated from adjacent intensive agricultural uses in accordance with Table 9.3.13.3.3 Siting and setback requirements for intensive Rural activities.
Scale and design			
PO3	A Nature-based tourism activity does not detract from the environmental or rural character and amenity of the local area.	AO3.1	For Nature-based tourism involving cabins: (a) the GFA of each cabin does not exceed 60m²; and (b) the maximum number of cabins on any site does not exceed 8.
		AO3.2	For Nature-based tourism, including camp grounds, the maximum number of camping sites on any premises does not exceed 50.
PO4	Development is located, orientated and designed to enhance the rural or natural setting for visitors.	AO4.1	Development is orientated and designed to enhance the experience of natural assets or the rural setting of the premises, including: (a) plantings to enhance the rural or natural setting and provide habitat for local wildlife; (b) orientation and location of rooms and communal areas toward scenic vistas on the premises; (c) large windows, balconies and verandas overlooking natural or rural settings; or

Performance Outcomes		Acceptable Outcomes	
			(d) architecture or placemaking elements that capture the sense of place.
PO5	Development is designed to: (a) provide an attractive landscape setting; (b) integrate the development into the surrounding landscape; (c) maximise the retention of existing mature trees to retain the landscape character of the area; and (d) preserve the amenity and privacy of adjoining habitable buildings.	AO5.1	Development preserves mature trees where possible and utilises high quality landscaping to: (a) identify the entrance to the premises; (b) provide shading of common areas, pathways and car parks; (c) soften solid fencing and built form in a manner that integrates built aspects into the natural environment; and (d) provide vegetation buffers to preserve the privacy and amenity of neighbouring habitable buildings and mitigate amenity impacts from adjoining uses.
PO6	The scale, design and external finish of buildings: (a) complements the rural and/or natural character of the area; and (b) incorporates colours and finishes that allow buildings to blend in with the rural and/or natural landscape.	AO6.1	Buildings take the form of small, separate buildings.
		AO6.2	Materials and finishes utilise: (a) muted earth/environmental tones that blend with the rural and/or natural environment; and (b) low reflective roofing and building materials. Note – Appropriate colours will depend on the existing native vegetation and backdrop. A colour palette may be requested by Council to ensure built form integration.
Access and servicing			
PO7	An acceptable standard of facilities is provided for guests.	AO7.1	For cabin accommodation: (a) shower, wash basin and toilet amenities are provided within each cabin; and (b) a common area or building is provided for food preparation, dining and other facilities.
		AO7.2	For camping grounds, a minimum of 2 toilets are provided on-site for every 10 camping sites.

Performance Outcomes		Acceptable Outcomes	
PO8	Development is provided with: (a) a safe and reliable potable water supply commensurate with the needs of the users; (b) a sewerage system, which maintains acceptable public health and environmental standards; and (c) adequate firefighting supplies.	AO8.1	The development has access to: (a) a potable water supply and water storage collection system capable of servicing the development that complies with the *Australian Drinking Water Guidelines* (NHMRC, 2011); and (b) an effective on-site effluent disposal system capable of accommodating anticipated maximum demand at 100% occupancy.
		AO8.2	Where not affected by a Bushfire overlay risk area, adequate fire-fighting water supply is provided on the premises: (a) sited to enable emergency service vehicles to park within 6m; (b) at least 10m from the building; (c) located within 60m of the building and not more than 90m from any part of the building; and (d) fitted with fire brigade tank fittings (50mm ball valve & male camlock coupling). Note – Provisions within the Bushfire overlay take precedence over this outcome where affected.
PO9	Development: (a) where composed of 10 or less camp sites, signage and operational controls are in place to ensure user management of waste; or (b) provides on-site facilities for the storage and collection of refuse, with facilities located in convenient and unobtrusive positions capable of being serviced by the Council's refuse collection contractor, where within the service area, or by local contractor in un-serviced areas.	AO9.1	Development ensures waste management facilities are: (a) adequately screened by landscaping or fencing to maintain amenity; (b) setback from Accommodation activities by at least 10m; and (c) where a Nature-based tourism use, a central waste collection area is provided for every 25 sites; or (d) where a shop, food and drink outlet or Recreation activity, waste bins are provided at key entrances and exits.

Performance Outcomes		Acceptable Outcomes	
PO10	Development manages impacts on neighbouring properties from dust, noise and traffic associated with vehicular movement to and from the development.	AO10.1	Development utilises mini-buses to reduce vehicular trips and: (a) access and parking areas provide dense vegetation on all sides, if within 50m of a neighbouring sensitive use; or (b) access and parking areas are sealed, if within 50m of a neighbouring sensitive use. Note – Where demonstrating effective use of mini-buses to service development, a car parking dispensation may be granted. Traffic impact assessment report prepared in accordance with PSP SC6.7 (Growth management) may assist in demonstrating compliance with the performance outcome.

~~12.3.13~~9.3.15 Sales office code

~~12.3.13.1~~9.3.15.1 Application

This code applies to accepted and assessable development:

(a) being a material change of use for a sales office; and

(b) identified as requiring assessment against the Sales office code by the tables of assessment in Part 5 (Tables of assessment).

~~12.3.13.2~~9.3.15.2 Purpose and overall outcomes

(1) The purpose of the Sales office code is to ensure sales offices are temporary in nature and are developed in a manner, which protects the amenity of surrounding premises.

(2) The purpose of the Sales office code will be achieved through the following overall outcomes:

(a) the siting, layout, design and operation of a sales office is commensurate to, and does not adversely impact upon, the character and amenity of the surrounding area; and

(b) a sales office is operated for a temporary duration only.

~~12.3.13.3~~9.3.15.3 Assessment benchmarks

Table 9.3.15.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Operational characteristics			
PO1	The duration of the use of premises for a sales office does not extend beyond a reasonable period.	**AO1.1**	A sales office, where: (a) a display dwelling, display village or estate sales office, operates for a maximum period of 2 years; or (b) a dwelling offered as a prize, operates for a maximum period of 6 months.
		AO1.2	Any temporary building or structure associated with the operation of the sales office is removed from the site within 14 days of the end of the period of operation and the site is left in a clean and tidy condition.
PO2	Where the temporary use of a sales office is contained within a structure intended to become a genuine residential dwelling, it is constructed in accordance with the relevant requirements for the ultimate use.	**AO2.1**	Where a sales office is located in a Class 1 building (Dwelling house) this dwelling must comply with Part 9.3.5 Dwelling house code.
PO3	The location, hours of operation and activities of the sales office does not adversely affect the amenity of nearby existing and	**AO3.1**	A sales office: (a) is located at the major entry to the development site; (b) only operates between 8.00am and 6.00pm; and

Performance Outcomes		Acceptable Outcomes	
	potential future residential premises.		(c) sales and promotional activities do not create a nuisance to adjoining residents or residents in the immediate locality.
PO4	The number of employees engaged in the operation of the sales office does not adversely affect the amenity of nearby residential premises.	**AO4.1**	A sales office, where a: (a) display dwelling, dwelling offered as a prize or estate sales office, has a maximum of 2 employees engaged in the operation at any one time; or (b) display village, has a maximum of 2 employees per display home engaged in the operation at any one time.
Public convenience facilities			
PO5	The sales office provides appropriate public convenience facilities for users of the sales office.	**AO5.1**	Public toilet facilities are provided for a display village comprising 4 or more display dwellings.
On-site car parking			
PO6	Sufficient car parking is provided to satisfy the projected needs of the sales office and is appropriately designed.	**AO6.1**	A sales office ensures: (a) a minimum of 2 on-site parking spaces are provided, where on-street parking is not available; or (b) a minimum of 2 on-street car parking spaces are available within 50m of the sales office.

~~12.3.14~~9.3.16 Service station code

~~12.3.14.1~~9.3.16.1 Application

This code applies to assessable development:

(a) being a material change of use for a service station; and

(b) identified as requiring assessment against the Service station code by the tables of assessment in Part 5 (Tables of assessment).

~~12.3.14.2~~9.3.16.2 Purpose and overall outcomes

(1) The purpose of the Service station code is to ensure service stations are developed in appropriate locations and in a manner, which meets the needs of users, provides safe access and protects the environment and amenity of surrounding premises.

(2) The purpose of the Service station code will be achieved through the following overall outcomes:

(a) a service station is established at a suitable location, on a site that is capable of accommodating all necessary and associated activities;

(b) a service station does not adversely impact upon the amenity of the surrounding local area;

(c) a service station incorporates a high standard of built form and landscaping;

(d) a service station is provided with safe and convenient access to the road network;

(e) a service station incorporates appropriate environmental management measures; and

(f) minimises the risk of land, ground and surface water contamination.

~~12.3.14.3~~9.3.16.3 Assessment benchmarks

Table 9.3.16.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	The service station is located on a site having sufficient area and dimensions to accommodate required buildings, structures, vehicle access, manoeuvring areas, site landscaping and buffer areas.	**AO1.1**	The service station site is located on a site that: (a) is at least 1,500m² in area; and (b) has a street frontage of at least: (i) 35m, where the site is a corner site; or (ii) 40m otherwise.
PO2	The service station is located so that it does not adversely impact upon the amenity of existing or future planned residential areas.	**AO2.1**	The service station is located: (a) on land included in a centre or industry zone; or (b) in the Rural zone on a major road and at least 15km from any existing or approved service station.
Siting of building and structures			

Performance Outcomes		Acceptable Outcomes	
PO3	Buildings and structures associated with the service station are sited to: (a) ensure the safe and efficient use of the site and operation of the facility; (b) protect streetscape character; and (c) provide adequate separation to adjoining land uses.	**AO3.1**	Buildings and structures are setback a minimum of: (a) 9m to the primary street frontage; (b) 3m to any secondary street frontage; and (c) 5m from any side or rear boundary, where adjoining a sensitive use or land in a residential zone or the Community facilities zone; or (d) where not adjoining a sensitive use or land in a residential zone or the Community facilities zone, no minimum side or rear boundary setback applies.
		AO3.2	For front boundary setbacks fuel pumps and canopies are setback a minimum of 7.5m from the property boundary.
		AO3.3	On-site storage of refuse is located so that it is not visible from the street.
PO4	Development maintains and contributes to the visual amenity of the locality.	**AO4.1**	Development ensures a 4m wide landscaping strip containing ground cover and small shrubs is maintained along: (a) a minimum 50% of the primary frontage; or (b) a minimum 75% of the total frontage, where a secondary frontage exists.
Location of fuel pumps and bulk fuel storage			
PO5	Fuels pumps and bulk fuel storage tanks are located: (a) wholly within the site; (b) such that vehicles, while refuelling, are standing wholly within the site and are parked away from entrances and circulation driveways; and (c) a safe distance from all site boundaries.	**AO5.1**	Fuel pumps are located in accordance with AS1940 (The storage and handling of flammable and combustible liquids).
		AO5.2	Inlets to bulk fuel storage tanks are located to ensure that tankers, while discharging fuel, are standing wholly within the site and are on level ground.
Access and parking			
PO6	The service station: (a) does not impair traffic flow or road safety; and (b) facilitates, through the design and arrangement of vehicular crossovers and on-site circulation, safe and convenient movement to, from and within the site.	**AO6.1**	Separate entrances and exits are provided, and these are clearly marked for their intended use.
		AO6.2	Vehicle crossovers are at least 8m wide.
		AO6.3	No part of a vehicle crossover is closer than: (a) 14m from any other vehicle crossover on the same site;

Performance Outcomes		Acceptable Outcomes	
			(b) 12m from an intersection; and (c) 3m from any property boundary.
		AO6.4	Adequate queuing areas are provided for refuelling, washing and related facilities.
		AO6.5	Bulk delivery area is located so that the site access and traffic flow is not restricted during delivery.
Environmental performance			
PO7	The service station is designed and constructed to ensure that on-site operations: (a) do not cause any environmental nuisance or harm; (b) do not result in the release of contaminants or untreated pollutants; (c) achieve acceptable levels of stormwater run-off quality and quantity; and (d) where practical, minimise wastage through recycling of liquid and solid waste.	**AO7.1**	Sealed impervious surfaces are provided in areas, where potential spills of contaminants may occur.
		AO7.2	Grease and oil arrestors or other infrastructure is provided to prevent the movement of contaminants from the site.
		AO7.3	Storm water is diverted away from the forecourt area or areas of potential contamination.
		AO7.4	The collection, treatment and disposal of solid and liquid wastes ensures that: (a) off-site releases of contaminants do not occur; and (b) measures to minimise waste generation and to maximise recycling are implemented.
		AO7.5	Ancillary automatic mechanical carwash facilities, where provided, are designed to collect, treat and recycle waste water for reuse.
Protection of residential amenity			
PO8	The service station ensures the amenity of existing or planned residential areas is protected and air pollutants, noise, light or odour nuisance is avoided.	**AO8.1**	Where the service station adjoins an Accommodation activity or land included in a residential zone: (a) a 2m high solid screen fence is provided along all common property boundaries of the site; and (b) the hours of operation of the service station are limited to between 7.00am to 10.00pm.
		AO8.2	The layout and design of the service station provides for the storage and collection of waste and is screened from public view.
		AO8.3	The service station limits the generation of noise, such that:

Performance Outcomes		Acceptable Outcomes	
			(a) nuisance is not caused to a sensitive land use; (b) desired ambient noise levels for residential areas are not exceeded; and (c) applicable legislative requirements are met.
		AO8.4	The service station prevents or minimises any emissions of odour, dust and air pollutants, such that: (a) nuisance is not caused beyond the site boundaries; and (b) air quality conducive to the health and wellbeing of people is maintained.
PO9	External lighting is designed, located and operated to avoid any adverse impacts on the amenity of neighbouring premises.	**AO9.1**	External lighting is provided in accordance with AS4282 (Control of obtrusive effects of outdoor lighting).
Ancillary on-site amenities			
PO10	Customer air and water facilities, and any ancillary automatic mechanical car washing facilities are provided in a way that protects the amenity of nearby Accommodation activities.	**AO10.1**	Ancillary facilities are located such that: (a) vehicles using, or waiting to use, such facilities are standing wholly within the site; and (b) an adequate buffer is provided to any adjoining Accommodation activities.
Extent of retail sale of goods			
PO11	The associated sale of goods, including food stuffs, is ancillary to the provision of fuel and automotive repairs and service.	**AO11.1**	The GFA used for the associated retail sale of goods is limited to 150m².
		AO11.2	Liquid contaminants are stored: (a) in a bunded area capable of containing 125% of the largest package; or (b) are located so that a spill can be contained within an existing contaminated area, such as the forecourt.

12.3.159.3.17 Short-term accommodation and Mmulti-unit uses code

12.3.15.19.3.17.1 Application

This code applies to assessable development identified as requiring assessment against the Short-term accommodation and Mmulti-unit uses code by the tables of assessment in Part 5 (Tables of assessment).

12.3.15.29.3.17.2 Purpose and overall outcomes

(1) The purpose of the Short-term accommodation and Mmulti-unit uses code is to ensure Short-term accommodation and multi-unit uses are of a high qualityhigh-quality design, and which appropriately responds integrate with to local character, environment and amenity considerations.

(2) The purpose of the Short-term accommodation and Mmulti-unit uses code will be achieved through the following overall outcomes:

(a) a multi-unit use development is visually attractive with a built form that addresses the street and integrates with surrounding development;

(b) a multi-unit use incorporates building design that responds to the character of the local areadevelopment minimises residential amenity impacts on the surrounding area;

(c) developmenta multi-unit use incorporates high quality landscaping and well designed, useable communal and private open space areas, that provide visual relief to the built form;

(d) developmenta multi-unit use provides a high standard of privacy and amenity for residents; and

(e) a multi-unit use is supported by infrastructure and services are provided, commensurate with the scale of the use and its location.

12.3.15.39.3.17.3 Assessment benchmarks

Table 9.3.17.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Short-term accommodation (Dwelling)			
PO1	Development: (a) is occupied and used in a manner generally expected of the type of dwelling in its locality; (a) does not detract from the prevailing environmental, residential or rural character and amenity of the local area.	**AO1.1**	No more than 2 guests are permitted per bedroom and: (a) if Short-term accommodation (Dwelling) accommodating no more than 8 resident guests at any one time, none may stay within a Secondary dwelling; or (b) if Short-term accommodation (Dwelling) on premises involving two dwellings on one lot, not more than 4 guests per dwelling stay at any one time.

Performance Outcomes		Acceptable Outcomes	
PO2	Use of the premises does not cause adverse impacts on the amenity of the neighbourhood by reason of: (a) use of outdoor areas, including but not limited to swimming pools/spas, outdoor decking/balconies and pontoons; or (b) noise from guests, visitors, entertainers or amplified devices.	AO2.1	Audible noise beyond the boundary of the premises does not happen: (a) between 9.00pm to 7.00am on a Sunday to Thursday night; and (b) between 11.00pm to 7.00am on a Friday or Saturday night.
PO3	Short-term accommodation (Dwelling) establishes operational controls to manage residential amenity, including: (a) adequate waste storage; (b) ensuring visitors, suppliers or entertainers do not disturb neighbouring properties; (c) a detailed Code of Conduct for guests to comply with; and (d) contact details of the property manager visible from the front of the premises.	AO3.1	If within an Urban area, where 3 or more bedrooms are used: (a) provides two recycling bins and one general waste bin; (b) provides adequate space for storing all rubbish bins in an area that is screened from frontages by a solid fence or vegetation at least 1.2m in height; and (c) ensures excess waste left on the premises following each booking period is promptly disposed of lawfully.
		AO3.2	Guests, visitors or suppliers: (a) must not congregate at the entrance to the premises, on the footpath or in the street; and (b) vehicles loading or unloading remains entirely within the site.
		AO3.3	Adult entertainment is not visible or audible from neighbouring premises or public spaces.
		AO3.4	A Code of Conduct is established, which includes as a minimum: (a) the maximum permitted number of resident guests on any one day; (b) a prohibition of noise and other activities that adversely affect neighbourhood amenity; and (c) details about on-site carparking, waste bin collection days and fire safety requirements.
		AO3.5	A 0.3m² sign, visible from the street includes contact details of a local property manager

Performance Outcomes		Acceptable Outcomes	
			including a phone number, available twenty-four (24) hours a day, seven (7) days per week.
Site layout and relationship of buildings to site features for a multi-unit use			
~~PO1~~PO4	The multi-unit use is located on a site, which has an area and dimensions capable of accommodating a well-designed and integrated multi-unit development, incorporating: (a) vehicle access, parking and manoeuvring areas; (b) communal and private open space areas; and (c) any necessary buffering to incompatible uses or sensitive environments.	~~AO1.1~~AO	The multi-unit use is located on a lot having a minimum area of: (a) ~~-~~800m²; or~~.~~ (b) 600m² if within Airlie Beach Local Plan Precinct A or B (Main Street).
Relationship of buildings to streets, public spaces and private open space for a multi-unit use			
~~PO2~~PO5	The multi-unit use is sited and designed to: (a) provide a visibly clear pedestrian entrance to and from the building; and (b) minimise the potential for pedestrian and vehicular conflict.	~~AO2.1~~AO	The building is sited and designed, such that: (a) the main pedestrian entrance to the building, or group of buildings, is located on the primary street frontage; (b) pedestrian access to the entrance of the building(s) or individual dwellings is easily discerned; and (c) vehicular access to the site is separate from the pedestrian access.
~~PO3~~PO6	The multi-unit use is sited and designed to: (a) address and provide a semi-active frontage to the street, adjacent parkland or other public areas; (b) promote casual surveillance of public and semi-public spaces; (c) contribute to a residential character; and (d) achieve a high level of amenity for dwellings within the site.	~~AO3.1~~AO	The building is sited and designed, such that: (a) street and parkland frontages of the site comprise semi-active uses/spaces, such as habitable rooms, indoor and outdoor common recreation areas and landscaped areas, to facilitate casual surveillance; and (b) the number of dwellings, rooming units, windows and balconies of habitable rooms that address adjoining streets, communal recreation areas and open spaces is optimised.
~~PO4~~PO7	The multi-unit use is designed to ensure that car parking areas, services or any mechanical plant does not visually dominate the site or surrounding area.		~~Any car parking area or other associated structures are integrated into the design of the development, such that:~~ ~~they are screened from view from frontages to streets, parks and adjoining land;~~

Performance Outcomes		Acceptable Outcomes	
			~~they are not located between the building and the street address; and~~ ~~a basement or under croft car parking area does not protrude above the adjacent ground level by more than 1m.~~
		~~AO4.1~~AO	Services and any mechanical plant, including individual air conditioning equipment for dwellings or rooming units, are visually integrated into the design and finish of the building or are effectively screened from view.
Building mass and composition			
~~PO5~~PO8	The multi-unit use is sited and designed in a manner, which: (a) minimises building mass and scale; (b) provides visual interest through building articulation and architectural design features; and (c) allows sufficient area at ground level for communal open space, site facilities, resident and visitor parking, landscaping and maintenance of a residential streetscape.	~~AO5.1~~AO	Buildings do not exceed 60% total site coverage.
		~~AO5.2~~AO	The building incorporates most or all of the following design features: (a) vertical and horizontal articulation, such that no unbroken elevation is longer than 15m; (b) variations in plan shape, such as curves, steps, recesses, projections or splays; (c) variations in the treatment and patterning of windows, sun protection and shading devices, or other elements of a façade treatment at a finer scale than the overall building structure; (d) balconies, verandahs or terraces; or (e) planting, particularly on podiums, terraces and low level roof decks.
~~PO6~~PO9	The multi-unit use is sited and designed to: (a) provide amenity for users of the premises whilst preserving the privacy and amenity of nearby properties; (b) provide adequate separation distance from adjoining uses; (c) preserve any existing vegetation that will buffer the proposed building; (d) allow for landscaping to be provided between buildings and street frontages and between neighbouring buildings; and	~~AO6.1~~AO	Buildings and structures comply with the minimum boundary setbacks in Table 9.3.17~~0~~.3.2 Minimum boundary setbacks for multi-unit uses.
		~~AO6.2~~AO	The building has a top level and roof form that is shaped to: (a) reduce the bulk of the building; (b) provide a visually attractive skyline silhouette; and (c) screen mechanical plant and equipment from view.

Performance Outcomes		Acceptable Outcomes	
	(e) maintain the visual continuity and pattern of buildings and landscape elements within the street.		
Privacy and amenity for a multi-unit use			
PO10	Where a mixed use development, residential amenity is managed through design and operation.	AO10.1	Mixed use development demonstrates the integration of uses or mitigates conflicts through: (a) building layout solutions, such as locating living spaces and bedrooms toward quiet areas; and (b) technical solutions to minimise noise impacts, such as acoustic or double glazing, insulation, cladding or noise attenuated ventilation systems, such that residential units achieve the following design sound levels: i. Leq 35 dB(A) in sleeping areas (bedrooms); and ii. Leq 40 dB(A) in living or work areas. Editor's note – Within Airlie Beach, noise reductions must assume a maximum allowable noise limit of 75 dB, measured 3m from the source, being a nearby premise capable of hosting an Entertainment activity in the future.
~~PO7~~PO11	The multi-unit use ensures that dwellings, rooming units, private open spaces and adjoining Accommodation activities are provided with a reasonable level of privacy and amenity.	~~AO7.1~~AO	Non-habitable room windows of a dwelling or rooming unit are not located opposite the non-habitable room windows of another dwelling or rooming unit, unless views are controlled by screening devices, distance, landscaping or design of the opening.
		~~AO7.2~~AO	Where habitable room windows look directly at habitable room windows in an adjacent dwelling or rooming unit within 2m at the ground level or 9m at levels above the ground level, privacy is protected by: (a) window sill heights being a minimum of 1.5m above floor level; (b) fixed opaque glazing being applied to any part of a window below 1.5m above floor level; (c) fixed external screens; or

Performance Outcomes		Acceptable Outcomes	
			(d) if at ground level, screen fencing to a minimum height of 2m.
		~~AO7.3~~AO	For development up to, and including, 3 storeys in height, the outlook from private, communal and public areas is screened, where direct view is available into the private open space of an existing dwelling.
~~PO8~~PO12	The multi-unit use utilises appropriate lighting for the security of residents, whilst not impacting on the amenity of surrounding residents.	~~AO8.1~~AO	Glare conditions or excessive light spill into dwellings, rooming units, adjacent sites and public spaces is avoided or minimised through measures, such as: (a) the use of building design and architectural elements or landscape treatments to block or reduce excessive light spill to locations where it would cause a nuisance; and (b) the alignment of driveways and servicing areas to minimise vehicle headlight impacts on residential accommodation and private open space.
		~~AO8.2~~AO	All access points, footpaths, car parks, building entrances and foyers are provided with adequate illumination.
		~~AO8.3~~AO	All external lighting complies with AS4282 Control of the obtrusive effects of outdoor lighting and does not exceed 8 lux measured at any lot boundary and at any level.
Open space and landscaping			
~~PO9~~PO13	The multi-unit use provides communal and private open space and landscaping, such that residents have sufficient area to engage in communal activities, enjoy private and semi-private spaces, and accommodate visitors.	~~AO9.1~~AO	At least 30% of the site area is provided as communal and private open space.
		~~AO9.2~~AO	Each ground floor dwelling or rooming unit has a courtyard or similar private open space area, directly accessible from the main living area and complying with the following minimum areas and dimensions respectively: (a) 10m² and 2.5m for a studio or rooming unit; (b) 18m² and 2.5m for a 1 bedroom unit; and (c) 20m² and 3.0m for a 2 or more bedroom unit.
		~~AO9.3~~AO	Each dwelling or rooming unit above ground floor level has a

Performance Outcomes		Acceptable Outcomes	
			balcony or similar private open space area directly accessible from the living area and complying with the following minimum areas and dimensions respectively: (a) 4.5m² and 1.7m for a studio or rooming unit; (b) 5.5m² and 2.1m for a 1 bedroom unit; and (c) 8m² and 2.5m for a 2 or more bedroom unit.
		~~AO9.4~~AO	Where not adjoining a park or similar public open space, a minimum 2m high solid screen fence is provided and maintained along the full length of any side or rear boundary.
		~~AO9.5~~AO	Communal open space is provided on-site and complies with the following minimum areas and dimensions: (a) minimum width of 4m; and (b) area equal to 15% of total area of the site.
PO14	The scale and external finishes of buildings: (a) complements the rural and/or natural character of the area and integrates with the surrounding natural landscape; and (b) incorporates colours and finishes that allow buildings to blend in with the natural and rural landscape.	AO14.1	The architectural style and materials used for any new building: (a) use muted earth or environmental tones that blend with the rural and natural environment; and (b) use low reflective roofing and building materials. Note – Appropriate colours will depend on the existing native vegetation and backdrop. A colour palette may be requested by Council to ensure built form integration.
Site facilities and waste management			
~~PO10~~PO1	Adequate communal clothes drying facilities are provided where dwellings or rooming units are not provided with individual drying facilities.	~~AO10.1~~A	Where dwellings or rooming units are not provided with individual clothes drying facilities, one or more outdoor communal clothes drying areas are provided in an accessible location, equipped with robust clothes lines.
~~PO11~~PO1	Refuse disposal and recycling areas are located in convenient and unobtrusive positions and are capable of being serviced by the Council's refuse collection contractor. Note - Developments must comply with Council's Trade Waste Policy.	~~AO11.1~~A	~~The multi-unit use provides for the on-site storage of refuse.~~ Refuse disposal and recycling areas are of an appropriate size and preferably use collective bins instead of multiple individual bins. Note -: There should be sufficient space to accommodate the equivalent of two 240L bins (for waste and recycling) per

Performance Outcomes		Acceptable Outcomes	
			dwelling per week contained in the communal bins.
		~~AO11.2~~A(	~~Refuse disposal areas and storage areas are screened by a solid fence or wall having a minimum height of 1.2m.~~Refuse disposal and recycling areas are: (a) provided on-site; (b) screened by a solid fence or wall having a minimum height of 1.2m; (c) are not directly visible from the street; (d) are imperviously sealed, bunded and roofed; (e) contain a hose down area draining to the reticulated sewerage system; (f) are fitted with a strainer basket type drain outlet or other appropriate pre-treatment device; and (g) drain into the reticulated sewerage system.
		~~AO11.3~~A(	Backwash discharge from commercial swimming pools, spas and decorative ponds must be connected to the reticulated sewer system or otherwise approved by Council.~~Refuse storage areas are not directly visible from the road.~~
Additional requirements for rooming accommodation or short-term accommodation			
~~PO12~~PO1	The rooming accommodation or short-term accommodation use is provided with sufficient facilities to accommodate the needs of temporary residents and staff.	~~AO12.1~~A(	Facilities including, but not limited to, kitchens, dining rooms, laundries and common rooms are provided for the use of temporary residents and staff.

Table 9.3.17.3.2 Minimum boundary setbacks for multi-unit uses

Building height	Boundary type	Minimum setback
Up to 8.5	Side	2m
	Front (primary)	6m
	Front (secondary)	3m
	Rear	2m
8.5m up to 11m	Side	4m
	Front (primary)	6m
	Front (secondary)	4m
	Rear	6m
11m to 16m	Side	4m
	Front (primary)	6m
	Front (secondary)	4m
	Rear	6m

16m up to 21m	Side	6m
	Front (primary)	6m
	Front (secondary)	6m
	Rear	6m
21m and above	Side	8m
	Front (primary)	6m
	Front (secondary)	6m
	Rear	8m

~~12.3.16~~9.3.18 Telecommunications facility code

~~12.3.16.1~~9.3.18.1 Application

This code applies to accepted and assessable development:

(a) being a material change of use for a telecommunications facility; and

(b) identified as requiring assessment against the Telecommunications facility code by the tables of assessment in Part 5 (Tables of assessment).

Editor's note—this code primarily deals with telecommunications facilities involving the erection of a telecommunications tower.

~~12.3.16.2~~9.3.18.2 Purpose and overall outcomes

(1) The purpose of the Telecommunications facility code is to ensure telecommunication facilities are developed in a manner, which protects public health, the environment and the amenity of surrounding premises.

(2) The purpose of the Telecommunication facility code will be achieved through the following overall outcomes:

(a) a telecommunications facility is located with compatible uses and facilities;

(b) a telecommunications facility does not adversely impact upon community wellbeing;

(c) a telecommunications facility does not adversely affect the amenity of surrounding premises;

(d) a telecommunications facility is visually integrated with its natural, rural or townscape setting; and

(e) a telecommunications facility is sited and constructed to minimise detrimental environmental impacts.

~~12.3.16.3~~9.3.18.3 Assessment benchmarks

Table 9.3.18.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	The telecommunications facility is located to minimise any adverse impacts on the amenity of a local area and protect community wellbeing.	**AO1.1**	The telecommunications facility is located at least: (a) 400m from any residential activity; (b) 500m from any childcare centre, community care centre, educational establishment or park; (c) 20m from any public pathway; and (d) 1km from any other existing or approved telecommunications facility, except where a co-located telecommunications tower uses a single structure.
Protection of visual amenity and landscape character			

Performance Outcomes		Acceptable Outcomes	
PO2	Development is visually integrated with its landscape or townscape setting to not be visually dominant or unduly obtrusive.	**AO2.1**	Telecommunications facilities within view of key lookouts or adjoining scenic corridors along Gregory Cannon Valley Road, Conway Road, Crystal Brook Road, Rose Bay Road, Horseshoe Bay Road, Kings Beach Road or Bowen-Developmental Road between Bogie River and Strathmore Road, are designed and sited to be visually unobtrusive and: (a) if adjoining a scenic corridor, are setback 60m from the road frontage; (b) are adequately buffered by landscaping; (c) are of monopole design; and (d) are coloured non-reflective grey to blend with the sky. ~~**AO3.1**~~ ~~Editor's note –~~ The full length of the above-mentioned roads are considered scenic corridors, except for Bowen-Developmental Road, as described. ~~The telecommunications facility is unobtrusive when viewed from scenic corridors and routes.~~
Access, safety and security			
PO3	The telecommunications facility is accessible and secure, public safety is protected and potential damage from vandalism is minimised.	~~**AO4.1**~~**AO**	The telecommunications facility is provided with adequate access to allow periodic servicing and maintenance of the facility.
		~~**AO4.2**~~**AO**	Warning information signs and security fencing are provided around the perimeter of the telecommunications facility site to prevent unauthorised entry.

~~12.2~~9.4 Other development codes

~~12.2.1~~9.4.1 Advertising devices code

~~12.2.1.1~~9.4.1.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Advertising devices code by the tables of assessment in Part 5 (Tables of assessment).

~~12.2.1.2~~9.4.1.2 Purpose and overall outcomes

(1) The purpose of the Advertising devices code is to ensure that advertising devices are established in a manner, which is consistent with the desired character and amenity of the Whitsunday region.

(2) The purpose of the Advertising devices code will be achieved through the following overall outcomes:

(a) an advertising device complements and does not detract from the desirable characteristics of the natural and built environment in which the advertising device is exhibited;

(b) an advertising device is designed and integrated into the built form to minimise visual clutter;

(c) an advertising device does not adversely impact on the visual amenity of a heritage or neighbourhood character area or public open space;

(d) an advertising device does not adversely impact on the amenity of rural, rural residential or residential areas;

(e) an advertising device does not pose a hazard for pedestrians, cyclists or drivers of motor vehicles;

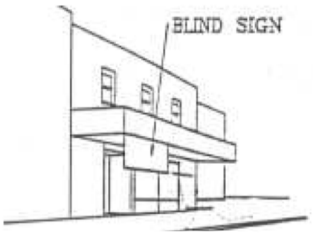
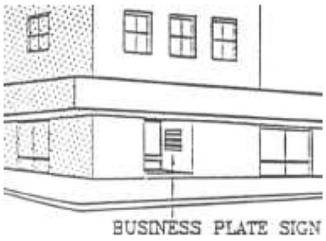
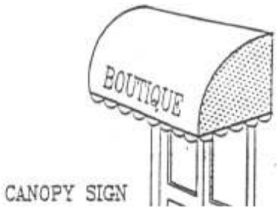
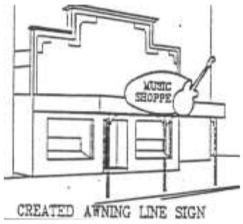
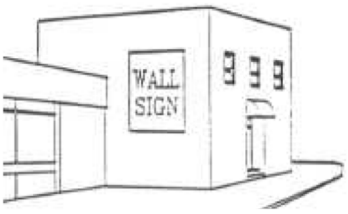
~~(e)~~(f) an advertising device that is only visible from an elevated location or the air, such as sky signs and written roof signs, are avoided; and

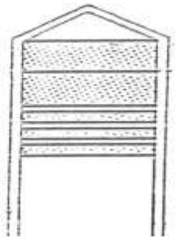
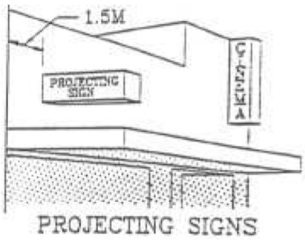
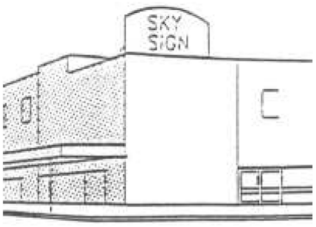
~~(f)~~(g) an advertising device accommodates the legitimate need to provide directions and business identification in a manner that is consistent with achieving overall outcomes (a) to (f~~e~~) above.

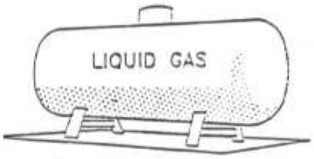
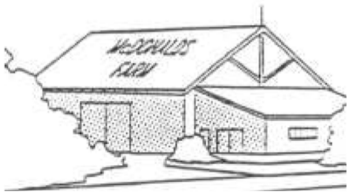
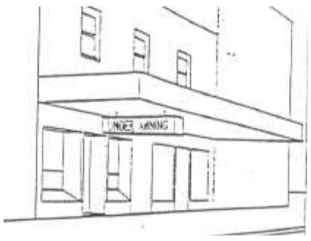
~~12.2.1.3~~9.4.1.3 Description of advertising devices

Table 9.4.1.3.1 Description of advertising device types

Advertising device type	Written description	Pictorial description
Above awning sign	An advertising device located on top of and attached to an awning or verandah.	

Advertising device type	Written description	Pictorial description
Awning fascia or return fascia sign	An advertising device painted or otherwise affixed to a solid or flexible material suspended from an awning, verandah or wall.	
Blind sign	An advertising device painted or otherwise affixed to a solid or flexible material suspended from an awning, verandah or wall.	
Business name plate	An advertising device displaying the name, occupation and contact details for the business occupant, which may also include the hours of operation of the business.	
Canopy sign	An advertising device painted on a canopy structure.	 CANOPY SIGN
Created awning sign	An advertising device positioned on the face, or aligned with the face of an awning, where the shape interrupts the natural line of the awning.	 CREATED AWNING LINE SIGN
Flush wall sign	An advertising device painted or otherwise affixed upon, and confined within, the limits of a wall.	

Advertising device type	Written description	Pictorial description
Freestanding sign	An advertising device that is independent of a building and is supported by one or more columns, poles or pylons. The term includes devices containing third party advertising. Note - Freestanding sign includes billboard and pylon signs, where a billboard sign has a surface area wider than it is tall and a pylon sign has a surface area taller than it is wide.	
Ground sign	An advertising device that is independent of a building that is normally erected at a driveway entrance to identify the business or points of entry.	
Hamper sign	An advertising device painted or otherwise affixed above the door head or its equivalent height and below the awning level or verandah of a building.	
Projecting sign	An advertising device attached and mounted at a right angle to the façade of a building.	 PROJECTING SIGNS
Sky sign	An advertising device placed at or near the top of a building and projecting above the building.	

Advertising device type	Written description	Pictorial description
Stallboard sign	An advertising device located below the ground level window of a building.	
Structure sign	An advertising device painted or otherwise affixed to any structure, which is not a building.	
Written roof sign	An advertising device painted or otherwise affixed to the roof cladding of a building.	
Three dimensional replica object or shape sign	An advertising device that replicates a real world object or shape. The replica may be enlarged, miniaturised or equal in scale and be freestanding or form part of another advertising device.	
Under awning sign	An advertising device attached or suspended under an awning or verandah.	
Window sign	An advertising device painted or otherwise affixed to the exterior or on the inner surface of a glazed area of any window. It includes any devices that are suspended from the window frame. The term does not include product displays or showcases for viewing by pedestrians.	

~~12.2.1.4~~9.4.1.4 Assessment benchmarks

Table 9.4.1.4.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Requirements for all advertising device types			
General			
PO1	All advertising devices are: (a) compatible with the existing and future planned character of the locality in which they are erected; (b) compatible with the scale, proportion, bulk and other characteristics of buildings, structures, landscaping and other advertising devices on the site; (c) of a scale, proportion and form that is appropriate to the streetscape or other setting in which they are located; (d) sited and designed to: (i) be compatible with the nature and extent of development and advertising devices on adjoining sites; (ii) not interfere with the reasonable enjoyment of adjoining sites; (iii) not unreasonably obstruct lawfully established advertising devices; (iv) not unduly dominate the visual landscape; (v) maintain views or vistas of public value; and (vi) protect the visual amenity of scenic routes and lookouts; (e) designed, sited and integrated to avoid the proliferation of visual clutter.	**AO1.1**	The advertising device complies with the specific requirements of Table 9.4.1.4.2 Requirements for~~of~~ particular advertising devices.
		AO1.2	~~A three dimensional replica object or shape sign complies with the acceptable outcomes relating to wall, façade, awning, roof and freestanding signs, as applicable depending on the proposed location of the sign on the site.~~Advertising devices, other than billboards, must advertise a lawful business, product or service offered on the subject premises.
PO2	Frequent and large advertising devices along key scenic gateways are avoided.	**AO2.1**	Not more than two billboard advertising devices are permitted per 10km of scenic corridors along Gregory Cannon Valley Road, Conway Road, Crystal Brook Road, Kings Beach Road or Bowen-Developmental Road between Bogie River and Strathmore Road. Note - This includes the distance, by road, to billboard advertising devices located just outside of scenic corridors.

Performance Outcomes		Acceptable Outcomes	
			Editor's note – The full length of the above-mentioned roads are considered scenic corridors, except for Bowen-Developmental Road as described.
Movement and illumination			
~~PO2~~PO3	An advertising device: (a) does not incorporate elements that move; and (b) incorporates illumination and lighting only where required and in a manner that does not create nuisance or detract from the amenity of the area.	~~AO2.1~~AO	The advertising device does not flash, revolve, move or contain mechanisms that give the impression of movement.
		~~AO2.2~~AO	Moving or variable message advertising devices are not located: (a) within 50 metres of land developed or intended for residential purposes; and (b) adjacent to any road which has a traffic speed of more than 60km/hr.
		AO3.3	The advertising device is not internally or externally illuminated.
Maximum site based sign face area			
~~PO3~~PO4	The maximum sign face area of an advertising device does not unduly detract from a building or location where the device is positioned, including: (a) visually dominating the appearance of a building; or (b) being visually intrusive in the streetscape or natural landscape setting.	~~AO3.1~~AO	The total sign face area of all advertising devices on a site does not exceed 0.75m² of sign face area per linear metre of the street front boundary length.
Construction standards			
~~PO4~~PO5	An advertising device is constructed to an appropriate and safe standard.	~~AO4.1~~AO	No support, fixing or other system required for the proper installation of an advertising device is exposed or protrudes in a manner that would create a potential safety hazard.
		~~AO4.2~~AO	The advertising devices are to be constructed from non-reflective materials that incorporate colours and finishes that complement and blend with the surrounding natural and built environment.
Traffic and safety hazards			
~~PO5~~PO6	An advertising device does not cause a traffic or safety hazard.	~~AO5.1~~AO	The advertising device is not located in a position: (a) that presents a physical danger to pedestrians; (b) that disrupts pedestrian movement along the footpath or from the road to the footpath; or (c) that distracts the attention of motorists or obscures the

Performance Outcomes		Acceptable Outcomes	
			view of drivers or road users.
		~~AO5.2~~AO	An advertising device adjacent to a State controlled road complies with the Department of Transport and Main Roads *Roadside A~~a~~dvertising M~~m~~anual 201~~7~~9* and must not: (a) give instructions to traffic; or (b) imitate a traffic control device.
PO7	Advertising devices provide adequate clearance above pedestrian or traffic movement areas to ensure safe and unobstructed movement.	AO7.1	Where located above a pedestrian area, the advertising device provides a minimum clearance of: (a) 2.4m if rigid; or (b) 2.1m if flexible.
Requirements for particular advertising device types			
Freestanding signs			
~~PO6~~PO8	A Freestanding sign is designed and sited to comply with the general amenity outcomes sought by PO1 of this code.	~~AO6.1~~AO	Where related to the use of the site, t~~T~~he total number of all freestanding signs on a site does not exceed: (a) one sign where the street front boundary length of the site is 30m or less; or (b) two signs where the total street front boundary length of the site is more than 30m.
		AO8.2	Where not related to the use of the site, the total number of all freestanding signs on a site does not exceed one (1) sign per three (3) km of frontage.
Requirements for advertising devices associated with a particular use			
Home based business			
PO9	Advertising devices for Home based business uses are of a scale and design consistent with the residential amenity of the locality.	AO9.1	Home based business uses are not permitted to display any advertising device other than a Business Name Plate.

Table 9.4.1.4.2 Requirements for particular advertising devices.

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	~~Minimum clearance~~
Above awning sign	All zones~~, where associated with the lawful use of the land, except a home based business.~~	(a) Orientated at right angles to the building frontage; and (b) centrally located along the frontage of each shop or tenancy.	(a) Does not extend past the width of the awning or verandah~~ to which it is attached~~; (b) does not exceed a maximum height of 600mm and a maximum depth of 300mm; and (c) is rigidly fixed~~ and not constructed from materials that are potentially dangerous (e.g. Glass)~~.	~~Maximum sign face area of~~ 1.4m².	~~Not specified.~~
Awning fascia or return fascia signs	All zones~~, where associated with the lawful use of the land, except a home based business~~.	Not specified.	~~(a)~~ Does not exceed a depth of 10~~0~~mm; ~~(b)~~(a) ~~do not project above or below the awning line by more than 20% of the vertical depth of the awning face;~~ and ~~(c)~~(b) does not project out from either face of the awning.	Does not exceed 100% of the fascia.~~In accordance with Table 9.4.1.4.1.~~	~~Minimum clearance of 2.4m between the footway pavement and the lowest part of the sign.~~
Blind signs	All zones~~, where associated with the lawful use of the land, except a home based business~~.	Not specified.	(a) Is predominantly constructed out of flexible materials; and ~~(a)~~(b) can be retracted or removed.~~Not illuminated.~~	~~Maximum sign face area d~~Does not exceed 50% of the blind.	~~Minimum clearance of 2.1m between the footpath pavement and any flexible part of the blind; and 2.4m between the footpath pavement and rigid part of the blind.~~

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	~~Minimum clearance~~
Business name plates	All zones.	Limited to one sign per business entry point.	Displays only the name, occupation, contact details and hours of operation of the business.~~In accordance with Table 9.4.1.4.1.~~	~~Maximum sign face area of~~ 1.0m².	~~Not applicable.~~
Canopy signs	All zones~~, where associated with the lawful use of the land, except a home based business.~~.	Not applicable.	(a) Does not exceed a height of 600mm; (b) does not project out from the surface of the canopy; and ~~(c)~~ does not project above or below the canopy. ~~on which it is displayed; and~~ ~~(d)~~(c) ~~not illuminated.~~	Does not exceed 50% of the canopy.~~In accordance with Table 9.4.1.4.1.~~	~~Minimum clearance of 2.1m between the footpath pavement and any flexible part of the canopy; and 2.4m between the footway pavement and rigid part of the canopy.~~
Created awning signs	All zones~~, where associated with the lawful use of the land, except a home based business~~.	Not applicable.	(a) Does not project out from either face of the awning; and (b) does not extend more than 600mm above or below the fascia ~~to which it is attached~~.	'Created' sign face area not exceeding 25% of the existing awning face area.	~~Minimum clearance of 2.4m between the footway pavement and the lowest part of the sign.~~
Flush wall signs	All zones~~, where associated with the lawful use of the land, except a home based business~~.	Do not obscure any window or architectural feature of the building on which it is located.	(a) Does not project more than 300mm from the wall on which it is affixed; and (b) does not project beyond the property boundary, except as an authorised encroachment onto a road reserve.	~~Maximum display area,~~ The lesser of: (a) 30m²; or (b) 20% of the area of the wall.	~~Not applicable.~~

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	~~Minimum clearance~~
Freestanding signs - ~~In the form of a~~ billboard	The Rural zone, only where adjacent to a State controlled road.	~~(a)~~ Minimum spacing between freestanding billboard signs is ~~:~~ ~~(b)~~(a) 3km~~, if erected on land in the Rural zone~~; and ~~(c)~~(b) situated at least 3m from any adjoining site boundary.	~~(a)~~ Has a maximum of two sign faces;~~Do not project beyond the front alignment of the site;~~ (a) (b) is mounted as a freestanding structure in a landscaped environment; (c) ~~designed and treated in such a way that the supporting~~ framework~~, supports~~ and back of the sign face area are not visible or blend with the surrounding ~~streetscape or fiel~~field of view; and (d) has a maximum height of 9m.	9m² per sign face.~~Maximum of two sign faces; and each sign face has a maximum area of 18m².~~	~~Not applicable.~~
Freestanding signs – ~~Not in the form of a billboard~~Pylon	(a) A centre zone; (b) an industry zone; (c) the Recreation and open space zone; (d) the Community facilities zone; (e) the Mixed use zone; and (f) the Rural zone, only where adjacent to a State controlled road.	(a) Minimum spacing between freestanding signs is: (i) 3km, if erected on land in the Rural zone; or (ii) ~~not less than the combined height of all freestanding signs on the site multiplied by 4, if erected on land in another permitted~~	~~(a) Do not project beyond the front alignment of the site;~~ (a) Has a maximum of two sign faces; (b) is mounted as a freestanding structure in a landscaped environment; (c) ~~designed and treated in such a way that the supporting~~ framework~~, supports~~ and back of the sign face area are not	9m² per sign face.~~Maximum of two sign faces; and each sign face has a maximum area of 4.5m².~~	~~Not applicable.~~

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	~~Minimum clearance~~
		~~zone~~otherwise, 20m; and (b) is situated at least 3m from any adjoining site boundary.	visible or blend with the surrounding streetscape or field of view; ~~and~~ (d) has a maximum height of 9m; and~~.~~ ~~(d)~~(e) has a maximum width of 3m.		
Ground signs	All zones~~, where associated with the lawful use of the land, except a home based business~~.	~~Displayed within a landscaped environment; and separated from another ground sign by a minimum of~~Minimum spacing between ground signs is 100m ~~of street front boundary length~~.	(a) Is displayed in a landscaped environment; (b) has a maximum of two sign faces; and ~~(a)~~(c) has a m~~M~~aximum height of 1.5m.	~~Maximum of two sign faces; and each sign face has a maximum area of~~ 4m² per sign face.	~~Not applicable.~~
Hamper signs	All zones~~, where associated with the lawful use of the land, except a home based business~~.	Not applicable.	~~(a)~~ Project no more than 300mm from the wall ~~to which it is attached~~; ~~(b)~~(a) ~~do not extend below the door head of the main entrance;~~ and ~~(c)~~(b) does not extend beyond the length of the building wall ~~above the door head~~.	~~Maximum sign face area~~ ~~l~~Limited to that area between the door head and the underside of the verandah or awning roof.	~~Not applicable.~~
Projecting signs	All zones~~, where associated with the lawful use of the land, except a home based business~~.	(a) Situated at least 2m from any site boundary; and	Does not project higher than the gutter line of the building~~ on which it is erected.~~	~~If a vertical projecting sign, maximum sign face area of~~ 2m²~~ ; or~~	~~Minimum of clearance of 2.4m between the footpath pavement and the lowest part of the sign.~~

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	~~Minimum clearance~~
		(b) not more than one projecting sign is erected for the premises.		~~if a horizontal projecting sign, maximum sign face area of 1m².~~	
Sign written roof sign	Is not erected within the Planning Scheme area.	Not applicable.	Not applicable.	Not applicable.	~~Not applicable.~~
Sky sign	Is not erected within the Planning Scheme area.	Not applicable.	Not applicable.	Not applicable.	~~Not applicable.~~
Stallboard signs	All zones~~, where associated with the lawful use of the land, except a home based business.~~.	Are designed such that the sign face is recessed inside the Stallboard facing.	Does not project beyond the property boundary, except as an authorised encroachment onto a road reserve.	~~Maximum sign face area i~~Limited to the Stallboard area below a street front window.	~~Not applicable.~~
Structure signs	(a) A centre zone; (b) an industry zone; and (c) the Mixed use zone.	Not applicable.	(a) Does not project beyond the surface of the structure; and (b) must be on a structure ancillary to the use of the premises.	~~Maximum sign face area of~~ 4m². ~~.~~	~~Not applicable.~~
Three dimensional replica object or shape sign	(a) A centre zone; (b) an industry zone; and (c) the Mixed use zone.	Not applicable.	Council may determine to allocate an additional advertising device type and assess against those requirements based on the characteristics of the sign.~~In accordance with Table 9.4.1.4.1.~~	~~In accordance with Table 9.4.1.4.1,T where t~~he surface area is calculated by taking ~~is th~~ the largest two dimensional cross section of the object and multiplying~~ied~~ by two.	~~In accordance with Table 9.4.1.4.1.~~
Under awning signs	(a) A centre zone; (b) an industry zone; and	(a) Oriented at right angles to the building frontage; and	(a) Is ~~N~~no longer than the width of the awning or veranda~~h to which it is attached~~;	~~Maximum sign face area of~~ 2.5m² ~~.~~per sign face.	~~Minimum clearance of 2.4m from the footway pavement to any part of the sign.~~

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	~~Minimum clearance~~
	(c) the Mixed use zone.	(b) centrally located along the frontage of each shop or tenancy, provided that one additional sign may also be erected at the entrance of an arcade.	(b) has a maximum height of 600mm and maximum depth of 300mm; ~~(b)~~(c) has a maximum of two sign faces; and ~~(c)~~(d) is rigidly fixed~~ and not constructed from materials that are potentially dangerous (e.g. glass) to pedestrians~~.		
Window sign	All zones., ~~where associated with the lawful use of the land, except a home based business.~~	~~Only located on the premises which the advertisement relates to; and~~ ~~I~~Located on ground storey windows only.	Not applicable~~Does not contain running lights giving the illusion of movement, if illuminated.~~	Does not exceed 50% of the window.~~In accordance with Table 9.4.1.4.1.~~	~~Not applicable.~~

~~12.2.29~~.4.2 Construction management code

~~12.2.2.19~~.4.2.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Construction management code by the tables of assessment in Part 5 (Tables of assessment).

~~12.2.2.29~~.4.2.2 Purpose and overall outcomes

(1) The purpose of the Construction management code is to ensure that development works meets the needs of the development and is undertaken in a sustainable manner in accordance with best practice.

(2) The purpose of the Construction management code will be achieved through the following overall outcomes:

(a) works are undertaken such that environmental harm and nuisance resulting from construction activities is avoided or minimised and the environmental values of water are protected;

(b) development is designed and constructed to a standard that meets community expectations, maintains public health and safety, prevents unacceptable off-site impacts and minimises whole of life cycle costs; and

(c) development does not compromise or interfere with the integrity or function of existing utilities, road or infrastructure.

~~12.2.2.39~~.4.2.3 Assessment benchmarks

Table 9.4.2.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Construction management			
PO1	Air emissions, noise or lighting arising from construction activities and works do not adversely impact on surrounding areas.	**AO1.1**	Dust emissions do not cause environmental nuisance beyond the boundary of the site.
		AO1.2	Air emissions, including odours, are not detectable at the boundary of the site.
		AO1.3	Noise generating equipment is enclosed, shielded or acoustically treated in a manner which ensures the equipment achieves the environmental values for the acoustic environment and acoustic quality objectives for sensitive receiving environments set out in the *Environmental Protection (Noise) Policy 2008*.
		AO1.4	Outdoor lighting complies with AS4282 (Control of the obtrusive effects of outdoor lighting).
PO2	Construction activities and works are managed such that all reasonable and practicable measures are taken to protect	**AO2.1**	Development is located, designed and constructed in accordance with an Erosion and sediment control plan, prepared

Performance Outcomes		Acceptable Outcomes	
	the environmental values of water and the functionality of stormwater infrastructure from the impacts of erosion, turbidity and sedimentation, both on and downstream of the development site.		in accordance with the requirements specified ~~in AP1: Application procedures, CP1: Construction procedures and D5: Stormwater quality of~~ the PSP SC6.8 WRC development manual.
		AO2.2	The ESPC demonstrates that release of sediment-laden stormwater is avoided the nominated design storm, and minimised when the nominated design storm is exceeded, by addressing design objectives listed below in Table 9.4.2.3.2 Stormwater management design objectives – construction phase.
		AO2.3	Erosion and Sediment control practices (including any proprietary erosion and sediment control products) are designed, installed, constructed, operated, monitored and maintained, and any other erosion and sediment control practices are carried out in accordance with local conditions and appropriate recommendation from a suitability qualified person.
PO3	Construction activities and works are undertaken such that existing utilities, roads and drainage infrastructure: (a) continue to function efficiently; and (b) can be accessed by the relevant authority for maintenance purposes.	AO3.1	Existing utilities, roads and drainage infrastructure are protected or relocated in accordance with the standards specified in PSP SC6.8 WRC development manual.
		AO3.2	The costs of any alterations or repairs to utilities, roads and drainage infrastructure are met by the developer.
PO4	Traffic and parking generated during construction activities are well planned and managed.	AO4.1	Any traffic or parking generated as a result of construction activities are managed to minimise potential impacts on the amenity of the surrounding area.
PO5	Construction activities and works provide appropriate opportunities for waste minimisation and recycling where possible.	AO5.1	Construction activities and works provide for: (a) separation of recyclable material; (b) storage of waste and recyclable material; and (c) collection of waste and recyclable material in a manner that minimises adverse impacts on the amenity and safety of surrounding areas.

Performance Outcomes		Acceptable Outcomes	
Vegetation Clearing			
PO6	Vegetation is protected to ensure that: (a) ecological processes, biodiversity and the habitat values of native flora and fauna are protected and enhanced; (b) ecosystems are protected from weed invasion and edge effects; (c) the functioning and connectivity of biodiversity corridors and fauna movement networks is maintained; (d) the ecological health and integrity of riparian corridors, waterways and wetlands are maintained; (e) soil resources are protected against the loss of chemical and physical fertility through processes, such as erosion, mass movement, salinity and water logging; and (f) vegetation of historical, cultural or visual significance is retained.	**AO6.1**	Vegetation clearing, other than exempt vegetation clearing: (a) does not occur; or (b) where any permanent, irreversible loss of identified ecological values occurs due to vegetation clearing, rehabilitation is undertaken in accordance with D2: Site regrading and D9: Landscaping of PSP SC6.8 (WRC development manual). Note— The assessment and deciding of vegetation clearing issues will include but not necessarily be limited to: (a) any current development approval attached to the land which may include conditions or measures relating to vegetation retention or protection; (b) whether the vegetation is specifically protected by a vegetation protection order, covenant, easement or similar legally binding mechanism that seeks to protect the values and functions of recognised significant vegetation; (c) whether the vegetation is identified or referred to in State or Federal legislation; (d) whether the vegetation is located on a prominent hillside, slope or ridgeline; (e) whether vegetation clearing may cause or contribute to erosion or slippage; (f) whether the vegetation is or forms part of a riparian area or other habitat network and is valuable to the functioning of that network; (g) whether the vegetation is or is capable of forming or contributing to a buffer between different land uses; (h) whether the vegetation is or is capable of forming or contributing to a visual buffer, agricultural buffer or a buffer against pollution, light spillage or noise; (i) whether the vegetation contributes to visual amenity, landscape quality or cultural heritage significance; and (j) the likely effectiveness of any proposed rehabilitation measures.
PO7	Vegetation clearing on slopes is minimised to maintain slope stability and prevent erosion and slippage to maintain slope.	**AO7.1**	Vegetation clearing on slopes15% or greater is avoided or where unavoidable, minimised. Note – This may be demonstrated by undertaking a Vegetation management plan in accordance with PSP SC6.2 Environmental features.

Performance Outcomes		Acceptable Outcomes	
PO8	Construction activities and works provide for: (a) the protection of the aesthetic and ecological values of retained vegetation; and (b) impacts on fauna to be minimised.	**AO8.1**	The health and stability of retained vegetation is maintained or enhanced during construction activities by: (a) clearly marking vegetation to be retained with temporary fencing and flagging tape; (b) installing secure barrier fencing around the outer drip line and critical root zone of the vegetation; (c) preventing any filling, excavation, stockpiling, storage of chemicals, fuel or machinery within the fenced protection area; (d) using low impact construction techniques in the vicinity of vegetation to minimise interference with the vegetation; and (e) removing all declared noxious weeds and environmental weeds from the site. Note – This may be demonstrated by undertaking a Vegetation management plan in accordance with PSP SC6.2 Environmental features.
		AO8.2	All works carried out in the vicinity of retained vegetation comply with D9: Landscaping of PSP SC6.8 WRC development manual and AS4970 (Protection of trees on development sites) and AS4687 (Temporary fencing and hoarding).
PO9	Vegetation clearing activities do not directly, indirectly or cumulatively interfere with, or have a worsening effect on, natural stormwater flows within the site.	**AO9.1**	Following any vegetation clearing, natural stormwater flows within the site are identified, captured and diverted to a lawful point of discharge.
Non-tidal artificial waterway			
PO10	The establishment of a non-tidal artificial waterway must provide a deed of agreement for the management and operation of the waterway.	**AO10.1**	Any non-tidal artificial waterway is managed and operated by a responsible entity for the life of the waterway by deed of agreement that: (a) identifies the waterway; (b) states a period of responsibility for all entities; (c) states a process for any transfer of responsibility for the waterway; (d) states required actions under the agreement for

Performance Outcomes		Acceptable Outcomes	
			monitoring the water quality of the waterway and all receiving waters; (e) states required actions under the agreement for maintaining the waterway, including any relevant conditions of a development approval; and (f) identifies funding sources for the above, such as bonds or levies.
PO11	Non-tidal artificial waterways are managed and operated by suitably qualified persons to achieve water quality objectives in natural waterways.	**AO11.1**	Any non-tidal artificial waterway is designed, constructed and managed by a suitably qualified Registered Professional Engineer Queensland (RPEQ) with experience in establishing and managing artificial waterways to achieve relevant water-quality objectives, including: (a) aquatic weeds are managed in any non-tidal artificial waterway to achieve a low percentage of coverage of the water surface area (less than 10%); and (b) pests and vectors, such as mosquitoes, are managed through avoiding stagnant water areas, establishing native fish predators or any other best practices for monitoring and treatment.
		AO11.2	Wastewater and stormwater discharge in waterways is managed to avoid, or minimise, the release of nutrients of concern to minimise the occurrence, frequency and intensity of coastal algal blooms. Note – nutrients of concern are included in the PSP 6.2.6 (Stormwater Management) and WRC Stormwater Quality Guidelines.
PO12	Non-tidal artificial waterways are designed to protect biodiversity and environmental values.	**AO12.1**	Any non-tidal artificial waterway must be designed and managed for all of the following functions: (a) aesthetic landscaping and recreation; (b) flood management;

Performance Outcomes		Acceptable Outcomes	
			(c) stormwater harvesting as part of an integrated water cycle management plan; or (d) aquatic habitat.
		AO12.2	The quality and integrity of declared fish habitat areas and water entering them is maintained.
PO13	Non-tidal artificial waterways are located in a way that is compatible with the land use constraints of the site and do not cause adverse impacts on the quality and integrity of water upstream or downstream properties and catchments, including the Great Barrier Reef Marine Park.	**AO13.1**	If the proposed development involves a non-tidal artificial waterway: (a) environmental values in existing downstream waterways and associated habitats are protected; (b) there are no adverse impacts on the long-term stability of the bed and banks of the waterway; (c) groundwater recharge areas are not affected; (d) the location of the waterway incorporates low lying areas of a catchment connected to an existing waterway; (e) existing areas of ponded water are included; and (f) non-tidal artificial waterways are located: (i) outside natural wetlands and any associated buffer areas; (ii) to minimise disturbing soils or sediments; and (iii) to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazard areas.
PO14	A non-tidal artificial waterway is located in a way that is compatible with existing tidal waterways.	**AO14.1**	Where a non-tidal artificial waterway is located adjacent to, or is connected to, a tidal waterway by means of a weir, lock, pumping system or similar: a) there is sufficient flushing or a tidal range of >0.3m; b) any tidal flow alteration does not adversely impact on the tidal waterway; or c) there is no introduction of salt water into freshwater environments.

Table 9.4.2.3.2 Stormwater management design objectives – construction phase

Issue	Design Objectives
Drainage control	1. Manage stormwater flows around or through areas of exposed soil to avoid contamination. 2. Manage sheet flows in order to avoid or minimise the generation of rill or gully erosion. 3. Provide stable concentrated flow paths to achieve the Construction phase - stormwater management design objectives for temporary drainage works (Table 9.4.2.3.3). 4. Provide emergency spillways for sediment basins to achieve the Construction phase - stormwater management design objectives for emergency spillways on temporary sediment basins (Table 9.4.2.3.4).
Erosion control	1. Stage clearing and construction works to minimise the area of exposed soil at any one time. 2. Effectively cover or stabilise exposed soils prior to predicted rainfall. 3. Prior to completion of works for the development, and prior to removal of sediment controls, all site surfaces must be effectively stabilised using methods which will achieve effective short-term stabilisation.
Sediment control	1. Direct runoff from exposed site soils to sediment controls that are appropriate to the extent of disturbance and level of erosion risk. 2. All exposed areas greater than 2500m² must be provided with sediment controls which are designed, implemented and maintained to a standard which would achieve at least 80% of the average annual runoff volume of the contributing catchment treated (i.e. 80% hydrological effectiveness) to 50mg/L Total Suspended Solids (TSS) or less, and pH in the range (6.5–8.5).
Water quality	1. Remove gross pollutants and litter. 2. Avoid the release of oil or visible sheen to released waters. 3. Dispose of waste containing contaminants at authorised facilities.
Waterway stability and flood flow management	1. Where measures are required to meet post-construction waterway stability objectives (specified in WRC Stormwater Quality Guideline), these are either installed prior to land disturbance and are integrated with erosion and sediment controls, or equivalent alternative measures are implemented during construction. 2. Earthworks and the implementation of erosion and sediment controls are undertaken in ways which ensure flooding characteristics (including stormwater quantity characteristics) external to the development site are not worsened during construction for all events up to and including the 1 in 100 year ARI (1% AEP).

Table 9.4.2.3.3 Construction phase – stormwater management design objectives for temporary drainage works

Temporary Drainage works	Anticipated operation design life and minimum design storm event		
	<12 months	12-24 months	>24 months
Drainage structure	1 in 2 year ARI/39% AEP	1 in 5 year ARI/18% AEP	1 in 10 year ARI/10% AEP
Where located immediately up-slope of an occupied property that would be adversely affected	1 in 10 year ARI/10% AEP		

by the failure or overtopping of the structure	
Culvert crossing	1 in 1 year ARI/63% AEP

Table 9.4.2.3.4 Construction phase – stormwater management design objectives for emergency spillways on temporary sediment basins

Temporary Drainage works	Anticipated operation design life and minimum design storm event		
	<3 months	3-12 months	>12 months
Emergency spillways on temporary sediment basins	1 in 10 year ARI/10% AEP	1 in 20 year ARI/5% AEP	1 in 50 year ARI/2% AEP

~~12.2.3~~9.4.3 Excavation and filling code

~~12.2.3.1~~9.4.3.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Excavation and filling code by the tables of assessment in Part 5 (Tables of assessment).

~~12.2.3.2~~9.4.3.2 Purpose and overall outcomes

(1) The purpose of the Excavation and filling code is to ensure that development works meets the needs of the development and is undertaken in a sustainable manner in accordance with best practice.

(2) The purpose of the Excavation and filling code will be achieved through the following overall outcomes:

(a) excavation and filling is completed to a standard that meets community expectations, maintains public health and safety, prevents unacceptable off-site impacts and minimises whole of life cycle costs; and

(b) excavation and filling does not adversely or unreasonably impact on the natural environment, drainage conditions or adjacent properties.

~~12.2.3.3~~9.4.3.3 Assessment benchmarks

Table 9.4.3.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
PO1	Filling or excavation does not prevent or create difficult access to the property.	**AO1.1**	Driveways are able to be constructed and maintained in accordance with the requirements of the D2: Site regrading and S1: Earthworks of PSP SC6.8 WRC development manual.
PO2	Excavation and filling: (a) does not cause environmental harm; (b) does not impact adversely on visual amenity or privacy; (c) maintains natural landforms as far as possible; and (d) is stable in both the short and long term.	**AO2.1**	Development provides that: (a) on sites of: (i) 15% slope or more, the extent of excavation (cut) and fill does not involve a total change of more than 1.5m relative to the natural ground level at any point; or (ii) in other areas, the extent of excavation (cut) and fill does not involve a total change of more than 1.0m relative to the natural ground level at any point; (b) no part of any cut or fill batter is within 1.5m of any property boundary except cut and fill involving a change in ground level of less than 200mm that does

Performance Outcomes		Acceptable Outcomes	
			not necessitate the removal of any vegetation; (c) retaining walls are no greater than 1.0m high; (d) retaining walls are constructed a minimum 150mm from property boundaries; (e) all stored material is: (i) contained wholly within the site; (ii) located in a single manageable area that does not exceed 50m^2; (iii) located at least 10m from any property boundary; and (f) any batter or retaining wall is structurally adequate.
PO3	Filling or excavation does not interfere with natural stormwater flows.	**AO3.1**	Any filling or excavation does not restrict or interfere with overland flow.
PO4	Filling or excavation does not directly, indirectly or cumulatively change flood characteristics which may cause adverse impacts external to the development site.	**AO4.1**	Development does not result in a reduction in flood storage capacity.
		AO4.2	Development does not change flood flows, velocities or levels external to the development site.
PO5	Filling or excavation does not result in any contamination of land or water, or pose a health or safety risk to users and neighbours of the site.	**AO5.1**	Development provides that: (a) no contaminated material is used as fill; (b) for excavation, no contaminated material is excavated or contaminant disturbed; and (c) waste materials are not used as fill, including: (i) commercial waste; (ii) construction/demolition waste; (iii) domestic waste; (iv) garden/vegetation waste; and (v) industrial waste.

9.4.4 Healthy Waters Code

9.4.4.1 Application

This code applies to assessable development identified as requiring assessment against the Healthy waters code by the table of assessment in Part 5 (Tables of Assessment) and involves:

(1) a material change of use for an urban purpose on a premises 2,500m² or greater in size that will result in:

(a) six or more dwellings; or

(b) an impervious area greater than 25% of the net developable area;

(2) reconfiguring a lot for an urban purpose on a premises 2,500m² or greater in size that will result in six or more lots, as a total of all stages of the development;

(3) operational works for an urban purpose that involves disturbing a land area 2,500m² or greater in size; or

(4) development located wholly outside the PIA that involves:

(a) a material change of use for Intensive animal industry, Medium impact industry, High impact industry, Special industry, Extractive industry, Motor sport facility or Renewable energy facility;

(b) a material change of use for Utility installation that involves waste management facilities or sewerage, drainage or stormwater services; or

(c) reconfiguring a lot to create six or more lots as a total of all stages of the development, if any resultant lot is less than 16 hectares in size and any of the lots created will rely on on-site wastewater treatment.

9.4.4.2 Purpose and Overall Outcomes

(1) The purpose of the Healthy waters code is to ensure that development layout and sustainable stormwater management infrastructure protects water quality, public health and environmental values in waterways, including ephemeral and perennial streams, creeks, rivers, lakes, estuarine areas, bays and the Great Barrier Reef, and integrates with the character of the area.

(2) The purpose of the Healthy waters code will be achieved through the following overall outcomes:

(a) development is located, designed, constructed and established to:

(i) protect and enhance the environmental values and flow regimes of waterways, wetlands, lakes and ground waters;

(ii) reflect the regional climate and the site's landscape characteristics;

(iii) enhance biodiversity, landscape and recreational values;

(iv) achieve acceptable maintenance, renewal and adaptation costs and reduce whole-of-lifecycle costs;

(v) protect public health and safety; and

(vi) minimise waste.

9.4.4.3 Assessment benchmarks

Table 9.4.4.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Stormwater quality			
PO1	Development protects or enhances the environmental values and water quality objectives of receiving waters or buffer areas within or downstream of a site.	AO1.1	Development achieves the water quality objectives specified in the WRC Stormwater Quality Guideline. Note – This may be demonstrated by preparing a Stormwater quality management plan in accordance with PSP SC6.2.6 Stormwater management plan.
Hydrology and waterway stability			
PO2	Development prevents increased channel bed and bank erosion in waterways by limiting changes in flow rate and flow duration within receiving waters.	AO2.1	Development achieves the waterway stability objectives specified in the WRC Stormwater Quality Guideline. Note – This may be demonstrated by preparing a Stormwater quality management plan in accordance with PSP SC6.2.6 Stormwater management plan.
Infrastructure			
PO3	Stormwater management devices are designed to: (a) minimise health and safety hazards; (b) minimise maintenance, renewal, adaptation costs and the requirement for specialised equipment or maintenance techniques; (c) be visually integrated into the development; and (d) enhance biodiversity.	AO3.1	Development achieves the integrated design objectives specified in the WRC Stormwater Quality Guideline. Note – This may be demonstrated by preparing a Stormwater quality management plan in accordance with PSP SC6.2.6 Stormwater management plan.
PO4	Stormwater management systems are established and maintained during the maintenance period to ensure optimal vegetation growth and achieve the design objectives at the end of the maintenance period.	AO4.1	Construction, establishment and maintenance of stormwater management systems is undertaken in accordance with the WRC Stormwater Quality Guideline and PSP SC6.8 (WRC Development manual).
Wastewater requirements			
PO5	The development does not discharge wastewater, unless demonstrated to be best practice environmental management.	AO5.1	A WWMP is prepared by a suitably qualified person and addresses: (a) wastewater type; (b) climatic conditions; (c) WQO; and (d) best-practice environmental management.

Performance Outcomes		Acceptable Outcomes	
		AO5.2	The WWMP provides that wastewater is managed in accordance with a waste management hierarchy that: a) avoids wastewater discharges to waterways; or b) if wastewater discharge to waterways cannot practicably be avoided, development minimises wastewater discharge to waterways by re-use, recycling, recovery and treatment for disposal to sewer, surface water or groundwater.
Non-tidal artificial waterway			
PO6	The establishment of a non-tidal artificial waterway must provide a deed of agreement for the management and operation of the waterway.	AO6.1	Any non-tidal artificial waterway is managed and operated by a responsible entity for the life of the waterway by deed of agreement that: (g) identifies the waterway; (h) states a period of responsibility for all entities; (i) states a process for any transfer of responsibility for the waterway; (j) states required actions under the agreement for monitoring the water quality of the waterway and all receiving waters; (k) states required actions under the agreement for maintaining the waterway, including any relevant conditions of a development approval; and (a) identifies funding sources for the above, such as bonds or levies.
PO7	Non-tidal artificial waterways are managed and operated by suitably qualified persons to achieve water quality objectives in natural waterways.	AO7.1	Any non-tidal artificial waterway is designed, constructed and managed by a suitably qualified Registered Professional Engineer Queensland (RPEQ) with experience in establishing and managing artificial waterways to achieve relevant water-quality objectives, including: (c) aquatic weeds are managed in any non-tidal artificial waterway to achieve a low percentage of coverage of the water surface area (less than 10%); and (a) pests and vectors, such as mosquitoes, are managed

Performance Outcomes		Acceptable Outcomes	
			through avoiding stagnant water areas, establishing native fish predators or any other best practices for monitoring and treatment.
		AO7.2	Wastewater and stormwater discharge in waterways is managed to avoid, or minimise, the release of nutrients of concern to minimise the occurrence, frequency and intensity of coastal algal blooms. Note – nutrients of concern are included in the PSP 6.2.6 (Stormwater Management) and WRC Stormwater Quality Guidelines.
PO8	Non-tidal artificial waterways are designed to protect biodiversity and environmental values.	AO8.1	Any non-tidal artificial waterway must be designed and managed for all of the following functions: (e) aesthetic landscaping and recreation; (f) flood management; (g) stormwater harvesting as part of an integrated water cycle management plan; or (a) aquatic habitat.
		AO8.2	The quality and integrity of declared fish habitat areas and water entering them is maintained.
PO9	Non-tidal artificial waterways are located in a way that is compatible with the land use constraints of the site and do not cause adverse impacts on the quality and integrity of water upstream or downstream properties and catchments, including the Great Barrier Reef Marine Park.	AO9.1	If the proposed development involves a non-tidal artificial waterway: (g) environmental values in existing downstream waterways and associated habitats are protected; (h) there are no adverse impacts on the long-term stability of the bed and banks of the waterway; (i) groundwater recharge areas are not affected; (j) the location of the waterway incorporates low lying areas of a catchment connected to an existing waterway; (k) existing areas of ponded water are included; and (l) non-tidal artificial waterways are located: (i) outside natural wetlands and any associated buffer areas; (ii) to minimise disturbing soils or sediments; and

Performance Outcomes		Acceptable Outcomes	
			to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazard areas.
PO10	A non-tidal artificial waterway is located in a way that is compatible with existing tidal waterways.	**AO10.1**	Where a non-tidal artificial waterway is located adjacent to, or is connected to, a tidal waterway by means of a weir, lock, pumping system or similar: d) there is sufficient flushing or a tidal range of >0.3m; e) any tidal flow alteration does not adversely impact on the tidal waterway; or there is no introduction of salt water into freshwater environments.

~~12.2.4~~9.4.5 Infrastructure code

~~12.2.4.1~~9.4.5.1 Application

This code applies to assessable development identified as requiring assessment against the Infrastructure code by the tables of assessment in Part 5 (Tables of assessment).

~~12.2.4.2~~9.4.5.2 Purpose and overall outcomes

(1) The purpose of the Infrastructure code is to ensure that development works and the provision of infrastructure and services meets the needs of the development, and is undertaken in a sustainable manner in accordance with best practice.

(2) The purpose of the Infrastructure code will be achieved through the following overall outcomes:

(a) infrastructure networks that provide basic and essential services and facilities to local communities are able to meet the planned increase in demand resulting from a planned increase in development density;

(b) development is provided with an appropriate level of water, wastewater treatment and disposal, drainage, energy and communications infrastructure and other services;

(c) infrastructure is designed, constructed and provided in a manner which maximises resource efficiency and achieves acceptable maintenance, renewal and adaptation costs;

(d) infrastructure is integrated with surrounding networks; and

(e) development over or near infrastructure does not compromise or interfere with the integrity of the infrastructure.

~~12.2.4.3~~9.4.5.3 Assessment benchmarks

Table 9.4.5.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Infrastructure, services and utilities			
PO1	Development is provided with infrastructure, services and utilities appropriate to its location and setting and commensurate with its needs.	**AO1.1**	Where available, development is provided with appropriate connection to reticulated sewerage, water supply, stormwater drainage, electricity, telecommunications and gas services, where available in the street, at no cost to the Council, including provision by way of dedicated road, public reserve or by way of easements to ensure continued access is available to these services.
		AO1.2	In an urban area, electricity infrastructure is provided underground where: (a) five or more new lots are created; (b) a new road is created; or (c) there is existing underground power in the

Performance Outcomes		Acceptable Outcomes	
			vicinity of the development site.
		AO1.3	Where reticulated sewerage is not available, an on-site treatment and disposal system is provided that complies with the requirements of the ~~*Plumbing and Drainage Act 2002.*~~ *Queensland Plumbing and Wastewater Code.*
		AO1.4	Where reticulated water supply is not available, development is provided with adequate on-site rainwater collection through: (a) a potable water supply or water potable storage collection system, having a minimum of 70,000 litres; or (b) development undertakes an on-site water needs assessment to determine water usage specific to the on-site uses. Note - Development is required to meet the firefighting requirements of the Building Code of Australia, independent of the supplies listed above. Note - Any potable water supply must be in accordance with the *Public Health Act 2005.*
PO2	Development provides for infrastructure, services and utilities that are planned, designed and constructed in a manner which: (a) ensures appropriate capacity to meet the current and planned future needs of the development; (b) is integrated with and efficiently extends existing networks; (c) minimises risk to life and property; (d) avoids ecologically important areas; (e) minimises risk of environmental harm; (f) achieves acceptable maintenance, renewal and adaptation costs; (g) can be easily and efficiently maintained; (h) minimises potable water demand and wastewater production;	**AO2.1**	Infrastructure is planned, designed and constructed with PSP SC6.8 WRC development manual for development works, or where applicable, the requirements of the service provider.
		AO2.2	Development occurs in a logical sequence and facilitates the efficient and timely provision of infrastructure and services, taking into account the capacity of existing and future infrastructure.
		AO2.3	Compatible public utility services are co-located in common trenching, in order to minimise the land required and costs for underground services.

Performance Outcomes		Acceptable Outcomes	
	(i) ensures the ongoing construction or operation of the development is not disrupted; (j) where development is staged, each stage is fully serviced before a new stage is released; (k) ensures adequate clearance zones are maintained between utilities and dwellings to protect residential amenity and health; and (l) minimises visual and amenity impacts.	**AO2.4**	Infrastructure, services and utilities are located and aligned to: (a) avoid disturbance of ecologically important areas; (b) minimise earthworks; and (c) avoid crossing waterways or wetlands.
		AO2.5	Where the crossing of a waterway or wetland cannot be avoided tunnel boring techniques are used to minimise disturbance and disturbed areas are reinstated and revegetated on completion of works.
		AO2.6	The selection of materials used in the construction of infrastructure is suitable, durable, easy to maintain and cost effective, taking into account the whole of life cycle cost, and achieves best practice environmental management and energy savings.
		AO2.7	Access easements for maintenance purposes are provided over Council infrastructure within privately owned land.
PO3	Short-term accommodation, Multi-unit uses, mixed use development with two or more uses on-site and Reconfiguration of a lot involving a private road: (a) provides an effective waste system for anticipated waste generation; (b) mitigates operational and amenity impacts of waste collection; and (c) minimises the proliferation of individual wheelie bins for collection at the road frontage of the development through a Waste management plan. Note – This may be demonstrated by undertaking a Waste management plan in accordance with PSP SC6.9 (Waste management policy).	**AO3.1**	A Waste management plan is developed in accordance with PSP SC6.9 (Waste management policy) for a: (a) residential subdivision with 4 or more lots; (b) Multiple dwelling; (c) Short-term accommodation; (d) Relocatable home park; (e) Retirement facility; (f) Tourist park; (g) Rooming accommodation; (h) Resort complex; or (i) Mixed use development with two or more uses onsite.
Community infrastructure			
PO4	Development involving essential infrastructure for community and/or services remains functional to serve community need during and immediately after a flood event.	**AO4.1**	Development identified in the Table 8.2.9.3.3 (Flood immunity for community infrastructure and services) is provided with the defined Level of immunity and:

Performance Outcomes		Acceptable Outcomes	
			(a) is designed, sited and operated to avoid adverse impacts on the community or the environment due to the impacts of flooding on infrastructure, facilities or access and egress routes; (b) retains essential site access during a flood event; and (c) is able to remain functional even when other infrastructure or services may be compromised in a flood event. Note - Essential community infrastructure is defined in the State Planning Policy 2017. Note - This may be demonstrated by preparing a Flood hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
Stormwater management infrastructure			
~~PO3~~PO5	Development provides for the effective drainage of lots and roads in a manner that: (a) maintains the pre-existing or natural flow regime; (b) effectively manages stormwater quality and quantity; ~~(b)~~(c) prevents increased channel bed and bank erosion in waterways; and ~~(c)~~(d) ensures no adverse impacts on receiving waters, adjacent properties on surrounding land.	~~AO3.1~~AO	The development of stormwater management infrastructure is designed in accordance with ~~D4: Stormwater drainage, D5: Stormwater quality and S4:~~ Stormwater drainage of PSP SC6.8 WRC development manual.
Works over or near sewerage, water and stormwater drainage infrastructure			
~~PO4~~PO6	Building or operational work near or over the Council's stormwater infrastructure and/or sewerage and water infrastructure: (a) protects the infrastructure from physical damage; and (b) allows ongoing necessary access for maintenance purposes.	~~AO4.1~~AO	Building or operational work near or over the Council's stormwater infrastructure and/or sewerage and water infrastructure complies with the PSP SC6.8 WRC development manual.
~~**Plan to avoid/minimise new impacts on water quality**~~			
	~~The development is planned and designed considering the land use constraints of the site for achieving stormwater design objectives.~~		~~A site stormwater quality management plan (SQMP) is prepared, and:~~ ~~(iii) is consistent with any local area stormwater~~

Performance Outcomes		Acceptable Outcomes	
			management planning, and (iv) provides for achievable stormwater quality treatment measures meeting design objectives listed below in Table 9.4.4.3.2 (construction phase) and Table 9.4.4.3.3 (post construction phase), or current best practice environmental managements, reflecting land use constraints, such as: (c) erosive, dispersive, sodic and/or saline soil types; (d) landscape features (including landform); (e) acid sulfate soil and management of nutrients of concern; (f) rainfall erosivity. Editor's note: Local area stormwater management planning may include Urban Stormwater Quality Management Plans, or Catchment or waterway management plans, Healthy Waters Management Plans, Water Quality Improvement Plans, Natural Resource Management Plans.
	Development does not discharge wastewater to a waterway or off site unless demonstrated to be best practice environmental management for that site.		A wastewater management plan (WWMP) is prepared by a suitably qualified person and addresses: wastewater type, and climatic conditions, and water quality objectives (WQOs), and best practice environmental management, and
			The WWMP provides that wastewater is managed in accordance with a waste management hierarchy that: avoids wastewater discharges to waterways, or if wastewater discharge to waterways cannot practicably be avoided, minimises wastewater discharge to waterways by re-use, recycling, recovery and treatment for disposal to sewer, surface water and groundwater.

Performance Outcomes		Acceptable Outcomes	
	Any non-tidal artificial waterway is located in a way that is compatible with the land use constraints of the site for protecting water environmental values in existing natural waterways.		If the proposed development involves a non-tidal artificial waterway: environmental values in downstream waterways are protected, and any groundwater recharge areas are not affected, and the location of the waterway incorporates low lying areas of a catchment connected to an existing waterway, and existing areas of ponded water are included, and
			Non-tidal artificial waterways are located: outside natural wetlands and any associated buffer areas, and to minimise disturbing soils or sediments, and to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazardous areas.
	Any non-tidal artificial waterway is located in a way that is compatible with existing tidal waterways.		Where a non-tidal artificial waterway is located adjacent to, or is connected to, a tidal waterway by means of a weir, lock, pumping system or similar: there is sufficient flushing or a tidal range of >0.3 m, or any tidal flow alteration does not adversely impact on the tidal waterway, or there is no introduction of salt water into freshwater environments.
Design to avoid/minimise new impacts on water quality			
	Stormwater does not discharge directly to a non-tidal artificial waterway without treatment to manage stormwater quality management.		Any non-tidal artificial waterway is designed and managed for any of the following end-use purposes: amenity including aesthetics, landscaping and recreation, or flood management, or stormwater harvesting as part of an integrated water cycle management plan, or aquatic habitat, and
			The end-use purpose of any non-tidal artificial waterway is designed and operated in a way that protects water environmental values.
Construct to avoid/minimise new impacts on water quality			

Performance Outcomes		Acceptable Outcomes	
	Construction activities for the development avoid or minimise adverse impacts on stormwater quality.		An erosion and sediment control plan (ESCP) demonstrates that release of sediment laden stormwater is avoided for the nominated design storm, and minimised when the nominated design storm is exceeded, by addressing design objectives listed below in Table 9.4.4.3.4 (construction phase) or local equivalent, for: drainage control, and erosion control, and sediment control, and water quality outcomes, and
			Erosion and sediment control practices (including any proprietary erosion and sediment control products) are designed, installed, constructed, operated, monitored and maintained, and any other erosion and sediment control practices are carried out in accordance with local conditions and appropriate recommendations from a suitably qualified person.
Operate to avoid/minimise new impacts on water quality			
	Operational activities for the development avoid or minimises changes to waterway hydrology from adverse impacts of altered stormwater quality and flow.		Development incorporates stormwater flow control measure to achieve the design objectives set out below in Table 9.4.4.3.5 (post construction phase). The operational phases for the development comply with design objectives in Table 9.4.4.3.6 (post construction phase), or current best practice environmental management, including management of frequent flows, and peak flows.
	Any treatment and disposal of waste water to a waterway accounts for: the applicable water quality objectives for the receiving waters, and adverse impact on ecosystem health or receiving waters, and in waters mapped as being of high ecological value, the adverse impacts of such releases and their offset.		Implement the WWMP prepared in accordance with.AO6.1.
	Wastewater discharge to a waterway is managed in a way that maintains ecological		Wastewater discharge waterways is managed to avoid or minimize the release of

Performance Outcomes		Acceptable Outcomes	
	processes, riparian vegetation, waterway integrity, and downstream ecosystem health.		nutrients of concern so as to minimize the occurrence, frequency and intensity of coastal algal blooms, and
			Development in coastal catchments avoids or minimises and appropriately manages soil disturbance or altering natural hydrology, and
			Development in coastal catchments: avoids lowering groundwater levels where potential or actual acid sulfate soils are present, and manages wastewaters so that: the pH of any wastewater discharged is maintained between 6.5 and 8.5 to avoid mobilisation of acid, iron, aluminium, and metals, and holding times of neutralised wastewaters ensures the flocculation and removal of any dissolved iron prior to release, and visible iron floc is not present in any discharge, and precipitated iron floc is contained and disposed of, and wastewater and precipitates that cannot be contained and treated for discharge on site are removed and disposed of through trade waste or another lawful method.
	Any non-tidal artificial waterway is managed and operated by suitably qualified persons to achieve water quality objectives in natural waterways.		Any non-tidal artificial waterway is designed, constructed and managed under the responsibility of a suitably qualified registered professional engineer, Queensland (RPEQ) with specific experience in establishing and managing artificial waterways, and
			Monitoring and maintenance programs adaptively manage water quality in any non-tidal artificial waterway to achieve relevant water quality objectives

Performance Outcomes		Acceptable Outcomes	
			~~downstream of the waterway, and~~
			~~Aquatic weeds are managed in any non-tidal artificial waterway to achieve a low percentage of coverage of the water surface area (less than 10%). Pests and vectors (such as mosquitoes) are managed through avoiding stagnant water areas, providing for native fish predators, and any other best practices for monitoring and treating pests, and~~
			~~Any non-tidal artificial waterway is managed and operated by a responsible entity under agreement for the life of the waterway. The responsible entity is to implement a deed of agreement for the management and operation of the waterway that:~~ ~~**PO1** identifies the waterway, and~~ ~~**PO2** states a period of responsibility for the entity, and~~ ~~**PO3** states a process for any transfer of responsibility for the waterway, and~~ ~~**PO4** states required actions under the agreement for monitoring the water quality of the waterway and receiving waters, and~~ ~~**PO5** states required actions under the agreement for maintaining the waterway to achieve the outcomes of this code and any relevant conditions of a development approval, and~~ ~~identifies funding sources for the above, including bonds, infrastructure charges or levies.~~
Fire services in developments accessed by common private title			

Performance Outcomes		Acceptable Outcomes	
~~PO5~~PO7	Hydrants are located in positions that will enable fire services to access water safely, effectively and efficiently.	~~AO5.1~~AO	Residential streets and common access ways within a common private title should have hydrants placed at intervals of no more than 120m and at each intersection. Hydrants may have a single outlet and should be situated above or below ground.
		AO5.2	Commercial and industrial streets and access ways within streets serving commercial properties, such as factories, warehouses and offices, should be provided with above or below ground fire hydrants at not more than 90m intervals and at each street intersection. Above ground fire hydrants should have dual valved outlets.
~~PO6~~PO8	Road widths and construction within the development are adequate for fire emergency vehicles to gain access to a safe working area close to dwellings and near water supplies, whether or not on-street parking spaces are occupied.	~~AO6.1~~AO	Road access minimum clearances of 3.5m wide and 4.8m high are provided for safe passage of emergency vehicles.
~~PO7~~PO9	Hydrants are suitably identified, so that fire services can locate them at all hours.	~~AO7.1~~AO	Hydrants are identified as specified in the *Traffic and Road Use Management Manual, Volume 1: Guide to traffic management*, Part 10: Traffic Control and Communication Devices, Section 6.7.2-1 Fire hydrant indication system. Editor's Note - Document available on the Department of Transport and Main Roads Website.

~~**Table 9.4.4.3.7 Stormwater management design objectives – Construction phase (Ref: SPP Appendix 3)**~~

~~Issue~~		~~Design Objectives~~
~~Drainage control~~	~~Temporary drainage works~~	~~(a) Design life and design storm for temporary drainage works:~~ ~~a. disturbed area open for <12 months – 1 in 2 year ARI event;~~ ~~b. disturbed area open for 12–24 months – 1 in 5 year ARI event;~~ ~~c. disturbed area open for > 24 months – 1 in 10 year ARI event.~~ ~~(b) Design capacity excludes minimum 150 mm freeboard.~~ ~~(c) Temporary culvert crossing – minimum 1 in 1 year ARI hydraulic capacity.~~
~~Erosion control~~	~~Erosion control measures~~	~~a) Minimise exposure of disturbed soils at any time.~~

Issue		Design Objectives
		b) Divert water run-off from undisturbed areas around disturbed areas. c) Determine the erosion risk rating using local rainfall erosivity, rainfall depth, soil loss rate or other acceptable methods. d) Implement erosion control methods corresponding to identified erosion risk rating.
Sediment control	Sediment control measures Design storm for sediment control basins Sediment basin dewatering	(1) Determine appropriate sediment control measures using: (a) potential soil loss rate; or (b) monthly erosivity; or (c) average monthly rainfall. (2) Collect and drain stormwater from disturbed soils to sediment basin for design storm event: (a) design storm for sediment basin sizing is 80th% five-day event or similar. (3) Site discharge during sediment basin dewatering: a. TSS < 50 mg/L TSS; b. turbidity not >10% receiving waters turbidity; and c. pH 6.5–8.5.
Water quality	Litter and other waste, hydrocarbons and other contaminants	Part 9 Avoid wind-blown litter; remove gross pollutants. Part 10 Ensure there is no visible oil or grease sheen on released waters. Part 11 Dispose of waste containing contaminants at authorised facilities.
Waterway stability and flood flow management	Changes to the natural waterway hydraulics and hydrology	(a) For peak flow for the 1-year and 100-year ARI event, use constructed sediment basins to attenuate the discharge rate of stormwater from the site.

Table 9.4.4.3.8 Stormwater Management Design Objectives - Post construction phase (Ref: SPP Appendix 3)

Climatic region	Design Objectives Minimum reductions in mean and annual load from unmitigated development (%)				Application
	Total suspended solids	Total phosphorus	Total Nitrogen	Gross pollutants >5mm	
Central Queensland (North)	75	60	40	90	Development for urban purposes within population centres greater than 3,000 persons.
All	N/A	N/A	N/A	N/A	Excludes development that is less than 25% impervious. In lieu of modelling, the default bio-retention treatment

					~~area to comply with load reduction targets for all Queensland regions is 1.5% of the contributing catchment area.~~
	~~Waterway stability management~~ ~~Limit the peak 1 year ARI event discharge within the receiving waterway to the pre-development peak 1 year ARI event discharge.~~				~~Catchments contributing to un-lined receiving waterway may not require compliance if the waterway is degraded.~~ ~~For peak flow the 1-year ARI event, use co-located storages to attenuate site discharge rate of stormwater.~~

~~11.1.1~~9.4.6 Landscaping code

~~11.1.1.1~~9.4.6.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Landscaping code by the tables of assessment in Part 5 (Tables of assessment).

~~11.1.1.2~~9.4.6.2 Purpose and overall outcomes

(1) The purpose of the Landscaping code is to ensure that landscaping is provided in a manner which is consistent with the desired character and amenity of the Whitsunday region.

(2) The purpose of the Landscaping code will be achieved through the following overall outcomes:

(a) development provides landscaping that retains, as far as practicable, existing vegetation and topographic features for their biodiversity, ecological, wildlife habitat, recreational, aesthetic and cultural values;

(b) development provides landscaping that creates new landscape environments that co-ordinate and complement the natural elements of climate, vegetation, drainage, aspect, landform and soils;

(c) development provides landscaping that successfully integrates the built form with the local landscape character, enhances the tropical qualities of the Whitsunday region and mitigates the impact of increased urbanisation;

(d) development provides landscaping that minimises the consumption of energy and water, and encourages the use of local native plant species and landscape materials;

(e) public landscaping works are provided in a manner consistent with Council's relevant requirements and standards;

(f) development provides landscaping that enhances personal safety, security and universal access;

(g) development provides landscaping that is functional and durable; and

(h) development provides landscaping that is practical and economic to maintain with on-going management considered as an integral part of the overall landscape design.

~~11.1.1.3~~9.4.6.3 Assessment benchmarks

Table 9.4.6.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Landscape design generally			
PO1	Landscaping is established on the site to maintain the amenity enjoyed by people using the premises and the adjoining premises.	**AO1.1**	Development provides for landscaping that contributes to and creates a high-quality landscape character for the site, street, local area and the Whitsunday region, by: (a) promoting the character of the Whitsunday region as a tropical environment;

Performance Outcomes		Acceptable Outcomes	
			(b) being sensitive to site conditions, natural landforms and landscape characteristics; (c) protecting and enhancing native vegetation, wildlife habitat and ecological values; (d) protecting and framing significant views, vistas and areas of high scenic quality; and (e) being of an appropriate scale to integrate successfully with development. (f) Note – This may be demonstrated by preparing a site specific Landscaping plan in accordance with PSP SC6.4 Landscaping.
Retention of vegetation and topographic features in layout and design of landscaping			
PO2	Development provides landscaping that, as far as practicable, retains, protects and enhances existing trees, vegetation and topographic features of ecological, recreational, aesthetic and cultural value.	**AO2.1**	Existing remnant vegetation and native non-remnant vegetation is retained and integrated within the landscaping concept of new development.
		AO2.2	Where established vegetation is removed or damaged to make way for new development, it is replaced with vegetation of the same or similar species within the development site.
Character and amenity			
PO3	Development provides for landscaping that protects and enhances the character and amenity of the site, streetscape and surrounding locality.	**AO3.1**	Built form is softened and integrated with the broader landscape by structured landscape planting.
		AO3.2	Unless otherwise specified, car parks and driveways are screened by: (a) a planting bed of at least 1.5m wide where adjacent to an Accommodation activity; or (b) a planting bed of at least 3m wide where adjacent to a street frontage or public open space.
		AO3.3	Car parking areas are provided with a minimum of 1 shade tree for every 4 car parking spaces. All trees are to be planted within a deep natural ground/structured soil garden bed, protected by raised kerbs,

Performance Outcomes		Acceptable Outcomes	
			wheel stops or bollards as required.
		AO3.4	Front boundary fences and walls are articulated by recesses that: (a) allow for dense vegetative screening; and (b) have a minimum depth of 1m to the full height of the fence or wall for at least 50% of the length.
		AO3.5	Storage and utility areas are completely screened by vegetation or built screens, except for access ways to these areas.
Streetscape landscaping			
PO4	Development provides for a streetscape landscaping that contributes to the character and amenity of surrounding development and assists in fostering social interaction.	**AO4.1**	Streetscape landscaping: (a) incorporates shade trees; (b) contributes to the continuity and character of existing and proposed streetscapes; (c) in established urban areas, incorporates landscape design, such as planting, pavements, furniture and structures, that reflect and enhance the character of the streetscape; (d) in new or establishing urban areas, incorporates landscape design, such as planting, pavements, furniture and structures, that is consistent with and complementary to the natural landscape character of the local area; and (e) incorporates garden planting in conjunction with street tree planting at major junctions only.
Vertical landscaping			
PO5	Development involving green roofs, walls or podiums; uses plants that are resilient to natural hazards and minimises maintenance requirements through design.	**AO5.1**	Development involving green roofs, podiums or walls incorporates the capture and re-use of stormwater or specifically designed irrigation systems to reduce maintenance.
		AO5.2	Plants are of a resilient species specific to the local climatic conditions and are planted in a structure designed to protect the root ball and enable regrowth following severe weather events.
Species selection			

Performance Outcomes		Acceptable Outcomes	
~~PO5~~PO6	Development provides for landscaping, which incorporates plant species that are: (a) fit for the intended purpose; (b) suited to local environmental conditions; (c) non-toxic; and (d) not declared environmental weeds.	~~AO5.1~~AO	Landscaping planting utilises locally endemic and/or other native species, in accordance with the PSP SC6.4 Landscaping.
		~~AO5.2~~AO	Species that have the potential to become an environmental weed or are known to be toxic to people or animals are not used in any landscaping works.
Safety, security and accessibility			
~~PO6~~PO7	Development provides for landscaping that: (a) clearly defines public and private spaces; (b) promotes passive surveillance of public and semi-public spaces; (c) enhances personal safety and security; and (d) provides universal and equitable access.	~~AO6.1~~AO	Development provides landscaping, which: (a) defines territory and ownership of public, common, semi-private and private space and does not create ambiguous spaces that encourage loitering; (b) allows passive surveillance into, and visibility within, communal recreational spaces, children's play areas/playgrounds, pathways and car parks; (c) incorporates trees with a minimum of 1.8m clear trunk and understorey planting that is a maximum of 0.3m in height where located immediately adjacent to pathways, entries, parking areas, street corners, street lighting and driveways; (d) minimises the use of dense shrubby vegetation over 1.5m in height along street frontages and adjacent to open space areas; (e) incorporates pedestrian surfaces that are slip-resistant, stable and trafficable in all weather conditions; (f) provides security and pathway level lighting to site entries, driveways, parking areas, building entries and pedestrian pathways; and (g) provides universal access in accordance with AS1428 Design for access and mobility.
		~~AO6.2~~AO	Fences and screens to street frontages are visually permeable for 50% of their face area to provide opportunities for passive surveillance.

Performance Outcomes		Acceptable Outcomes	
Climate control and energy efficiency			
~~PO7~~PO8	Development provides landscaping that assists in passive solar access, the provision of shade, microclimate management and energy conservation.	~~AO7.1~~AO	Landscaping elements are positioned to shade walls, windows and outdoor areas from summer sun.
		~~AO7.2~~AO	Landscaping allows winter sun access to living areas, north facing windows and public spaces.
		~~AO7.3~~AO	Landscaping, fences and walls allow exposure of living and public areas to prevailing summer breezes and protection against winter winds.
Water sensitive urban design			
~~PO8~~PO9	Development provides for landscaping that promotes the efficient and sensitive use of water through appropriate plant selection, layout and by maximising opportunities for water infiltration.	~~AO8.1~~AO	Landscaping maximises the infiltration and conservation of water by: (a) selecting locally endemic and/or other native plant species and appropriate turf species that require minimal irrigation after establishment; (b) grouping plants and street trees, where appropriate, in mulched beds; (c) minimising impervious surfaces; (d) incorporating semi-porous pavement surfaces as an alternative to impervious surfaces; and (e) draining hard surface areas to landscaped areas and water sensitive urban design devices.
PO10	Development provides for landscaping of stormwater management infrastructure that: (a) reduces maintenance costs and requirements; (b) integrates visually with its surroundings; and (c) facilitates the long-term health and performance of that infrastructure.	AO10.1	Landscaping of stormwater management infrastructure is in accordance with the WRC Stormwater Quality Guideline.
Landscaped separation buffers and environmental management			
~~PO9~~PO11	Development provides for landscaped separation buffers that: (a) effectively protect matters of environmental significance or the edges of existing native vegetation; and (b) provide separation between incompatible land uses or between major	~~AO9.1~~AO	The ecological values of a site or adjoining land is protected and enhanced by landscaping and landscape buffers. Note – This may be demonstrated by preparing a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 Landscaping.
		~~AO9.2~~AO	Where a landscaped separation buffer is required, it is designed,

Performance Outcomes		Acceptable Outcomes	
	infrastructure elements, such as State-controlled roads, and land uses.		constructed and maintained to achieve visual screening and acoustic attenuation of major infrastructure elements. Note – This may be demonstrated by preparing a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 Landscaping.
Traffic safety and infrastructure			
~~PO10~~PO1	Development ensures that landscaping does not impede traffic visibility at access points, speed control devices and intersections.	~~AO10.1~~AO	Landscaping does not: (a) unreasonably restrict sightlines for vehicles, pedestrians or cyclists; (b) obscure warning signs, information signs or road signs; (c) compromise building foundations, roads and paths; and (d) compromise services such as pipelines, underground cabling and overhead powerlines.
		~~AO10.2~~AO	Where restrictions occur, suitable alternative landscaping is provided.
~~PO11~~PO1	Development ensures that landscaping does not adversely impact upon the provision, operation and maintenance of infrastructure.	~~AO11.1~~AO	Planting and landscape structures are located to enable tradespersons to access, view and inspect switchboards, substations, service meters and the like.
		~~AO11.2~~AO	Root barriers are installed around tree root balls to minimise the risk of damage to infrastructure, services or utilities.
		~~AO11.3~~AO	Trees and large shrubs are located clear of underground services and utilities and in accordance with D9.07 of PSP SC6.8 WRC development manual.
		~~AO11.4~~AO	Planting in landscaping areas adjacent to electricity substations or high voltage transmission line easements complies with the PSP SC6.8 WRC development manual, in addition to: (a) for Ergon Energy's assets, the Ergon Energy Vegetation management standard; and (b) for Powerlink's assets, Powerlink's Easement co-use guideline and

Performance Outcomes		Acceptable Outcomes	
			Screening your home from powerlines guideline.
		~~AO11.5~~A	Where restrictions occur, suitable alternative landscaping is provided.
Requirements for Accommodation activities (Dual occupancy, Multi-unit uses, Residential care facility and retirement facility)			
~~PO12~~PO	Development provides for landscaping that contributes to and creates a high-quality landscape for the site and streetscape.	~~AO12.1~~A	A landscaped buffer strip at least 3m wide is provided within the boundaries of the site, adjacent to the full street frontage of the site.
Requirements for Business activities (Business, Child care centre, Relocatable home park and tourist park and Sales office)			
~~PO13~~PO	The development provides streetscape landscaping that creates a high level of comfort, safety and visual attractiveness for users.	~~AO13.1~~A	Streets are provided with turfed verges and constructed footpaths.
		~~AO13.2~~A	Where provided, street trees are located between footpaths and the street or parking lanes.
		~~AO13.3~~A	Shade trees are provided throughout public and semi-public spaces and provide shade to footpaths, activity areas and open car parking areas.
		~~AO13.4~~A	Street furniture, including seats, bollards, grates, grilles, screens and fences, bicycle racks, flag poles, banners, litter bins, telephone booths and drinking fountains, are co-ordinated with other elements of the streetscape.
~~PO14~~PO	The Business activity provides for the premises to be attractively landscaped in a manner that is consistent with the function, location and setting of the premises.	~~AO14.1~~A	A minimum of 10% of the site is provided as landscaped area.
		~~AO14.2~~A	Landscaping is provided on-site, in accordance with the following: (a) shade trees, low planting and hard landscaping are provided along street frontages not occupied by buildings or driveways; (b) a landscaped buffer strip is provided between the use and any adjacent Accommodation activities, which: (i) has a minimum width of 3m; (ii) is planted with a variety of screening trees and shrubs; (iii) incorporates a minimum 2m high solid screen fence along the full length of the

Performance Outcomes		Acceptable Outcomes	
			common boundary; and (c) planting is provided on top of podium levels and on the roof or roof level of car parking structures. Note – A Landscaping plan may be prepared in accordance with the PSP SC6.4 Landscaping.
Requirements for Industry activities (Extractive industry, Industry and Service station)			
~~PO15~~PO1	The development provides streetscape landscaping that creates a high level of comfort, safety and visual attractiveness for users.	~~AO15.1~~A(	Streets are provided with turfed verges and constructed footpaths.
~~PO16~~PO1	The industrial use incorporates landscaping that: (a) makes a positive contribution to the streetscape; and (b) buffers the development from adjoining sensitive uses.	~~AO16.1~~A(	A minimum of 10% of the site is provided as landscaped area.
		~~AO16.2~~A(	Landscaping is provided on-site, in accordance with the following: (a) a 3m landscaping buffer is provided along street frontages not occupied by buildings or driveways; (b) a landscaped buffer strip is provided between the use and any adjacent Accommodation activities, which: (i) has a minimum width of 3m; (ii) is planted with a variety of screening trees and shrubs; (iii) incorporates a minimum 2m high solid screen fence along the full length of the common boundary; and (c) any security fencing is set within or located behind the landscaping strip rather than adjacent to the major road. Note – A Landscaping plan may be prepared in accordance with the PSP SC6.4 Landscaping.

~~11.1.2~~9.4.7 Reconfiguring a lot code

~~11.1.2.1~~9.4.7.1 Application

This code applies to assessable development:

(a) being reconfiguring a lot; and

(b) identified as requiring assessment against the Reconfiguring a lot code by the tables of assessment in Part 5 (Tables of assessment).

~~11.1.2.2~~9.4.7.2 Purpose and overall outcomes

(1) The purpose of the Reconfiguring a lot code is to ensure that new lots are configured in a manner which:

(a) is appropriate for their intended use;

(b) is responsive to site constraints;

(c) provides appropriate access; and

(d) supports high quality urban design outcomes.

(2) The purpose of the Reconfiguring a lot code will be achieved through the following overall outcomes:

(a) development provides for lots that are of a size and have dimensions that:

(i) are appropriate for their intended use;

(ii) promote a range of housing types in the case of residential development;

(iii) are compatible with the prevailing character and density of surrounding development; and

(iv) sensitively respond to site constraints;

(b) development provides for lots that have a suitable and safe means of access to a public road;

(c) development provides for reconfiguration that result in the creation of safe and healthy communities by:

(i) incorporating a functional and efficient lot layout that promotes the use of active and public transport;

(ii) incorporating a transport network with a grid or modified grid street pattern that is responsive to, and integrated with, the natural topography of the site, existing or planned adjoining development and supports the circulation of public transport with no, or only minimal, route redundancy;

(iii) avoiding adverse impacts on economic or natural resource areas;

(iv) avoiding adverse impacts on native vegetation, waterways, wetlands and other ecologically important areas present on, or adjoining the site;

(v) avoiding, or if avoidance is not practicable, mitigating the risk to people and property of natural hazards, including hazards posed by bushfire, flooding, coastal erosion/inundation, landslide and steep slopes; and

(vi) providing timely, efficient and appropriate infrastructure, including reticulated water and sewerage, sealed roads, pedestrian and bicycle paths, open space and community facilities in urban areas.

~~11.1.2.3~~9.4.7.3 Assessment benchmarks

Table 9.4.7.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Size and dimensions of lots			
PO1	Development provides for the size, dimensions and orientation of lots to: (a) be appropriate for their intended use; (b) be compatible with the preferred character for the zone and local area in which the land is located; (c) where within the Rural zone; maintain the productive use and amenity of rural lands, (d) provide suitable building envelopes and safe pedestrian, bicycle and vehicular access without the need for major earthworks and retaining walls; and (e) take account of, and respond sensitively to, site constraints.	**AO1.1**	Unless otherwise specified in this code or a Local plan code, a lot complies with the minimum lot size specified in ~~Table~~ Table 9.4.7.3.2 Minimum lot sizes and dimensions~~9.4.6.3.2 Minimum lot size and dimensions~~.
		AO1.2	Lots are designed to contain the minimum width and depth requirements specified in Table 9.4.7.3.2 Minimum lot sizes and dimensions~~Table 9.4.6.3.2 Minimum lot size and dimensions~~.
		AO1.3	A lot located on land identified on an overlay map contains a development envelope marked on a plan of development that demonstrates that there is an area sufficient to accommodate the intended purpose of the lot, that is not subject to the constraint or valuable resource or that appropriately responds to the constraint or valuable resource.
		AO1.4	Vehicular and active transport corridors are sensitively designed with the landscape to minimise the need for major earthworks and retaining walls.
		AO1.5	A lot has a development envelope of land with a slope no greater than 15%.
		AO1.6	No additional lots are created on land included in an Extractive resource or Transport route separation area identified on the Overlay map - ~~ER - 01:29 (~~Extractive resources overlay~~)~~.
		AO1.7	Lot boundaries are aligned to avoid traversing matters of environmental significance.

Performance Outcomes		Acceptable Outcomes	
Rear Lots			
PO2	A rear lot is created only where: (a) no more than one rear lot is created; (b) the amenity of the surrounding area is not compromised; (c) safe and convenient access is achieved; (d) the lot is capable of containing a suitable building envelope and sufficient area for onsite effluent disposal where relevant; (e) each lot achieves the minimum street frontage and minimum access handle width; and (f) the rear lot provides a waste bin storage area; and (g) is located within a Residential Zone or an Other Zone category.	AO2.1	The creation of a rear lot: (a) is only permitted behind a lot with direct road frontage; (b) is not permitted behind another rear lot; and (c) is only located within a Residential zone or Other zone category. Editor's Note - Refer to Zone categories in Table 1.2.1.
		AO2.2	A rear lot must not gain access from a cul-de-sac head.
		AO2.3	Where a rear lot is located in a Residential zone: (a) a~~A~~ minimum unconstrained building envelope of 17m by 17m is capable of being contained entirely within the lot; and (b) ~~I~~if unable to connect to municipal sewer, sufficient area for on-site effluent disposal is provided for. Editor's Note ~~-~~ Refer to Zone categories in Table 1.2.1.
		AO2.4	Access handle fencing is reduced to 1m in height within 6m of the road to allow for clear sightlines when entering and exiting the site.
		AO2.5	Refuse areas for waste bins are appropriately located and screen from the streetscape.
Small residential lots (Lots less than 600m²)			
~~PO2~~PO3	To facilitate and encourage urban consolidation and housing diversity, development may provide for small residential lots to be created where: (a) they are within easy walking distance of an activity centre or public transport stop; (b) the development will be consistent with the preferred character for the zone and local area in which the land is located; and (c) the land is fit for purpose and not subject to significant topographic constraints.	~~AO2.1~~AO	The small residential lots are located on land included in the Low-medium density residential zone, where the parent lot has a minimum area of 2,000m².
		~~AO2.2~~AO	The land does not have a slope of greater than 10%.
~~PO3~~PO4	Small residential lots are dispersed across a	~~AO3.1~~AO	Not more than four lots of a particular type, such as small lots, are located in a row.

Performance Outcomes		Acceptable Outcomes	
	development in a configuration that: (a) promotes variety in streetscape character; and (b) avoids an area being dominated by a particular lot type.	~~AO3.2~~AO	A maximum of 50% of all lots within any neighbourhood block are of a particular type, such as small lots.
Irregular shaped lots			
~~PO4~~PO5	Development provides for irregular shaped lots to be created only where: (a) the creation of regular lots is impractical, such as at a curve in the road; (b) safe access to and from the site can be provided while not adversely impacting on the functionality of the surrounding road network; and (c) the irregular lot is suitable for its intended purpose.	~~AO4.1~~AO	Irregular lots are designed to incorporate a building envelope that contains the minimum width and depth requirements specified in Table 9.4.7.3.2 Minimum lot sizes and dimensions~~Table 9.4.6.3.2 Minimum lot sizes and dimensions~~.
~~Rearrangement of lot boundaries~~Boundary Realignment/Access Easement			
~~PO5~~PO6	Development ensures~~provides~~ that the ~~rearrangement of lot boundaries~~boundary realignment or creation of an access easement: (a) does not result in the creation~~, or in the potential creation of,~~ of additional lots; ~~and~~ (b) is an improvement on the existing situation that creates a more usable lot or protects environmentally significant features; and~~.~~ ~~(b)~~(c) the amenity of the area is not compromised from the change and existing dwelling(s) are not compromised from either dust and/or noise.	~~AO5.1~~AO	~~The rearrangement of lot boundaries~~ A boundary realignment or creation of an access easement results in an improvement to the existing layout~~situation~~ whereby the size and dimensions of proposed lots comply more fully with Table 9.4.7.3.2 Minimum lot sizes and dimensions~~Table 9.4.6.3.2 Minimum lot size and dimensions~~, and ~~at least one~~ of the following, as applicable, is achieved: (a) the rearrangement of lots remedies an existing boundary encroachment by a building, structure or other use areas; (b) in the rural zones, the amenity of the existing dwellings is not compromised in terms of noise and dust: (i) for a new access easement, a vegetation buffer must be planted to screen adjoining sensitive uses; or ~~(i)~~(ii) for a boundary realignment, meet the requirements of Table 9.3.13.3.3, where adjoining an

Performance Outcomes		Acceptable Outcomes	
			Intensive rural industry use; (b)(c) the rearranged lots will be made more regular in shape; and (c)(d) access is provided to a lot that previously had no access or an unsuitable access.
Lot layout and site responsive design			
PO6PO7	Development provides for a lot layout and configuration of roads and other transport corridors that sensitively respond to surrounding environmental values, and ddevelopment and any structure planning undertaken by Council.	AO6.1AO	Development layout and configuration responds appropriately to: (a) any Structure plans completed by Council; (a)(b) any areas of environmental significance or natural hazards present on, or adjoining the site; (b)(c) the location and management of natural stormwater flows present on, or adjoining the site; (c)(d) any places of cultural heritage significance or character areas present on, or adjoining the site; (d)(e) any important landmarks, views, vistas or other areas of high scenic value present on, or able to be viewed from the site; (e)(f) creates legible and interconnected movement and open space networks; (f)(g) provides for a grid or modified movement network, which avoids or minimises the use of cul-de-sac; and (h) provides defined edges to public open space and avoids or minimises direct interface between public open space and freehold lots. Note: This may be demonstrated by providing a Structure plan in accordance with PSP SC6.7 (Growth management) Note: A Traffic impact assessment report prepared in accordance with PSP SC6.7 (Growth management) may assist in demonstrating compliance with the performance outcome.
Lot layout and neighbourhood/estate design			

Performance Outcomes		Acceptable Outcomes	
~~PO7~~PO8	Development is appropriately planned, encompassing structure planning undertaken by Council, best practice lot layout and neighbourhood/estate design, whilst providing efficient land use pattern and effectively connecting the site with existing or planned development.	~~AO7.1~~AO	Development provides for a lot layout and infrastructure configuration that: (a) aligns with any Structure plans completed by Council; ~~(a)~~(b) provides for the efficient movement of pedestrians, cyclists, public transport and private motor vehicles in that order of priority; ~~(b)~~(c) avoids narrow pathways and/or drainage reserves between lots; ~~(c)~~(d) provides for the creation of a diverse range of lot sizes capable of accommodating a mix of housing types and other uses required to support the community as appropriate to the zone and, where applicable, local plan area; ~~(d)~~(e) promotes a sense of community identity and belonging; ~~(e)~~(f) provides for a high level of amenity having regard to potential noise, dust, odour and lighting nuisance sources; ~~(f)~~(g) accommodates and provides for the efficient and timely delivery of infrastructure appropriate to the site's context and setting; and (h) avoids the sporadic, or out of sequence, creation of lots. Note: This may be demonstrated by providing a Structure plan in accordance with PSP SC6.7 (Growth management)
Landscaped separation buffers to sensitive land, incompatible uses and infrastructure			
~~PO8~~PO9	Development provides for lots to be created in locations that: (a) are adequately buffered to prevent potential adverse impacts on future users of the lots; (b) separate the lots from incompatible uses and infrastructure; and	~~AO8.1~~AO	Where any part of a lot included in a Residential zone, Emerging community zone or Rural residential zone is adjacent to a Rural or Industry zone or existing Rural or Industry activity the following landscaped separation buffers are provided: (a) 40m from a: (i) Rural zone;

Performance Outcomes		Acceptable Outcomes	
	(c) do not create "reverse amenity" situations where the continued operation of existing uses is compromised by the proposed development.		(ii) Low impact industry zone; (iii) Medium impact industry zone; (iv) Rural activities; (v) Low impact industry use; (vi) Medium impact industry use; (vii) Research or technology industry; (viii) Service industry use; or (ix) Warehouse use; (b) 50m from a: (i) High impact industry zone; or (ii) high impact industry use; (c) 60m from a: (i) Special industry zone; or (ii) Special industry use; and (d) 40m from a: (i) Waterfront and marine industry zone; or (ii) Marine industry use. Note – This may be demonstrated by preparing a site specific Landscaped separation buffer in accordance with PSP SC6.4 Landscaping.
		~~AO8.2~~AO	Where a landscaped separation buffer is required, it is designed, constructed and maintained to achieve visual screening and acoustic attenuation of major infrastructure elements. Note – This may be demonstrated by preparing a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 Landscaping.
Public parks and open space infrastructure			
~~PO9~~PO1(	Development provides for public parks and open space for the enjoyment of residents and visitors that add to the character and amenity of future and existing surrounding development.	~~AO9.1~~AO	Development provides a variety of public parks and open space infrastructure that: (a) provides for a range of passive and active recreation settings and can accommodate adequate facilities to meet the needs of the community; (b) is well distributed and contributes to the legibility, accessibility and character of the locality;

Performance Outcomes		Acceptable Outcomes	
			(c) creates attractive settings and focal points for the community; (d) benefits the amenity of adjoining land uses; (e) incorporates appropriate measures for stormwater and flood management; (f) facilitates the retention of native vegetation, waterways, wetlands and other ecologically important areas and natural and cultural features; (g) facilitates the retention or enhancement of ecological corridors and connections to surrounding areas of open space; (h) is cost effective to maintain; and (i) is dedicated as public land in the early stages of the subdivision. Note—Section 9.4.65 Landscaping code and PSP SC6.8 WRC development manual includes requirements for the design and construction of landscape elements in public parks and open space infrastructure.

Table 9.4.7.3.2 Minimum lot sizes and dimensions

Zone	Minimum lot sizes[1]	Minimum width (Road frontage)[2]	Minimum depth
Major centre	400m²	Not applicable	Not applicable
District centre	400m²	Not applicable	4:1 (depth: width)
Local centre	400m²	Not applicable	4:1 (depth: width)
Neighbourhood centre	400m²	Not applicable	4:1 (depth: width)
Mixed use	800m²	20m	40m
Low density residential	600m²	18m	20m
Low-medium density residential	450m²	15m	20m
Tourist accommodation	800m²	20m	40m
Rural residential	4000m²	40m	50m
Low impact industry	1000m²	20m	50m
Medium impact industry	2000m²	30m	50m
High impact industry	2000m²	30m	50m
Special industry	2000m²	30m	50m
Waterfront and marine industry	4000m²	40m	100m
Environmental conservation and management	Not applicable	Not applicable	Not applicable
Recreation and open space	Not applicable	Not applicable	Not applicable
Community facilities	Not applicable	Not applicable	Not applicable
Rural	100ha	200m	800m

Emerging communities	10ha	100m	400m
Industry investigation	10ha	100m	400m

[1] The area of the access handle is not used in the calculation of a lot area.
[2] A rear lot access handle is not a road frontage.

~~11.1.3~~9.4.8 Transport and parking code

~~11.1.3.1~~9.4.8.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Transport and parking code by the tables of assessment in Part 5 (Tables of assessment).

~~11.1.3.2~~9.4.8.2 Purpose and overall outcomes

(2) The purpose of the Transport and parking code is to ensure that transport infrastructure including pathways, public transport infrastructure, roads, parking and service areas, are provided in a manner which meets the needs of the development, whilst promoting active and public transport use and preserving the character and amenity of the Whitsunday region.

(3) The purpose of the Transport and parking code will be achieved through the following overall outcomes:

(a) development is consistent with the objectives of the strategic transport network, which are to:

(i) provide for a highly permeable and integrated movement network;

(ii) improve coordination between land use and transport to maximise the potential for walking, cycling and public transport use and reduce reliance on private motor vehicle travel;

(iii) achieve acceptable levels of access, convenience, efficiency and legibility for all transport users;

(iv) limit road construction to the minimum necessary to meet the endorsed standards of service for the future development of the Whitsunday Region; and

(v) provide for staging of Council's limited trunk road construction program to maximise sustainability;

(b) transport infrastructure is designed and constructed to acceptable standards and operates in a safe and efficient manner that meets community expectations, prevents unacceptable off-site impacts and reduces whole of life cycle costs, including reduced ongoing maintenance costs; and

(c) development provides for on-site parking, access, circulation and servicing areas that are safe, convenient and meet the reasonable requirements of the development.

~~11.1.3.3~~9.4.8.3 Assessment benchmarks

Table 9.4.8.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Layout and design of on-site parking and access			
PO1	Development ensures that the layout and design of vehicle access, on-site circulation systems and parking areas are safe, convenient and legible for all users including people with	**AO1.1**	Development provides access driveways, internal circulation and manoeuvring areas, service areas and parking areas that comply with D1: Road geometry of PSP SC6.8 WRC

Performance Outcomes		Acceptable Outcomes	
	disabilities, pedestrians, cyclists and public transport services, where relevant.		development manual and AS2890 (Parking facilities) ensuring: (a) the number and type of vehicles planned for the development can be accommodated on the site; (b) on-site vehicle parking and manoeuvring areas provide for vehicles to enter and leave the site in a forward motion; and (c) a progressive reduction in vehicle speed between the external transport corridor and internal parking spaces, such that lower speeds occur near areas of high pedestrian activity. Editor's note - A roadworks permit may be required if operational works will be undertaken on Council land.
Site access			
PO2	Development ensures that the location and design of any new site access does not interfere with the planned function, safety, capacity and operation of the transport network.	**AO2.1**	The location and design of any new site access complies with D1: Road geometry of PSP SC6.8 WRC development manual, AS2890.1 (Parking facilities: Off-street car parking), AS2890.2 (Parking facilities: Off-street commercial vehicle facilities) and, where applicable, in accordance with the Department of Transport and Main Roads requirements where state roads are affected.
Rear Lots			
PO3	A rear lot is only created where safe and convenient access is achieved.	**AO3.1**	The access handle: (a) has a minimum width of 5m; (b) is created adjacent to the side boundary of the front lot; and (c) is in accordance with standards specified in DG1.17 of the PSP SC6.8 (WRC Development Manual).
On-site car parking			
~~PO3~~PO4	Development provides on-site car parking for the demand anticipated to be generated by the development and existing conditions.	**~~AO3.1~~AO**	Development provides on-site car parking spaces at the minimum rates outlined in Table 9.4.8~~7~~.3.3 Minimum on-site parking requirements. Note—where the calculated number of spaces is not a whole number, the required number of parking spaces is the nearest whole number.

Performance Outcomes		Acceptable Outcomes	
			~~Where development is proposed for existing Business or Entertainment activities within Airlie Beach Precinct D and Precinct E, car parking is only provided for additional GFA at the rates provided in Table 9.4.7.3.3 Minimum on-site parking requirements.~~
~~PO4~~PO5	Development provides for a reasonable portion of the total number of on-site car parking spaces to be wheelchair accessible spaces and to be identified and reserved for such purposes.	~~AO4.1~~AO	Development provides the number of parking spaces for people with disabilities, required by the Building code of Australia and, in any case, provides a minimum of one space.
		~~AO4.2~~AO	Parking spaces for people with disabilities and access to them complies with AS1428 (General requirements for access: Buildings) and AS2890.6 (Parking facilities: Off-street parking for people with disabilities).
Service vehicle requirements			
~~PO5~~PO6	Development provides sufficient parking and access for service vehicles to meet the needs of the development.	~~AO5.1~~AO	Development provides on-site service vehicle parking bays at the minimum rates outlined in Table 9.4.8.3.3 Minimum on-site parking requirements~~Table 9.4.7.3.3 Minimum on-site parking requirements~~.
		~~AO5.2~~AO	Service vehicle access, manoeuvring and parking is designed in accordance with AS2890.2 (Parking facilities: Off-street commercial vehicle facilities).
~~PO6~~PO7	Development provides for driveways, internal circulation areas and service areas to be designed to: (a) ensure that proposed loading, unloading, waste collection and fuel delivery facilities, if required, can satisfactorily accommodate the number and type of service vehicles expected on-site; and (b) the movement of service vehicles on-site and loading and unloading operations do not interfere with on-site amenity and the safe and convenient movement of other vehicles and pedestrians on the site.	~~AO6.1~~AO	Driveways, internal circulation areas and service areas are provided to accommodate the nominated design vehicles for each development type.
		~~AO6.2~~AO	Driveways, internal circulation areas, manoeuvring areas, loading and unloading areas and refuse collection facilities are designed and constructed in accordance with D1: Road geometry of PSP SC6.8 WRC development manual and AS2890 (Parking facilities).
Access and parking site access			

Performance Outcomes		Acceptable Outcomes	
~~PO7~~PO8	Development is designed such that turning traffic minimises the impact of the development on external traffic systems.	~~AO7.1~~AO	Turns to and from the development are designed in accordance with the standards specified in D1: Road geometry of PSP SC6.8 WRC development manual.
~~PO8~~PO9	Development provides for sight distances to and from driveways sufficient to ensure safe operation.	~~AO8.1~~AO	Available sight distances from driveways comply with the standards specified in D1: Road geometry of PSP SC6.8 WRC development manual.
~~PO9~~PO10	Development provides appropriate and sufficient signage to ensure safe and convenient usage of site access systems	~~AO9.1~~AO	Appropriate direction, regulatory, warning and information signage and line marking is provided in accordance with the requirements of PSP SC6.8 WRC development manual and the Department of Transport and Main Roads' *Queensland manual of uniform traffic control devices*.

Table 9.4.8.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Layout and design of on-site parking and access			
PO1	Development ensures that the layout and design of vehicle access, on-site circulation systems and parking areas are safe, convenient and legible for all users including people with disabilities, pedestrians, cyclists and public transport services, where relevant.	**AO1.1**	Development provides clearly defined pedestrian paths within and around on-site vehicle parking areas that: (a) are located in areas where people will choose to walk; and (b) ensure pedestrian movement through vehicle parking areas is along aisles rather than across them.
PO2	~~Development provides for shared or multiple use of car parking areas.~~ Mixed use development provides an efficient car parking model with consideration of temporal parking demand and cross utilisation between uses.	**AO2.1**	Mixed use development that demonstrates cross utilisation and a variation in temporal demand between uses on site can apply for a dispensation to reduce Business or Entertainment activity car parking rates by up to 30%, excluding office uses. Note – A Traffic impact assessment report prepared in accordance with PSP SC6.7 (Growth management) may assist in demonstrating compliance with the acceptable outcome. ~~Development at times when car parking areas would otherwise not be occupied, such as weekends;~~ ~~when car parking spaces service two or more land uses~~

Performance Outcomes		Acceptable Outcomes	
			~~with varying peak usage times, such as food and drink outlets and Entertainment activities, which generate peak parking demands in periods when retail or office uses are relatively inactive; and~~ ~~to reduce the amount and size of the car parking area.~~
PO3	Development ensures that car parking areas, service areas and access driveways do not impede on the useability of the network or amenity of surrounding uses.	**AO3.1**	Parking areas and service areas and access driveways are located where: (a) they will not dominate the streetscape; and (b) will not unduly intrude upon pedestrian use of footpaths, through: (i) the configuration behind buildings or landscape screening; ~~(i)~~(ii) the use of rear access lanes; ~~(ii)~~(iii) car parking areas and service areas situated at the rear of the premises or below ground level; or ~~(iii)~~(iv) shared driveways.
PO4	Car parking is not to be provided at the primary frontage of the lot.	**AO4.1**	Car parking is integrated into the design of the development such that: (a) undercroft car parking protrudes above the adjacent ground level by less than 1m; (b) it is located to the rear or side of the building; or (c) it is screened from view with high quality landscaping.
Site access			
~~**PO4**~~**PO5**	Development ensures that the location and design of any new site access does not interfere with the planned function, safety, capacity and operation of the transport network.	~~**AO4.1**~~**AO**	The number of site access driveways is minimised (usually one), with access to the lowest order transport corridor to which the site has frontage, consistent with amenity impact constraints.
~~**PO5**~~**PO6**	An acceptable level of flood immune access is provided.	~~**AO5.1**~~**AO**	Roads providing access to lots have the same flood immunity as the road network they adjoin, specified in accordance with D4: Stormwater drainage of PSP SC6.8 WRC development manual.
Road and transport network			

Performance Outcomes		Acceptable Outcomes	
~~PO6~~PO7	Development, particularly where involving the creation of new roads and other transport corridors is appropriately planned, designed and managed, taking into account existing and future networks and surrounding development.	~~AO6.1~~AO	Development of roads and transport corridors ensures that the road network: (a) is in accordance with the Queensland streets and DP1: Development principles DP1 – DP1.07 and D1: Road geometry of PSP SC6.8 WRC development manual; (b) provides visible distinction of roads, based on function and design features; (c) provides convenient, safe and efficient movement for all modes of transport between land use activities with priority given to pedestrian movement and bicycle use over vehicle movements; (d) allows for unimpeded and practical access to the development site and each proposed lot; (e) accommodates or facilitates access to cycle and pedestrian pathways; (f) facilitates a high standard of urban design, which reflects a grid pattern to assist in connectivity and permeability, particularly for pedestrians and cyclists; (g) connects to and integrates with existing roads and other relevant facilities within and external to the land to be developed or subdivided; (h) provides for the dedication and construction of roads where required to allow access to, and proper development of, adjoining vacant land that is intended for development; (i) provides for the construction and adequate drainage of all proposed roads, pathways, laneways and bikeways within and adjoining the land to be developed; (j) does not unreasonably adversely impact on existing vehicular traffic, active transport users or the

Performance Outcomes		Acceptable Outcomes	
			amenity of the surrounding environment; and (k) does not adversely impact on wildlife movement corridors. Note – D1: Road geometry of PSP SC6.8 WRC development manual specifies standards and provides guidance for the design and construction of roads and transport corridors. Note: A Traffic impact assessment report prepared in accordance with PSP SC6.7 (Growth management) may assist in demonstrating compliance with the performance outcome.
~~PO7~~PO8	Development involving high trip generating land uses minimises any adverse impacts on surrounding land uses and the external transport network.	~~AO7.1~~AO	Development of high trip generating land uses appropriately allows for the provision of infrastructure and services to increase the use of public and active transport. Note – A Traffic impact assessment report prepared in accordance with PSP SC6.7 Growth management may assist in demonstrating compliance with the performance outcome.
~~PO8~~PO9	Development facilitates orderly provision of the transport network.	~~AO8.1~~AO	Development provides for upgrades or contributes to the construction of transport network improvements.
		~~AO8.2~~AO	Required upgrading of the transport network is provided in accordance with the hierarchy characteristics and requirements outlined in DP1: Development principles of PSP SC6.8 WRC development manual.
Pedestrian and bicycle network and facilities			
~~PO9~~PO10	Development ~~in the Major centre, District centre, Local centre, Mixed use, Low-medium density residential and Tourist accommodation zones~~ provides safe and secure on-site parking and ancillary end of trip facilities for bicycles to encourage use of this mode of transport and support the demand anticipated to be generated by the development.	~~AO9.1~~AO	Development of high trip generating land uses provides lockable on-site bicycle spaces that meet the needs of all users of the development, including but not limited to, employees, customers, students and visitors. Note – A Traffic impact assessment report prepared in accordance with PSP SC6.7 Growth management may assist in demonstrating compliance with the performance outcome.~~Note – The minimum on-site bicycle parking rates specified in PSP SC6.8 WRC development manual.~~
		AO10.2	Lockable bicycle spaces are provided in an area that: (a) has a high level of casual surveillance;

Performance Outcomes		Acceptable Outcomes	
			(b) does not adversely impact on visual amenity; and (c) are designed in accordance with the Austroads: Guide to road design part 6A: Pedestrian and cyclist paths.
~~PO10~~PO1	Development provides for the establishment of a safe and convenient network of pedestrian and bicycle paths. ~~Appropriate on-site end of trip facilities are provided to encourage walking and cycling as an alternative to private car travel.~~	~~AO10.1~~A(	Development allows for the provision of pedestrian and bicycle networks that: (a) provide a high level of permeability and connectivity; (b) provide for joint usage where appropriate; (c) maximise opportunities to link activity centres, employment areas, residential areas, community facilities, open space and public transport stops located internally and externally to the site; (d) have an alignment that maximises visual interest, allows for the retention of trees and other significant features and does not compromise the operation of or access to other infrastructure; (e) incorporate safe street crossings with adequate sight distances, pavement markings, warning signs and safety rails; and (f) are well lit and located where there is casual surveillance from nearby premises. Note — D1: Road geometry PSP SC6.8 WRC development manual and Complete Streets specify standards and provides guidance for the design and construction of pedestrian and bicycle paths. ~~Development for a Business activity, Community activity, Recreation activity, or for a hostel, short term accommodation, resort complex, residential care facility, air services or marina, provides residents, employees and visitors with shower cubicles and ancillary change rooms and lockers, including provision for both males and females, at the following rates:~~

Performance Outcomes		Acceptable Outcomes	
			~~(a) 1 cubicle and 5 lockers for the first 5,500m² of gross floor area, provided that the development exceeds a minimum GFA of 1,500m²; plus~~ ~~(b) 1 additional cubicle and 5 additional lockers for that part of the development that exceeds 5,500m² gross floor area up to a maximum of 30,000m² GFA; plus~~ ~~2 additional cubicles and 10 additional lockers for that part of the development that exceeds 30,000m² GFA.~~ ~~Development provides bicycle access, parking and storage facilities that:~~ ~~(a) are located close to the building's pedestrian entrance;~~ ~~(b) are obvious and easily and safely accessible from outside the site;~~ ~~(c) do not adversely impact on visual amenity; and~~ ~~(d)~~(a) ~~are designed in accordance with the Austroads: Guide to road design part 6A: Pedestrian and cyclist paths.~~
Public transport facilities			
~~PO11~~PO	Development encourages the use of public transport through the appropriate provision of on-site or off-site public transport facilities, having regard to the specific nature and scale of development and the number of people or lots involved.	~~AO11.1~~A	Development is designed and arranged to provide safe, convenient and functional linkages to existing and proposed public transport facilities.
		~~AO11.2~~A	On-site public transport facilities are provided in conjunction with the following development: (a) shopping centre, where having a GFA of greater than 10,000m²; (b) tourist attraction, having a TUA of greater than 10,000m²; (c) educational establishment, where accommodating more than 500 students;

Performance Outcomes		Acceptable Outcomes	
			(d) major sport, recreation and entertainment facility; (e) indoor sport and recreation, where having a GFA of more than 1,000m^2 or for spectator sports; and (f) outdoor sport and recreation where for spectator sports.
		~~AO11.3~~A(	On-street public transport facilities are provided as part of the following development: (a) shopping centre, where having a GFA of 10,000m^2 or less; (b) tourist attraction, where having a GFA of 10,000m^2 or less; (c) educational establishment, where accommodating 500 or less students; and (d) indoor sport and recreation where having a GFA of 500m^2 or less and not for spectator sports.
		~~AO11.4~~A(	Where not otherwise specified above, on street public transport facilities are provided where development is located on an existing or future public transport route. Public transport facilities are located and designed in accordance with the standards specified in D1: Road geometry of PSP SC6.8 WRC development manual.
		~~AO11.5~~A(	Public transport facilities are located and designed in accordance with the standards specified in D1: Road geometry of PSP SC6.8 WRC development manual.
~~PO12~~PO1	Development involving the creation of new roads provides for and maintains connectivity to existing and future public transport routes.	~~AO12.1~~A(	Development ensures that a network of public transport routes is provided, such that public transport can efficiently service the neighbourhood/ estate with no, or only minimal, route redundancy.
		~~AO12.2~~A(	Development ensures that the design of streets and roads to be used as a public transport route allows for the efficient and unimpeded movement of buses without facilitating high traffic speeds.
Amenity and environmental impacts of transport infrastructure			
~~PO13~~PO1	The environmental impacts of transport infrastructure are	~~AO13.1~~A(	Development ensures that the environmental impacts of

Performance Outcomes		Acceptable Outcomes	
	minimised by appropriate design and the use of low impact construction techniques.		transport infrastructure are minimised by the use of low impact construction techniques, including: (a) co-location of transport corridors within an existing or planned infrastructure corridor; (b) location of transport corridors within an area clear of, or consisting of, disturbed vegetation; (c) avoidance of clearing of native vegetation and provision of fauna underpasses and associated fencing, where appropriate; (d) minimisation of changes to the hydrological regime, including drainage patterns, run-off and water quality; (e) avoidance of crossing waterways, drainage lines and wetlands, where such crossings are unavoidable, disturbed areas are reinstated and revegetated on completion of works; and (f) minimisation of changes to the natural landform and extensive earthworks.
		~~AO13.2~~A	Transport corridor design and construction is undertaken in accordance with DP1: Development principles of PSP SC6.8 WRC development manual.
~~PO14~~PO	A development's parking areas incorporate appropriate landscaping and, where possible, minimises adverse impacts on people, properties or activities with regard to light, noise, emissions or stormwater run-off.	~~AO14.1~~A	Development provides appropriate landscaping for on-site vehicle access and parking areas to: (a) provide shade; (b) maximise infiltration of stormwater runoff; (c) define parking areas; and (d) soften views of hardstand areas. Note – D9: Landscaping of PSP SC6.8 WRC development manual sets out requirements for landscaping.
Transport corridor widths, pavement, surfacing and verges			
~~PO15~~PO	Development provides external road works along the full extent of the site frontage appropriate to the function and amenity of the transport corridor, including where applicable:	~~AO15.1~~A	The design and construction of external road works is: (a) undertaken in accordance with the D1: Road geometry of PSP SC6.8 WRC development manual; and

Performance Outcomes		Acceptable Outcomes	
	(a) paved roadway; (b) kerb and channel; (c) safe vehicular access; (d) safe footpaths and bikeways; (e) safe on-road cycle lanes or verges for cycling; (f) stormwater drainage; and (g) conduits to facilitate the provision of street lighting systems and traffic signals.		(b) consistent with the characteristics intended for the particular type of transport corridor specified in the DP1: Development principles of PSP SC6.8 WRC development manual.
~~PO16~~PO1	Development provides for the reserve width, pavement, edging, streetscaping and landscaping of a transport corridor to support the intended functions and amenity of the transport corridor.	~~AO16.1~~A(	Transport corridor design and construction is: (a) undertaken in accordance with the standards specified in the DP1: Development principles of PSP SC6.8 WRC development manual and (b) consistent with the characteristics intended for the particular type of transport corridor specified in DP1: Development principles of PSP SC6.8 WRC development manual.
~~PO17~~PO1	Development provides for road pavement and surfacing that: (a) is sufficiently durable to carry wheel loads for design traffic; (b) provides adequate area for parked vehicles; (c) ensures the safe passage of vehicles, pedestrians and bicycles; (d) ensures appropriate management of stormwater and maintenance of all-weather access; and (e) allows for reasonable travel comfort.	~~AO17.1~~A(	Road pavement design and construction is undertaken in accordance with the standards specified in the D3: Road pavements and S2: Road pavements of PSP SC6.8 WRC development manual.
~~PO18~~PO1	Development provides pavement edging that controls: (a) vehicle movements by delineating the extent of the carriageway; and (b) stormwater runoff.	~~AO18.1~~A(	Design and construction of pavement edging is undertaken in accordance with the standards specified in the D1: Road geometry and S2: Road pavements of PSP SC6.8 WRC development manual.
~~PO19~~PO2	Development provides verges and footpaths that: (a) allow safe access for pedestrians clear of obstructions; (b) allow safe passage of wheel chairs and other mobility aids; (c) allow safe passage of cyclists;	~~AO19.1~~A(	Verge and footpath design and construction is undertaken in accordance with the: (a) standards specified in the D1: Road geometry of PSP SC6.8 WRC development manual; and (b) characteristics intended for the particular type of transport corridor specified

Performance Outcomes		Acceptable Outcomes	
	(d) allow access for vehicles onto properties; (e) include an area for public utility services; (f) allow signage and line marking; and (g) contribute to the amenity of transport corridors.		in the DP1: Development principles of PSP SC6.8 WRC development manual.
Intersections and traffic controls			
~~PO20~~PO2	Development provides for traffic speeds and volumes to be catered for through the design and location of intersections and traffic controls to: (a) avoid stop-start conditions; (b) provide for appropriate sight distances; (c) avoid increased vehicle emissions; (d) minimise unacceptable traffic noise to adjoining land uses; (e) maintain convenience and safety levels for pedestrians, cyclists and public transport; and (f) integrate traffic controls with landscaping and streetscape design.	~~AO20.1~~A(	Intersections and speed control devices are designed and constructed in accordance with the D1: Road geometry of PSP SC6.8 WRC development manual and Part 4 of AustRoads (Intersections and crossings).
Development staging			
~~PO21~~PO2	Staged development is planned, designed and constructed to ensure uninterrupted transport service and connectivity.	~~AO21.1~~A(	Development ensures: (a) each stage of the development can be constructed without interruption to services and utilities provided to the previous stages; (b) transport infrastructure provided is capable of servicing the entire development; (c) early bus access and circulation is achieved through the connection of collector roads; and (d) materials used are consistent throughout the development.

Table 9.4.8.3.3 Minimum on-site parking requirements

Note - Service vehicle classes are defined in AS2890.2 - Off street parking, Part 2: Commercial vehicles.

Land use	Cars	Service vehicles
Residential activities		
Caretakers residence	1 space for exclusive use by the occupants of the caretaker's accommodation	Not required
Community residence	2 plus 1 for a manager residence or resident support worker	Not required
Dwelling house	2 spaces, 1 of which is covered, spaces may be in tandem	Not required
Dual occupancy	1 bedroom: 1 space per unit 2 bedroom: 1.5 space per unit 3 or more bedroom: 2 spaces per unit	Not required
Home based business	As per dwelling house or dual occupancy: plus 1 space customer parking; plus 1 space non-resident employee; plus 1 space per guest room, where a Bed and breakfast	1 SRV
Multiple dwelling	1 bedroom: 1 space per unit 2 bedroom: 1.5 space per unit 3 or more bedroom: 2 spaces per unit Visitor spaces: 1 space per 5 units	1 SRV where more than 10 dwellings
Nature based tourism	1 space per cabin/site plus 1 manager space	Not required
Non-resident workforce accommodation	1 bedroom: 1 space per unit 2 bedroom: 1.5 space per unit 3 or more bedroom: 2 spaces per unit Visitor spaces: 1 space per 5 units	1 SRV where more than 10 dwellings
Relocatable home park	1 space van/tent/cabin site (adjacent to site) plus 1 visitors space per 4 van/tent/cabin sites	1 SRV where more than 10 relocatable home sites
Residential care facility	1 space per 6 dormitory type bed; 1 space per 4 hostel type units; 1 space per self-contained unit; and visitor parking equal to 50% of the resident parking requirement	1 MRV plus 1 ambulance
Resort complex	As per separately defined uses	As per separately defined uses
Retirement facility	1 space per 6 dormitory type bed; 1 space per 4 hostel type units;	1 MRV plus 1 ambulance

Land use	Cars	Service vehicles
	1 space per self-contained unit; and visitor parking equal to 50% of the resident parking requirement	
Rooming accommodation	1 space per 6 dormitory type bed; 1 space per 4 hostel type units; 1 space per self-contained unit; and visitor parking equal to 50% of the resident parking requirement	1 SRV plus 1 ambulance
Short-term accommodation	1 or 2 bedroom: 1 space per unit ~~2 bedroom: 1.5 space per unit~~ 3 or more bedroom: 2 spaces per unit Visitor spaces: 1 space per 5 units	1 SRV where more than 10 dwellings
Tourist park	1 space van/tent/cabin site (adjacent to site) plus 1 visitors space per 4 van/tent/cabin sites	1 HL~~L~~RV
Business activities		
Adult store	1 space per 25m^2 TUA	Not specified
Agricultural supplies store	1 space per 25m^2 of sales area plus 1 space per 200m^2 TUA	Not specified
Bulk landscape supplies	A minimum of 6 car parks plus 1 space per 25m^2 of sales area plus 1 space per 200m^2 TUA.	1 HRV
Food and drink outlet	1 space per 25m^2 TUA, excluding footpath dining areas located within the road reserve	1 SRV
Garden Centre	1 space per 25m^2 of sales area plus 1 space per 200m^2 TUA	1 SRV if less than 500m² GFA 1 SRV and 1 LRV if 500m² to 1,999m² GFA Not specified if 2,000m² GFA or above
Hardware and trade supplies	1 space per 25m^2 of sales area plus 1 space per 200m^2 TUA	1 SRV if less than 500m² GFA 1 SRV and 1 LRV if 500m² to 1,999m² GFA Not specified if 2,000m² GFA or above
Market	1 space per 25m^2 GFA or total use area	Not specified
Office	1 space per 40m^2 GFA	Not specified
Outdoor sales	1 space per 150m^2 TUA	1 AV
Service station	4 spaces per service bay plus parking requirements for ancillary uses as detailed	1 AV

Land use	Cars	Service vehicles
	herein, such as a Shop, with a minimum of 8 spaces	
Shop	1 space per 25m^2 TUA	1 SRV if less than 500m² GFA 1 SRV and 1 LRV if 500m² to 1,999m² GFA Not specified if 2,000m² GFA or above
Shopping centre	1 space per 25m^2 GFA	1 SRV if less than 500m² GFA 1 SRV and 1 LRV if 500m² to 1,999m² GFA Not specified if 2,000m² GFA or above
Showroom	1 space per 50m^2 TUA	1 AV
Veterinary services	1 space per 25m^2 TUA	1 SRV
Entertainment activities		
Bar	1 space per 10m^2 GFA	Not specified
Club	1 space per 25m^2 TUA plus sufficient room for queuing. Accommodation and food and drink outlet as per separate defined uses	Not specified
Function facility	1 space per 15m^2 GFA	1 SRV
Hotel	1 space per 25m^2 TUA plus sufficient room for queuing. Accommodation and food and drink outlet as per separate defined uses	1 MRV
Nightclub entertainment facility	1 space per 25m^2 TUA plus sufficient room for queuing. Accommodation and food and drink outlet as per separate defined uses	1 SRV
Theatre	1 space per 20m^2 of TUA;	Not specified
Tourist attraction	Demonstration of required car parking spaces~~Not specified~~	Demonstration of required service vehicles parking~~Not specified~~
Industrial activities		
~~Bulk landscape supplies~~	~~A minimum of 6 car parks plus 1 space per 25m^2 of sales area plus 1 space per 200m^2 TUA.~~	~~1 H~~LRV~~
Extractive industry	1 space per 100m^2 GFA	Not specified
Low impact industry	1 space per 50m^2 GFA	Not specified
High impact industry	1 space per 100m^2 GFA	Not specified
Marina	0.6 spaces per wet berth 0.2 spaces per dry storage berth 0.5 spaces per marina employee 0.2 spaces per swing mooring licensed to the marina.	Demonstration of required service vehicles parking~~Not specified~~
Medium impact industry	1 space per 100m^2 GFA	Not specified
Service industry	1 space per 50m^2 GFA	1 MRV
Special industry	1 space per 100m^2 GFA	Not specified

Land use	Cars	Service vehicles
Warehouse	1 space per 150m^2 site area plus provisions to provide for the loading and unloading facilities instead of car parks in self-storage facilities	Not specified
All other industrial activities	1 space per 50m^2 if less than 500m^2 GFA plus 1 space per 100m^2 GFA for that part exceeding 500m^2 GFA	1 AV
Community activities		
Cemetery	Demonstration of required car parking spaces~~Not specified~~	Not specified
Child care centre	2 spaces for every 4 children in attendance plus 1 per employee	Not specified
Community care centre	1 space per 25m^2 plus parking for emergency service vehicles	Not specified
Community use	1 space per 15m^2 of TUA	Not specified
Crematorium	Not specified	Not specified
Educational establishment	1 space per 10 seats plus drop off pick up	Not specified
Emergency services	1 space per employee plus 1 visitor space per 4 employees	Demonstration of required service vehicles parking ~~Not specified~~
Funeral parlour	1 space per 15m^2 GFA where memorials are conducted and 1 space per 40m^2 GFA for all others	1 SRV
Health care services	1 space per 25m^2 plus parking for emergency service vehicles	1 SRV plus Ambulance, however this ambulance requirement is exempt when that Health service does not use ambulances in their operations e.g. optometrist
Hospital	1 space per 25m^2 plus parking for emergency vehicles	Not specified
Place of worship	1 space per 15m^2 of TUA	SRV
Recreation activities		
Outdoor sport and recreation	6 spaces per court (tennis or court game); 530 spaces per pitch/field ~~plus 1 per person able to be seated in stands~~ (cricket or football); 30 spaces per green (lawn bowls); and 15 spaces, plus one space per 100m^2 of site area (swimming pool)	Not specified
Indoor sport and recreation	1 space per 20m^2 of TUA	Not specified
All other recreational activities	Demonstration of required car parking spaces~~Not specified~~	Demonstration of required service vehicles parking~~Not specified~~
Rural activities		
Rural industry	1 space per 50m^2 GFA	1 AV

Land use	Cars	Service vehicles
Wholesale nursery	1 space per 25m^2 of sales area plus 1 space per 200m^2 TUA	1 AV
All other Rural activities	Not specified	Not required
Other activities		
All Other activities	Sufficient car parking is demonstrated by a Traffic assessment report prepared in accordance with PSP SC6.7 Growth management.	Demonstration of required service vehicles parking~~Not specified~~

Contents of Part 10

Part 10 Other plans

Part 10 Other plans

There are no other plans for the planning scheme.

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Tables of Schedule 1

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Schedule 1 Definitions

SC1.1 Use definitions

(1) Use definitions have a particular meaning for the purpose of the Planning Scheme.

(2) Any use not listed in Table SC1.1.2 (Use definitions) column 1 is an undefined use.

Note—development comprising a combination of defined uses is not considered to be an undefined use.

(3) A use listed in Table SC1.1.2 (Use definitions) column 1 has the meaning set out beside that term in column 2.

(4) The use definitions listed here are the definitions used in this Planning Scheme.

(5) Column 3 of Table SC1.1.2 (Use definitions) identifies examples of the types of activities that are consistent with the use identified in column 1.

(6) Column 4 of Table SC1.1.2 (Use definitions) identifies examples of activities that are not consistent with the use identified in column 1.

(7) Columns 3 and 4 of Table SC1.1.2 (Use definitions) are not exhaustive lists.

(8) Uses listed in Table SC1.1.2 (Use definitions) columns 3 and 4 that are not listed in column 1 do not form part of the definition.

(9) All use definitions are derived from the Planning Regulations 2017, where any discrepancy occurs the Planning Regulation 2017 use definition prevails.

Table SC 1.1.1 Index of use definitions

Adult store	Health care services	Port services
Agricultural supplies store	High impact industry	Relocatable home park
Air service	Home based business	Renewable energy facility
Animal husbandry	Hospital	Research and technology industry
Animal keeping	Hotel	Residential care facility
Aquaculture	Indoor sport and recreation	Resort complex
Bar	Intensive animal industry	Retirement facility
Brothel	Intensive horticulture	Roadside stall
Bulk landscape supplies	Landing	Rooming accommodation
Caretaker's accommodation	Low impact industry	Rural industry
Car wash	Major electricity infrastructure	Rural workers' accommodation
Cemetery	Major sport, recreation and entertainment facility	Sales office
Child care centre	Marine industry	Service industry
Club	Market	Service station
Community care centre	Medium impact industry	Shop
Community residence	Motor sport facility	Shopping centre
Community use	Multiple dwelling	Short-term accommodation
Crematorium	Nature-based tourism	Showroom
Cropping		Special industry

Detention facility Dual occupancy Dwelling house Dwelling unit Educational establishment Emergency services Environment facility Extractive industry Food and drink outlet Function facility Funeral parlour Garden centre Hardware and trade supplies	Nightclub entertainment facility Non-resident workforce accommodation Office Outdoor sales Outdoor sport and recreation Outstation Park Parking station Party house Permanent plantation Place of worship	Substation Telecommunications facility Theatre Tourist attraction Tourist park Transport depot Utility installation Veterinary services Warehouse Wholesale nursery Winery

Table SC 1.1.2 Use definitions

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Adult store	Premises for the primary purpose of displaying or selling sexually explicit materials; or products and devices that are associated with, or used in, a sexual practice or activity.	Sex shop	Shop, newsagent, registered pharmacist or video hire, where the primary use of these are concerned with: • the sale, display or hire of printed or recorded matter (not of a sexually explicit nature); or • the sale or display of underwear or lingerie; or • the sale or display of an article or thing primarily concerned with or used in association with a medically recognised purpose.
Agricultural supplies store	Premises used for the sale of agricultural supplies and products. Examples of agricultural supplies		Bulk landscape supplies, garden centre, outdoor sales wholesale nursery

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	and products include animal feed, bulk veterinary supplies, chemicals, farm clothing, fertilisers, irrigation materials, saddlery, and seeds.		
Air services	Premises used for— • the arrival or departure of aircraft; • housing, servicing, refuelling, maintaining or repairing aircraft; • the assembly and dispersal of passengers or goods on or from an aircraft; • training and education facilities relating to aviation; • aviation facilities; or • an activity that is ancillary to an activity or facility that directly services the needs of aircraft passengers.	Airport, airstrip, helipad, public or private airfield	
Animal husbandry	Premises used for producing animals or animal products on native or improved pastures or vegetation. Where ancillary the use may include yards, stables, temporary holding facilities or machinery repairs and servicing.	Cattle studs, grazing of livestock, non-feedlot dairy	Animal keeping, intensive animal industry, aquaculture, feedlots, piggeries
Animal keeping	Premises used for boarding, breeding or training of animals. Where ancillary the use may include holding facilities and repair and servicing of machinery.	Aviaries, catteries, kennels, stables, wildlife refuge	Aquaculture, cattle studs, domestic pets, feedlots, grazing of livestock, non-feedlot dairying, piggeries, poultry meat and egg production, animal husbandry
Aquaculture	Premises used cultivation of live fisheries resources for sale.	Pond farms, tank systems, hatcheries, raceway system, rack and	Intensive animal industry

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
		line systems, sea cages	
Bar	Premises used primarily to sell liquor for consumption on the premises and that has seating for 60 or less people. Where ancillary the use may include entertainment activity, or preparing and selling food and drink for consumption on the premises.		Club, hotel, nightclub entertainment facility, tavern
Brothel	Premises made available for prostitution by two or more prostitutes at the premises. (Source – *Prostitution Act 1999)*		Adult store, club, nightclub entertainment facility, shop
Bulk landscape supplies	Premises used for the bulk storage and sale of mainly non-packaged landscaping and gardening supplies, including, for example, soil, gravel, potting mix or mulch.		Garden centre, outdoor sales, wholesale nursery
Caretaker's accommodation	Premises used for a dwelling for a caretaker of a non-residential use on the same premises.		Dwelling house
Car wash	Premises primarily used for commercially cleaning motor vehicles.		Service station
Cemetery	Premises used for interment of bodies or ashes after death.	Burial ground, crypt, columbarium, lawn cemetery, pet cemetery, mausoleum	Crematorium, funeral parlour
Child care centre	Premises used for minding, education and care, but not residence, of children.	Crèche, early childhood centre, kindergarten, outside hours school care, vacation care	Educational establishment, home based child care, family day care

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Club	Premises used by an association established for social, literary, political, sporting, athletic or other similar purposes. Where ancillary the use may include the preparation and selling of food and drink.	Club house, guide and scout clubs, surf lifesaving club, RSL, bowls club	Hotel, nightclub entertainment facility, place of worship, theatre
Community care centre	Premises used for providing social support to members of the public. Where ancillary the use may include medical care.	Disability support services, drop in centre, respite centre, integrated Indigenous support centre	Child care centre, family day care, home based child care, health care services,~~,~~ accommodation activities
Community residence	Premises used for residential accommodation for no more than 6 children if the accommodation is provided as part of a program or service under the Youth Justice Act 1992; or 6 persons who require assistance or support with daily living needs; and no more than 1 support worker. It includes a building or structure that is reasonably associated with the primary use.	Hospice	Dwelling house, dwelling unit, residential care facility, rooming accommodation, short-term accommodation
Community use	Premises used for providing artistic, social or cultural facilities or community -services to the public. The ancillary use may include the preparation and selling of food and drink.	Art gallery, community centre, community hall, library, museum	Cinema, club, hotel, nightclub entertainment facility, place of worship
Crematorium	Premises used for the cremation or aquamation of bodies.		Cemetery
Cropping	Premises used for growing and harvesting	Forestry for wood production, fodder	Permanent plantations,

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	plants, or plant material, that are cultivated in soil, for commercial purposes. Where ancillary the use may include harvesting, storing or packing plants or plant material grown on the premises, or repairing and servicing machinery used on the premises.	and pasture production, producing fruit, nuts, vegetables and grains, plant fibre production, sugar cane growing, vineyard	intensive horticulture, rural industry
Detention facility	Premises used for the lawful detention of persons.	Prison, detention centre	
Dual occupancy	A residential use of premises for 2 households involving 2 dwellings (whether attached or detached) on a single lot or 2 dwellings (whether attached or detached) on separate lots that share a common property. The use may include any domestic outbuilding associated with the dwellings; but does not include a residential use of premises that involves a secondary dwelling.	Duplex, 2 dwellings on a single lot (whether or not attached), 2 dwellings within one single community title scheme under the *Body Corporate and Community Management Act 1997, 2* dwellings within the 1 body corporate to which the *Building Units and Group Title Act 1980* continues to apply	Dwelling house, multiple dwelling
Dwelling house	Residential use of premises involving 1 dwelling for a single household and any domestic outbuildings associated with the dwelling; or 1 dwelling for a single household, a secondary dwelling and any domestic outbuildings associated with either dwelling.		Caretaker's accommodation, dual occupancy, rooming accommodation, short-term accommodation, student accommodation, multiple dwelling
Dwelling unit	Premises containing a non-residential use for a single dwelling, other than a dwelling for a caretaker of the non-residential use.	Shop-top apartment	Caretaker's accommodation, dwelling house

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Educational establishment	Premises used for training and instruction to impart knowledge and develop skills. Where ancillary the use may include student accommodation, before or after school care or vacation care.	College, outdoor education centre, primary school, secondary school, special education facility, technical institute, university	Child care centre, home based child care, family day care
Emergency services	Premises used by a government entity -or community organisations to provide essential emergency services or disaster management services or management support facilities for the services.	Ambulance station, evacuation centre, fire station, police station	Community use, hospital, residential care facility
Environment facility	Premises used for a Facility for the appreciation, conservation or interpretation of an area of cultural, environmental or heritage value, but does not include the provision of accommodation for tourists and travellers.	Nature-based attractions, walking tracks, seating, shelters, boardwalks, observation decks, bird hides	Accommodation activities
Extractive industry	Premises used for extracting or processing extractive resources and any related activities including, for example, transporting the resources to market.	Quarry	
Food and drink outlet	Premises used for preparation and sale of food and drink for consumption on or off the premises. Where ancillary the use may include the sale of liquor for consumption on premises.	Bistro, café, coffee shop, drive-through facility, kiosk, milk bar, restaurant, snack bar, take-away, tea room	Bar, club, hotel, shop, theatre, nightclub entertainment facility
Function facility	Premises used for receptions or functions	Conference centre, reception centre	Community use, hotel

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	that may include the preparation and provision of food and liquor for consumption on premises as part of a reception or function.		
Funeral parlour	Premises used to arrange and conduct funerals, memorial and other similar events. The premises may include a mortuary or the storage and preparation of bodies for burial or cremation, but does not include the use of premises for the burial or cremation of bodies.		Cemetery, crematorium, place of worship
Garden centre	Premises used for the selling of plants; or selling gardening and landscape products and supplies that are mainly in pre-packaged form. Where ancillary the use may include a food and drink outlet.	Retail plant nursery	Bulk landscape supplies, wholesale nursery, outdoor sales
Hardware and trade supplies	Premises used for the sale, display or hire of hardware and trade supplies including, for example, household fixtures, timber, tools, paint, wallpaper and plumbing supplies.		Shop, showroom, outdoor sales and warehouse
Health care services	Premises used for medical purposes, paramedical purposes, alternative health therapies or general health care, if overnight accommodation is not provided on the premises.	Dental clinics, medical centres, natural medicine practices, nursing services, physiotherapy clinic	Community care centre, hospital
High impact industry	Premises used for an industrial activity that is the manufacturing, producing, processing, repairing, altering,	Abattoirs, concrete batching plant, boiler making and engineering and metal foundry	Tanneries, rendering plants, oil refineries, waste incineration, manufacturing or

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	recycling, storing, distributing, transferring or treating of products, the use must be identified in, and not exceed the thresholds of the Industry thresholds table SC1.1.2.1.	Note—additional examples may be shown in SC1.1.2.1 Industry thresholds.	storing explosives, power plants, manufacturing fertilisers, service industry, low impact industry, medium impact industry, special industry
Home based business	A dwelling or domestic outbuilding on premises used for a business activity that is subordinate to the residential use of the premises.	Bed and breakfast, home office, home based child care	Hobby, office, shop, warehouse, transport depot
Hospital	Premises used for medical or surgical care or treatment of patients, or providing accommodation for patients. Any other use, including providing accommodation for employees, must be ancillary to the hospital use.		Health care services, residential care facility
Hotel	Premises used primarily to sell liquor for consumption on the premises. Where ancillary the use may include accommodation to tourists or travellers, dining and entertainment activities. The use does not include a bar.	Pub, tavern	Nightclub entertainment facility, bar
Indoor sport and recreation	Premises used for leisure, sport or recreation conducted wholly or mainly indoors.	Amusement parlour, bowling alley, gymnasium, squash courts, enclosed tennis courts	Cinema, hotel, nightclub entertainment facility, theatre
Intensive animal industry	Premises used for the intensive production of animals or animal products in an	Feedlots, piggeries, poultry and egg production	Animal husbandry, aquaculture, drought feeding, milking sheds,

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	enclosure that requires the provision of food and water either mechanically or by hand. Where ancillary the use may include storage and packing of feed and produce, but does not include the cultivation of aquatic animals.		shearing sheds, weaning pens, cultivation of aquatic animals
Intensive horticulture	Premises used for the intensive production of plants or plant material carried out indoors on imported media; or the intensive production of plants or plant material carried out outside using artificial lights or containers. Where ancillary the use may include storage and packing of plants or plant material grown on the premises, but does not include the cultivation of aquatic plants.	Greenhouse and shade house plant production, hydroponic farms, mushroom farms	Wholesale nursery, cultivation of aquatic plants
Landing	Premises used for a structure for mooring, launching, storage and retrieval of vessels and from which passengers embark and disembark.	Boat ramp, jetty, pontoon	Marina
Low impact industry	Premises used for an industrial activity that is the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products; and the use be identified in, and not exceed the thresholds of the Industry thresholds table SC1.1.2.1.	Repairing motor vehicles, fitting and turning workshop Note—additional examples may be shown in SC1.1.2.1 Industry thresholds.	Panel beating, spray painting or surface coating, tyre recycling, drum re-conditioning, wooden and laminated product manufacturing, service industry, medium impact industry, high impact industry, special industry

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Major electricity infrastructure	Premises used for a transmission grid or supply network, or an ancillary telecommunication facility. It does not include a supply network or private electricity works being development for a supply network or for private electricity works that form an extension of, or provide service connections to, properties from the network if the network operates at standard voltages up to and including 66kV. The use may involve a new zone substation or bulk supply substation; or the augmentation of a zone substation or bulk supply substation that significantly increases the input or output standard voltage.	Power lines greater than 66kV	Minor electricity infrastructure, substation
Major sport, recreation and entertainment facility	Premises used for large-scale events including, for example, major sporting, recreation, conference or entertainment events.	Convention and exhibition centres, entertainment centres, sports stadiums, horse racing facility	Indoor sport and recreation, local sporting field, motor sport, park, outdoor sport and recreation
Marine industry	Waterfront premises used for the manufacturing, storage, repair or servicing of vessels and maritime infrastructure. Where ancillary the use may include the provision of fuel and disposal of waste.	Boat building, boat storage, dry dock	Marina
Market	Premises used on a regular basis for the selling of goods to the	Flea market, farmers market, car boot sales	Shop, roadside stall

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	public mainly from temporary structures, including for example, stalls, booths or trestle tables. Where ancillary the use may include entertainment.		
Medium impact industry	The use of premises for an industrial activity that is the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products; and the use be identified in, and not exceed the thresholds of the Industry thresholds table SC1.1.2.1.	Spray painting and surface coating, wooden and laminated product manufacturing (including cabinet making, joining, timber truss making or wood working) Note—additional examples may be shown in SC1.1.2.1 Industry thresholds.	Concrete batching, tyre manufacturing and retreading, metal recovery (involving a fragmentiser), textile manufacture, chemically treating timber and plastic product manufacture, service industry, low impact industry, high impact industry, special industry
Motor sport facility	Premises used for organised or recreational motor sports. Where ancillary the use may include facilities for spectators including stands, amenities and food and drink outlets.	Go-karting, lawn mower race tracks, trail bike parks, 4WD and all terrain parks, motocross tracks, off road motorcycle facility, motorcycle or car race tracks	Major sport, recreation and entertainment facility, outdoor sport and recreation
Multiple dwelling	Residential use of premises involving three or more dwellings, whether attached or detached, for separate households.	Apartments, flats, units, townhouses, row housing, triplex	Rooming accommodation, dual occupancy, duplex, granny flat, residential care facility, retirement facility
Nature-based tourism	The use of premises for a tourism activity, including accommodation for tourists, for the conservation, interpretation and appreciation of an area of environmental, cultural or heritage value, a local	Environmentally responsible accommodation facilities including lodges, cabins, huts and tents	Environment facility

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	ecosystem or the natural environment.		
Nightclub entertainment facility	Premises used to provide entertainment, that is cabaret, dancing or music. Where ancillary the use may include the sale of liquor and the preparing and selling of food for consumption on site.		Club, hotel, tavern, pub, indoor sport and recreation, theatre, concert hall
Non-resident workforce accommodation	Premises used to provide accommodation for non-resident workers. Where ancillary the use may include recreational and entertainment facilities for persons residing at the premises and their visitors.	Contractor's camp, construction camp, single person's quarters, temporary workers' accommodation	Relocatable home park, short-term accommodation, tourist park
Office	Premises used for • providing an administrative, financial, management or secretarial service or function; • the practice of a profession; or • providing business or professional advice or services. The use does not include the use of premises for making, selling or hiring goods.	Bank, real estate agent, administration building	Home based business, home office, shop, outdoor sales
Outdoor sales	Premises used for the display, sale, hire or lease of vehicles, boats, caravans, machinery, equipment or other similar products where the use is conducted mainly outdoors. Where ancillary the use may include the repair or servicing activities	Agricultural machinery sales yard, motor vehicles sales yard	Bulk landscape supplies, market

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	and sale or fitting of accessories for the above products.		
Outdoor sport and recreation	Premises used for a recreation or sport activity that is carried on outdoors and requires areas of open space. Where ancillary the use may include providing and selling of food and drink, change room facilities or storage facilities	Driving range, golf course, swimming pool, tennis courts, football ground, cricket oval	Major sport, recreation and entertainment facility, motor sport, park, community use
Outstation	Premises used for cultural and/or recreational activities undertaken by Aboriginal and Torres Strait Islander people. Where ancillary the use may include facilities for short-term or long-term camping activities.	Indigenous camp site	Dwelling house, hostel, multiple dwelling, relocatable home park, short term accommodation, tourist park
Park	The use of premises, accessible to the public free of charge, for sport, recreation and leisure activities and facilities.	Urban common	Tourist attraction, outdoor sport and recreation
Parking station	Premises used for parking vehicles, other than parking that is ancillary to another use.	Car park, park and ride, bicycle parking	
Party house	Premises containing a dwelling that is used to provide, for a fee, accommodation or facilities for guests if— (a) guests regularly use all or part of the premises for parties (bucks parties, hens parties, raves, or wedding receptions, for example); (b) the accommodation or facilities are		

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	provided for a period of less than 10 days; and (c) the owner of the premises does not occupy the premises during that period.		
Permanent plantation	Premises used for growing, but not harvesting, plants for carbon sequestration, biodiversity, natural resource management or another similar purpose.	Permanent plantations for carbon sequestration, biodiversity or natural resource management	Forestry for wood production, biofuel production
Place of worship	Premises used by an organised group for worship and religious activities. Where ancillary the use may include social, educational or charitable activities.	Church, chapel, mosque, synagogue, temple	Community use, child care centre, funeral parlour, crematorium
Port services	Premises used for the following: • the arrival and departure of vessels; • the movement of passengers or goods on or off vessels; • storing, servicing, maintaining or repairing vessels; or • ancillary uses that directly service the needs of the passengers of the vessels.	Marina, ferry terminal	Landing
Relocatable home park	Premises used for relocatable dwellings for long-term residential accommodation. Where ancillary the use may include a manager's residence, amenity facilities, food and drink outlets, or recreation facilities for the exclusive use of residents.		Tourist park

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Renewable energy facility	Premises used for the generation of electricity or energy from a renewable energy source, but does not include the use of premises to generate electricity or energy to be used mainly on the premises.	Solar farm, tidal power, bioenergy, geothermal energy, hydropower, ocean energy production	Wind turbine or solar panels supplying energy to domestic or rural activities on the same site
Research and technology industry	Premises used for an innovative or emerging industry that involves designing and researching, assembling, manufacturing, maintaining, storing or testing machinery or equipment.	Aeronautical engineering, biotechnology industries, computer component manufacturing, computer server facilities, energy industries, medical laboratories	
Residential care facility	The use of premises for supervised accommodation, medical and other support services, for persons who cannot live independently, and require regular nursing or personal care.	Convalescent home, nursing home	Community residence, dwelling house, dual occupancy, hospital, multiple dwelling, retirement facility
Resort complex	Premises used for tourist and visitor accommodation that includes integrated leisure facilities, ancillary staff accommodation, and transport facilities for the premises including, for example, a ferry terminal or air service. Examples of integrated leisure facilities includes bars, meeting and function facilities, restaurants, sporting and fitness facilities.	Island resort	
Retirement facility	A residential use of premises for accommodation for older members of the community, or retired persons, in	Retirement village	Residential care facility

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	independent living units or serviced units. Where ancillary the use may include amenity and community facilities, a manager's residence, health care and support services, preparing food and drink or staff accommodation.		
Roadside stall	Premises used for the roadside display and sale of goods in a rural area.	Produce stall	Market
Rooming accommodation	Premises used for residential accommodation, if each resident— • has a right to occupy 1 or more rooms on the premises; • does not have a right to occupy the whole of the premises; • does not occupy a self-contained unit, as defined under the *Residential Tenancies and Rooming Accommodation Act 2008*, schedule 2, or has only limited facilities available for private use; and • shares other rooms, facilities, furniture or equipment outside of the resident's room with 1 or more other residents, whether or not the rooms, facilities, furniture or equipment are on the same or different premises. Where ancillary the use may include a	Boarding house, hostel, monastery, off-site student accommodation	Hospice, community residence, dwelling house, short-term accommodation, multiple dwelling

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	manager's residence, an office or providing food or other services to residents.		
Rural industry	Premises used for storing, processing or packaging products from a rural use carried out on the premises or adjoining premise. Where ancillary the use may include selling products from a rural use carried out on the premises or adjoining premises.	Packing shed	Intensive animal husbandry, intensive horticulture, roadside stall, wholesale nursery, winery, abattoir, agricultural supply store
Rural workers' accommodation	Any premises used as accommodation, whether or not self-contained, for employees of a rural use, if the premises, and the premises where the rural use is carried out, are owned by the same person; and the employees are not non-resident workers.	Farm workers' accommodation	Short-term accommodation, caretaker's accommodation, dual occupancy, dwelling house, nature or rural based tourist accommodation, non-resident workforce accommodation, multiple dwellings
Sales office	The use of premises for the temporary display of land parcels or buildings that are for sale, or proposed to be sold; or can be won as a prize in a competition.	Display dwelling	Bank, office
Service industry	Premises used for an industrial activity that does not result in off-site air, noise or odour emissions; and is suitable for location with other non-industrial uses.	Audio visual equipment repair, film processing, bicycle repairs, clock and watch repairs, computer repairs, dry cleaning, hand engraving, jewellery making, laundromat, locksmith, picture framing, shoe repairs, tailor	Small engine mechanical repair workshop, cabinet making, shop fitting, sign writing, tyre depot, low impact industry, medium impact, high impact industry, special industry

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Service station	Premises used for the sale of fuel including, for example, petrol, liquid petroleum gas, automotive distillate and alternative fuels. Where ancillary the use may include a food and drink outlet, shop, trailer hire, or maintaining, repairing, servicing or washing vehicles.		Car wash
Shop	Premises used for the display, sale or hire of goods or the provision of personal services or betting to the public.	Betting agency, corner store, department store, discount variety store, hair dressing salon, liquor store, supermarket	Adult store, food and drink outlet, showroom, market
Shopping centre	Premises used for an integrated shopping complex consisting mainly of shops.		
Short-term accommodation	Premises used to provide accommodation of less than 3 consecutive months to tourists or travellers. Where ancillary the use may include a manager's residence, office, or recreation facilities for the exclusive use of guests.	Motel, ~~backpackers~~backpacker's accommodation, cabins, serviced apartments, hotel, farm stay	Hostel, rooming accommodation, tourist park hotel, nature-based tourism, resort complex or tourist park.
Showroom	Premises used the sale of goods that are of in a related product line, and a size, shape or weight that requires a large area for handling, display or storage, and direct vehicle access to the building that contains the goods, by members of the public, to enable the loading and unloading of the goods.	Bulky goods sales, motor vehicles sales showroom, bulk stationary supplies, bulk home supplies	Food and drink outlet, shop, outdoor sales

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Special industry	The use of premises for an industrial activity that is the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products, and the use be identified in, and not exceed the thresholds of the Industry thresholds table SC1.1.2.1.	Tanneries, rendering plants, oil refineries, waste incineration, manufacturing or storing explosives, power plants, manufacturing fertilisers Note—additional examples may be shown in SC1.1.2.1 Industry thresholds.	Low impact industry, medium impact industry, high impact industry, service industry
Substation	The use of premises— • as part of a transmission grid or supply network to— ○ convert or transform electrical energy from one voltage to another; ○ regulate voltage in an electrical circuit; ○ control electrical circuits; or ○ switch electrical current between circuits; or • for a telecommunications facility for works are anything used for, or in association with, the generation, transmission or supply of electricity; or workforce operational and safety communications.	Substations, switching yards	Major electricity infrastructure, minor electricity infrastructure
Telecommunications facility	Premises used for a facility that is capable of carrying	Telecommunication tower, broadcasting	Aviation facility, “low-impact telecommunications

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	communications and signals by guided or unguided electromagnetic energy.	station, television station	facility" as defined under the *Telecommunications Act 1997*
Theatre	Premises used for presenting movies, live entertainment or music to the public or the production of film or music. Where ancillary the use may include preparing and selling food and drink for consumption on the premises, facilities for editing and post-production, facilities for wardrobe, laundry and make-up, set construction workshops, and sound stages.	Cinema, movie house, concert hall, dance hall, film studio, music recording studio	Community hall, hotel, indoor sport and recreation facility, temporary film studio
Tourist attraction	Premises used for providing entertainment to, or a recreation facility for, the general public. Where ancillary the use may include preparing and selling food and drink for consumption on the premises.	Theme park, zoo	Hotel, major sport, recreation and entertainment facility, nightclub entertainment facility
Tourist park	Premises used to provide for holiday accommodation in caravans, self-contained cabins, tents or other similar structures. Where ancillary the use may include amenity facilities, a food and drink outlet, a manager's residence, offices, recreation facilities for the use of occupants and their visitors or staff accommodation.	Camping ground, caravan park, holiday cabins	Relocatable home park, tourist attraction, short-term accommodation, non-resident workforce accommodation

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Transport depot	Premises used for storing vehicles, or machinery, that are used for a commercial or public purpose. Where ancillary the use may include cleaning, repairing or servicing vehicles or machinery.	Contractor's depot, bus depot, truck yard, heavy machinery yard	Home based business, warehouse, low impact industry, service industry
Utility installation	Premises used for: • a service for supplying or treating water, hydraulic power or gas; • a sewerage, drainage or stormwater service; • a transport service; or • a waste management service. Where ancillary the use may include maintenance and storage depots or other facility for a service.	Sewerage treatment plant, mail depot, pumping station, water treatment plant	Telecommunications tower, major electricity infrastructure, minor electricity infrastructure, substation, renewable energy facility, transport depot
Veterinary services	Premises used for the medical or surgical treatment of animals. Where ancillary the use may include the short-term stay of animals.		Animal keeping
Warehouse	Premises used for storing or distributing goods, whether or not carried out in a building. Where ancillary the use may include the wholesale of goods.	Self-storage sheds	Hardware and trade supplies, outdoor sales, showroom, shop
Wholesale nursery	Premises used for the wholesale of plants grown on or next to the premises. Where ancillary the use may include selling garden materials.		Bulk landscape supplies, garden centre

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Winery	Premises used for making wine, or selling wine that is made on the premises.		Rural industry

SC1.1.1 Defined activity groups

(1) Defined use terms listed in Table SC1.1.2 (Defined uses) are able to be clustered into activity groups.

(2) An activity group listed in Table SC1.1.1.2 (Defined activity groups) column 1 clusters the defined use terms listed in column 2.

(3) An activity group is able to be referenced in Part 5 (tables of assessment).

(4) The activity groups listed here are the defined activity groups for the purpose of the Planning Scheme.

Table SC 1.1.1.1 Index of defined activity groups

Accommodation activities	Entertainment activities	Rural activities
Business activities	Industry activities	Other activities
Community activities	Recreation activities	

Table SC 1.1.1.2 Defined activity groups

Column 1 Activity group	Column 2 Use Terms
Accommodation activities	Caretaker's accommodation Community residence Dual occupancy Dwelling house Dwelling unit Home based business Multiple dwelling Nature-based tourism Non-resident workforce accommodation Relocatable home park Residential care facility Resort complex Retirement facility Rooming accommodation Rural workers' accommodation Short term accommodation Tourist park
Business activities	Adult store Agricultural supplies store Brothel Bulk landscape supplies Car wash Food and drink outlet Garden centre Hardware trade supplies Market Office Outdoor sales Sales office Service station Shop Shopping centre Showroom Veterinary services

Column 1 Activity group	Column 2 Use Terms
Community activities	Cemetery Child care centre Community care centre Community use Crematorium Educational; establishment Emergency services Funeral parlour Health care services Hospital Outstation Place of worship
Entertainment activities	Bar Club Function facility Hotel Nightclub entertainment facility Theatre Tourist attraction
Industry activities	Extractive industries High impact industry Low impact industry Marine industry Medium impact industry Research and technology industry Service industry Special industry Warehouse
Recreation activities	Environment facility Indoor sport and recreation Major sport, recreation and entertainment facility Motor sports facility Outdoor sport and recreation Park
Rural activities	Animal husbandry Animal keeping Aquaculture Cropping Intensive animal industry Intensive horticulture Permanent plantation Roadside stall Rural industry Wholesale nursery Winery
Other activities	Air services Detention facility Landing Major electrical infrastructure Parking station Port services Renewable energy facility Substation Telecommunications facility Transport depot Utility installation

SC1.1.2 Industry thresholds

The industry thresholds listed below are to be used in conjunction with the defined uses listed in Table SC1.1.2 (Defined use terms) - Low impact industry, Medium impact industry, High impact industry and Special industry.

Table SC 1.1.2.1 Industry thresholds

Column 1 Use Terms	Column 2 Additional examples include
High impact industry	(1) Metal foundry producing 10 tonnes or greater of metal castings per annum; (2) Boiler making or engineering works producing 10 000 tonnes or greater of metal product per annum; (3) Major hazard facility for the storage and distribution of dangerous goods not involving manufacturing processes; (4) Scrap metal yard including a fragmentiser; (5) Manufacturing clay or ceramic products including bricks, tiles, pipes and pottery goods, greater than 200 tonnes per annum; (6) Processing, smoking, drying, curing, milling, bottling or canning food, beverages or pet food, greater than 200 tonnes per annum; (7) Vegetable oil or oilseed processing in works with a design production capacity of greater than 1000 tonnes per annum; (8) Manufacturing wooden products including cabinet making, joinery, wood working, producing greater than 500 tonnes per annum; (9) Manufacturing medium density fibreboard, chipboard, particle board, plywood, laminated board or wood veneer products, 250 tonnes or greater per annum; (10) Sawmilling, wood chipping and kiln drying timber and logs, producing greater than 500 tonnes per annum; (11) Manufacturing or processing plaster, producing greater than 5000 tonnes per annum; (12) Enamelling workshop using 15 000 litres or greater of enamel per annum; (13) Galvanising works using 100 tonnes or greater of zinc per annum; (14) Anodising or electroplating workshop where tank area is 400 square metres or greater; (15) Powder coating workshop using 500 tonnes or greater of coating per annum; (16) Spray painting workshop (including spray painting vehicles, plant, equipment or boats) using 20 000 litres or greater of paint per annum; (17) Concrete batching and producing concrete products; (18) Treating timber for preservation using chemicals including copper, chromium, arsenic, borax and creosote; (19) Manufacturing soil conditioners by receiving, blending, storing, processing, drying or composting organic material or organic waste, including animal manures, sewage, septic sludge and domestic waste; (20) Manufacturing fibreglass pools, tanks and boats;

Column 1 Use Terms	Column 2 Additional examples include
	(21) Manufacturing, fibreglass, foam plastic, composite plastic or rigid fibre-reinforced plastic or plastic products, 5 tonnes or greater per annum (except fibreglass boats, tanks and swimming pools); (22) Manufacturing PET, PETE, polypropylene and polystyrene plastic or plastic products, 10 000 tonnes or greater per annum; (23) Manufacturing tyres, asbestos products, asphalt, cement, glass or glass fibre, mineral wool or ceramic fibre; (24) Abattoir; (25) Recycling chemicals, oils or solvents; (26) Waste disposal facility (other than waste incinerator); (27) Recycling, storing or reprocessing regulated waste; (28) Manufacturing batteries; (29) Manufacturing wooden products including cabinet making, joinery, wood working, producing greater than 500 tonnes per annum; (30) Abrasive blasting facility using 10 tonnes or greater of abrasive material per annum; (31) Crematoria; (32) Glass fibre manufacture producing 200 tonnes or greater per annum; and (33) Manufacturing glass or glass products, where not glass fibre, less than 250 tonnes per annum.
Low impact industry	(1) Repairing and servicing motor vehicles, including mechanical components, radiators, electrical components, wheel alignments, exhausts, tyres, suspension or air conditioning, not including spray painting; (2) Repairing and servicing lawn mowers and outboard engines; (3) Fitting and turning workshop; (4) Assembling or fabricating products from sheet metal or welding steel, producing less than 10 tonnes a year and not including spray painting; (5) Assembling wood products not involving cutting, routing, sanding or spray painting; ~~and~~ (6) Dismantling automotive or mechanical equipment, not including debonding brake or clutch components~~.~~; (7) Micro-brewery, limited to beer or cider, producing less than 300,000 litres per annum; and ~~(6)~~(8) Coffee roasting, producing less than 100 tonnes per annum.
Medium impact industry	(1) Metal foundry producing less than 10 tonnes of metal castings per annum; (2) Boiler making or engineering works producing less than 10 000 tonnes of metal product per annum; (3) Facility, goods yard or warehouse for the storage and distribution of dangerous goods not involving manufacturing processes and not a major hazard facility under the *Work Health and Safety Act 2011*; (4) Abrasive blasting facility using less than 10 tonnes of abrasive material per annum; (5) Enamelling workshop using less than 15 000 litres of enamel per annum;

Column 1 Use Terms	Column 2 Additional examples include
	(6) Galvanising works using less than 100 tonnes of zinc per annum; (7) Anodising or electroplating workshop where tank area is less than 400 square metres; (8) Powder coating workshop using less than 500 tonnes of coating per annum; (9) Spray painting workshop (including spray painting vehicles, plant, equipment or boats) using less than 20 000 litres of paint per annum; (10) Scrap metal yard (not including a fragmentiser), dismantling automotive or mechanical equipment including debonding brake or clutch components; (11) Manufacturing clay or ceramic products including bricks, tiles, pipes and pottery goods, less than 200 tonnes per annum; (12) Processing, smoking, drying, curing, milling, bottling or canning food, beverages or pet food, less than 200 tonnes per annum; (13) Brewery, limited to beer or cider, producing 300,000 litres or greater per annum; ~~(12)~~(14) Coffee roasting, producing 100 tonnes or greater per annum; ~~(13)~~(15) Vegetable oil or oilseed processing in works with a design production capacity of less than 1000 tonnes per annum; ~~(14)~~(16) Manufacturing wooden products including cabinet making, joinery, wood working, producing less than 500 tonnes per annum; ~~(15)~~(17) Manufacturing medium density fibreboard, chipboard, particle board, plywood, laminated board or wood veneer products, less than 250 tonnes per annum; ~~(16)~~(18) Sawmilling, wood chipping and kiln drying timber and logs, producing less than 500 tonnes per annum; ~~(17)~~(19) Recycling and reprocessing batteries; ~~(18)~~(20) Repairing or maintaining boats; ~~(19)~~(21) Manufacturing substrate for mushroom growing; ~~(20)~~(22) Manufacturing or processing plaster, producing less than 5000 tonnes per annum; ~~(21)~~(23) Recycling or reprocessing tyres including retreading; ~~(22)~~(24) Printing advertising material, magazines, newspapers, packaging and stationery; ~~(23)~~(25) Transport depot, distribution centre, contractors depot and storage yard; ~~(24)~~(26) Manufacturing fibreglass, foam plastic, composite plastic or rigid fibre-reinforced plastic or plastic products, less than 5 tonnes per annum (except fibreglass boats, tanks and swimming pools); ~~(25)~~(27) Manufacturing PET, PETE, polypropylene and polystyrene plastic or plastic products, less than 10 000 tonnes per annum; ~~(26)~~(28) Reconditioning metal or plastic drums; ~~(27)~~(29) Glass fibre manufacture less than 200 tonnes per annum; and

Column 1 Use Terms	Column 2 Additional examples include
	~~(28)~~(30) Manufacturing glass or glass products, where not glass fibre, less than 250 tonnes per annum.
Special industry	a) Oil refining or processing; b) Producing, refining or processing gas or fuel gas; c) Distilling alcohol in works, other than beer and cider, producing greater than 2 500 litres per annum; d) Power station; e) Producing, quenching, cutting, crushing or grading coke; f) Waste incinerator; g) Sugar milling or refining; h) Pulp or paper manufacturing; i) Tobacco processing; j) Tannery or works for curing animal skins, hides or finishing leather; k) Textile manufacturing, including carpet manufacturing, wool scouring or carbonising, cotton milling, or textile bleaching, dyeing or finishing; l) Rendering plant; m) Manufacturing chemicals, poisons and explosives; n) Manufacturing fertilisers involving ammonia; and o) Manufacturing polyvinyl chloride plastic.

SC1.2 Administrative terms

(1) Administrative terms and definitions assist with the interpretation of the Planning Scheme but do not have a meaning in relation to a use.

(2) An administrative term listed in Table SC1.2.2 (Administrative definitions) column 1 has the meaning set out beside that administrative term in column 2.

(3) The administrative terms and definitions listed here are the terms and definitions for the purpose of the Planning Scheme.

Table SC 1.2.1 Index of administrative definitions

Access handle	Demand unit	Non-resident workers
Active uses	Development footprint	Non-tidal artificial waterways
Adjoining premises	Display home	Obstacle limitation surfaces
Advertising device	Domestic outbuilding	Outermost projection
Affordable housing	Dune crest height	Planning assumptions
Agricultural land	Dwelling	Plot ratio
Annual exceedance probability (AEP)	Engineering work	Projection area(s)
Area of environmental significance	Essential service uses	Rear lot
Average building height (ABH)	Flood hazard area	Secondary dwelling
Average width	Future State transport corridor	Semi-public space
Base date	Gross floor area	Sensitive use
Basement	Gross leasable area	Service catchment
Boundary clearance	Ground level	Setback
Building height	Hazardous chemical facility uses	Short-term accommodation (Dwelling)
Bushfire prone area	Hazardous material	Significant attributes
Centre zones	Hazardous material in bulk	Site
Coastal dependant development	Heritage place	Site cover
Coastal hazard area	Household	Social housing
Coastal environment work	Industrial zones	Solar panel farm
Communal open space	Isolated areas	Storey
Communal space	Landslide hazard	Stream order
Community infrastructure	Landscaping works	~~Stream protection zone~~
Corner s~~S~~tore	~~Maritime development~~	Temporary development
Country living	Minor building work	Total use area
Defined flood event (DFE)	Minor electricity infrastructure	Transit oriented development
Defined flood level (DFL)	Minor marine development	Ultimate development
Defined storm tide event (DSTE)	Multi-unit uses	Urban area
	Net developable area	Urban purposes
	Netserv plan	Urban services
		Vulnerable uses

Table SC 1.2.2 Administrative definitions

Column 1 Term	Column 2 Definition
Access handle	That part of a lot which is used for providing access to a road from a rear lot. An access easement may also be an access handle.
Active uses	Includes uses which directly address the street frontage with building accesses and open or transparent frontages that attract a pedestrian to look in and allow casual surveillance looking outward. May include uses such as food and drink outlets, bars, beer gardens, outdoor venues, shops, community uses, offices and Accommodation activities, where communal space or foyer adjoins the frontage.
Adjoining premises	Premises that share a common boundary, including premises that meet at a single point on a common boundary. (Source— Planning Regulation 2017)
Advertising device	A permanent sign, structure or other device used, or intended to be used, for advertising and includes a structure, or part of a building, the primary purpose of which is to support the sign, structure or device. (Source—Planning Regulation 2017)
Affordable housing	Housing that is appropriate to the needs of households with low to moderate incomes, if the members of the households will spend no more than 30% of gross income on housing costs. (Source—Planning Regulation 2017)
Agricultural land	An area that is identified as agricultural land classification class A, agricultural land classification class B~~, state important agricultural land~~ or locally important agricultural land on the Agricultural land overlay.
Annual exceedance probability (AEP)	The likelihood of occurrence of a flood of a given size or larger in any one year, usually expressed as a percentage. Editor's Note—for example, if a peak flood discharge of 500m^3/ second has an AEP of five percent; it means that there is a five percent risk, that is the probability of 0.05 or a likelihood of one in twenty, of a peak flood discharge of 500m^3/second or larger occurring in any one year. Note—the AEP of a flood event gives no indication of when a flood of that size will occur next. (Source—State Planning Policy July 2014)
Area of environmental significance	An area that is: (a) identified as a Matter of local ~~or, s~~State or ~~environmental~~National environmental significance on the Biodiversity, waterways and wetlands overlay map; or ~~(a)~~ if not identified on the map above, an area included in a riparian buffer for waterbodies or a protected or wildlife habitat as per Table 8.2.4.3.3 of the Planning Scheme.~~:~~ (b)

Column 1 Term	Column 2 Definition
	~~Overlay map - ES - 01:29 (Environmental significance overlay); or~~ ~~(i)~~ Note: Matters of Local Environmental Significance (MLES), Matters of State Environmental Significance (MSES) and Matters of National Environmental Significance (MNES) are defined under the State Planning Policy 2017.~~Overlay map - WW1 - 01:29 (Waterways and wetlands overlay); or~~ ~~(b) if not identified on map (i) or (ii) above, an area of land affected by a waterway stream protection zone buffer as detailed in Table 8.2.12.3.4 (Waterways and wetland overlay code).~~
Average building height (ABH)	The building height calculation for development on premises with excessive slope (greater than 25%), measured as ABH = (A+B) ÷ 2, where: (a) (A) is the greatest building height of the building's primary street frontage façade; and (b) (B) is the greatest building height at any point of the building.
Average width	In regard to a lot, the distance measured in metres, between the midpoint on each side boundary of the lot. (Source—Planning Regulation 2017)
Base date	The date from which a local government has estimated its projected infrastructure demands and costs for the local government area. (Source—Planning Regulation 2017)
Basement	A space that is situated between one floor level and the floor level immediately below it where no part of the space projects more than one metre above ground level. (Source—Planning Regulation 2017)
Boundary clearance	The distance between a building or structure on premises and the boundary of the premises, measured from the part of the building or structure that is closest to the boundary, other than a part that is— (a) an architectural or ornamental attachment; or (b) a rainwater fitting. (Source—Planning Regulation 2017)
Building height	Building height, of a building, means: (a) the vertical distance, measured in metres, between the ground level of the building and the highest point on the roof of the building, other than a point that is part of an aerial, chimney, flagpole or load-bearing antenna; or (b) the number of storeys in the building above ground level. (Source—Planning Regulation 2017)
Bushfire prone area	An area that is: (a) identified as medium, high or very high risk on Overlay map -~~ BH - 01:29 (~~Bushfire hazard overlay~~)~~; or

Column 1 Term	Column 2 Definition
	(b) if not identified on the Bushfire hazard overlay map, an area of land with a medium, high or very high risk on the relevant State mapping.
Centre zones	Centre zones is an Area classification for the purposes of the Local government infrastructure plan only and includes the following zones: • Major centre; • District centre; • Local centre; and • Neighbourhood centre.
Coastal dependent development	Development that in order to function must be located in tidal waters or be able to access tidal water and: (a) may include, but is not limited to: (i) industrial and commercial facilities such as ports, public marine development, harbours and navigation channels and facilities, aquaculture involving marine species, desalination plants, tidal generators, coastal protection works, erosion control structures and beach nourishment; (ii) tourism facilities for marine (boating) purposes; (iii) community facilities and sporting facilities which require access to tidal water in order to function, such as surf clubs, marine rescue, rowing and sailing clubs; or (iv) co-located residential and tourist uses that are part of an integrated development proposal (e.g. mixed use development) incorporating a marina, if these uses are located directly land ward of the marina and appropriately protected from natural hazards; but (b) does not include: (i) residential development, including canal development, as the primary use; (ii) waste management facilities, such as landfills, sewage treatment plants; or (iii) transport infrastructure, other than for access to the coast. (Source – State Planning Policy July 2017)
Coastal hazard area	An area that is: (a) identified as ~~medium or high hazard~~wave run-up or inundation area on Coastal hazard ~~O~~overlay map ~~– CP1 – 01:14 – (Coastal environment overlay:~~ Storm tide inundation~~)~~; (i) wave run-up area is considered to affect premises 200m landward from the highest astronomical tide. It represents the peak elevation of the intermittent process of advancement and retreat of the shoreline associated with wave processes during the coastal inundation event; and ~~(a)~~(ii) inundation area is located landward of the wave run-up area and is assumed to persist for a sufficient duration to cause inundation of land below this design water level; (b) identified as coastal erosion subcategory or permanent inundation due to seal level rise at 2100 sub category

Column 1 Term	Column 2 Definition
	on ~~Overlay map - CP2 - 01:14 (~~Coastal ~~environment~~ hazard overlay map ~~-~~: Erosion prone areas and P~~p~~ermanent inundation~~)~~; or (c) if not identified on the Coastal ~~environment~~ hazard overlay maps, an area of land affected by the Defined Storm Tide Event (DSTE).
Coastal environment work	Any permanent or periodic work undertaken primarily to manage the impacts of coastal hazards, including altering physical coastal processes, such as sediment transport. ~~(Source—State Planning Policy July 2014)~~
Communal open space	Common outdoor open space which is accessible to and shared by all residents of a development. This space can be used for recreation and/or relaxation purposes.
Communal space	A space that is access controlled and accessible to residents, employees or business owners and associated people, for the purposes of promoting social interaction. Examples include a foyer, shared kitchen, shared resting area for an office, or communal BBQ area in a residential building. Examples do not include areas connecting spaces, such as communal staircases or hallways.
Community infrastructure	Any one or more of the following: (a) Accommodation activities; or (b) Community activities; or (c) Industry activities; or (d) Other activities; or (e) Recreation activities. (Source—Planning Act 2016~~-~~)
Corner store	A single small store, no larger than 150m^2 in an accessible location that sells a limited variety of daily necessities to local residents and visitors.
Country living	Country living is an Area classification for the purposes of the Local government infrastructure plan only and includes the following zones: • Emerging communities; • Rural residential; and • Rural.
Defined flood event (DFE)	~~The defined flood event adopted by the Council~~A defined flood event (DFE) is the flood event adopted by a local government for the management of development in a particular locality.~~-~~ For the purposes of the Planning Scheme, the DFE is the 1 % Annual Exceedance Probability (AEP) event, equivalent to a 1 in 100 year average recurrence interval (ARI) event unless indicated otherwise.
Defined flood level (DFL)	The level to which it is reasonably expected flood waters may rise. (Source – Building Regulation 2006) A flood water level adopted by the Council that represents the defined flood event (DFE) at the development site. ~~The DFL is also the adopted flood level for the purpose of~~

Column 1 Term	Column 2 Definition
	~~section 13(1)(b) of the *Building Regulation 2006* and Queensland development code MP3.5 (Construction of buildings in flood hazard areas).~~ (Source—State Planning Policy July 2017)
Defined storm tide event (DSTE)	The event (measured in terms of the likelihood of reoccurrence) and associated inundation level adopted to manage the development of a particular area. The DSTE is the 1% annual exceedance probability (AEP) storm tide, equivalent to a 1 in 100 year average recurrence interval (ARI) ~~unless otherwise indicated for essential community service infrastructure.~~ storm event incorporating 2100 climate change projections, including: (a) sea level rise; and (b) an increase in cyclone intensity by 10 per cent relative to maximum potential intensity.
Demand unit	Demand units provide a standard of unit measurement to measure the level of demand for infrastructure. (Source—Planning Regulation 2017)
Development footprint	A part of the premises that the development relates to, including, for example, any part of the premises that, after the development is carried out, will be covered by— (a) buildings or structures measured to their outermost projection; (b) landscaping or open space; (c) facilities relating to the development; (d) on-site stormwater drainage or wastewater treatment; (e) a car park, road, access track or area used for vehicle movement; or (f) another area of disturbance. (Source— Planning Regulation 2017)
Display home	The temporary use of premises for: (a) display to the general public as a type of Accommodation activity that can be built; (b) the display of an Accommodation activity for the general public for some other business or commercial purpose including the promotion of a contest for which the premises are offered as a prize; or (c) the promotion and sale of land within a residential estate or other Accommodation activities within which it is located.
Domestic outbuilding	A non-habitable Class 10a building, as defined in the Building Code of Australia, that is ancillary to a residential use on the premises and is limited to a shed, garage and carport. (Source—Planning Regulation 2017)
Dwelling	A building or part of a building used or capable of being used as a self-contained residence that must include the following: (a) food preparation facilities; (b) a bath or shower; (c) a toilet and wash basin; and

Column 1 Term	Column 2 Definition
	(d) clothes washing facilities. (Source—Planning Regulation 2017)
Engineering work	All works associated with private or public car parking, footpath, sewer, water or stormwater infrastructure, excluding building, plumbing or drainage work.
Essential service uses	The provision of essential services, such as utility installations, telecommunications facilities, substations and major electricity infrastructure. (Source—Planning Regulation 2017)
Flood hazard area	An area that is ~~:~~ ~~(a)~~ identified as a flood hazard area on the Flood hazard o~~O~~verlay map~~–~~. ~~FH - 01:29 (Flood hazard overlay).; or~~ ~~if not identified on the Flood hazard overlay map, an area of land affected by the predicted 1 percent AEP flood event.~~ ~~(b)~~ (Source—State Planning Policy 2017)
Future State transport corridor	Is an area for: (a) a future busway corridor; (b) a future light rail corridor; (c) a future railway corridor; or (d) a future State-controlled road. (Source—Planning Regulation 2017)
Gross floor area	The total floor area of all storeys of a building (measured from the outside of the external walls or the centre of a common wall), other than areas used for the following: (a) building services, plant and equipment; (b) access between levels; (c) ground floor public lobby; (d) a mall; (e) the parking, loading and manoeuvring of motor vehicles; or (f) unenclosed private balconies, whether roofed or not. (Source—Planning Regulation 2017)
Ground level	The level of the natural ground; or level of the natural ground has been changed, the level as lawfully changed. (Source – Planning Regulation 2017)
Habitable room	A room used for normal domestic activities, and: (a) includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, and sunroom; but (b) excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes-drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods. (Source—Building Code of Australia 1996 – Volume One)
Hazardous chemical facility uses	The use of premises for a facility at which a prescribed hazardous chemical is present or likely to be present in a quantity that exceeds 10% of the chemical's threshold

Column 1 Term	Column 2 Definition
	quantity under the Work Health and Safety Regulation, Schedule 15. (Source – Planning Regulation 2017)
Hazardous chemicals flood hazard threshold	One of the following: (a) a hazardous chemical listed in schedule 11 of the *Work Health and Safety Regulation 2011* in a quantity that exceeds a threshold quantity stated in column 5 of schedule 11; (b) a chemical classified as hazardous to the aquatic environment under the Australian Dangerous Goods (ADG) code in the Acute I or Chronic I category that exceeds 2500 litres or kilograms; (c) a chemical classified as hazardous to the aquatic environment under the ADG code in the Chronic II category that exceeds 10,000 litres or kilograms; (d) a chemical classified as hazardous to the aquatic environment under the ADG code and assigned to Packing Group III that exceeds 10,000 litres or kilograms; or (e) a chemical classified as hazardous to the aquatic environment under the Globally Harmonised System of Classification and Labelling of Chemicals that exceeds 10,000 litres or kilograms. (Source—State Planning Policy 2017)
Hazardous material	A substance with potential to cause harm to persons, property or the environment because of one or more of the following: (a) the chemical properties of the substance; or (b) the physical properties of the substance; or (c) the biological properties of the substance. (Source – State Planning Policy July 2017)
Hazardous material in bulk	Hazardous materials as defined in the Dangerous Goods Safety Management Act 2001 (except that radioactive substances and infectious substances are excluded) in quantities that: (a) would be equivalent to or exceed the minimum quantities set out to determine a Large Dangerous Goods Location in the Dangerous Goods Safety Management Regulation; or (b) would require a licence for a magazine for the storage of an explosive under the Explosives Regulation 1955.
Heritage place	A Queensland heritage place or a local heritage place. A place that is: (a) identified as a Local heritage place on Overlay map - HER - 01:29 (Heritage overlay); or (b) listed on the Whitsunday Regional Council Local Heritage Register. (Source – Queensland Heritage Act 1992)

Column 1 Term	Column 2 Definition
Household	1 or more individuals who live in a dwelling with the intent of living together on a long-term basis and make common provision for food and other essentials for living. (Source—Planning Regulations 2017)
Industrial zones	Industrial zones is an Area classification for the purposes of the Local government infrastructure plan only and includes the following zones: • High impact industry; • Medium impact industry; • Low impact industry; • Special industry; • Waterfront and marine industry; and • Industry investigation.
Isolated areas	An area that is: (a) isolated solely by floodwaters; or (b) isolated by a combination of floodwaters and impassable terrain. (Source – State Planning Policy July 2017)
Landslide hazard	An area that is: ~~(a)~~(c) identified as slope greater than, or equal to 15% on Overlay map - LH - 01:29 (Landslide hazard overlay); or ~~(b)~~(d) if not identified on the Landslide hazard overlay map, an area of land with a slope greater than, or equal to 15%.
Landscaping works	Planning, design and implementation of all hardscape and softscape treatment of the surface of the land in all areas external to a building envelope. This may include both public and private open space areas and road reserve areas for the purposes of amenity and function.
~~Maritime development~~	~~Businesses, infrastructure, services or the like that relate to, or must be adjacent to tidal waters to function.~~
Minor building work	building work that increases the gross floor area of a building by no more than the lesser of the following— (a) 50m²; (b) an area equal to 5% of the gross floor area of the building. (Source—Planning Regulation 2017)
Minor electricity infrastructure	Development for a supply network or for private electricity works that form an extension of, or provide service connections to, properties from the network, if the network operates at standard voltages up to and including 66kV, other than development for— (a) a new zone substation or bulk supply substation; or (b) the augmentation of a zone substation or bulk supply substation that significantly increases the input or output standard voltage. (Source—Planning Regulation 2017)

Column 1 Term	Column 2 Definition
Minor marine development	An alteration, addition or extension to an existing maritime development where the floor area, including balconies, is less than five per cent of the building or 50m^2, whichever is the lesser.
Multi-unit uses	A premise that contains three or more ~~dwellings for separate households.~~ separate, short-term or long-term residences on the premises.
Net developable area	The area of the premises that is able to be developed; and is not subject to a development constraint, including, for example, a constraint relating to acid sulfate soils, flooding or slope. Note—for the purpose of a local government infrastructure plan, net developable area is usually measured in hectares, net developable hectares (net dev ha). (Source—~~&~~ Planning Regulations 2017)
Netserv plan	A distributor-retailer's plan about its water and wastewater networks and provision of water service and wastewater service pursuant to section 99BJ of the *South East Queensland water (Distribution and retail restructuring) Act 2009*. (Source—Planning Regulation 2017)
Non-resident workers	Means a person who— a) performs work as part of— i. a resource extraction project; ii. a project identified in a Planning Scheme as a major industry or infrastructure project; or iii. a rural use; and b) lives, for extended periods, in the locality of the project, but has a permanent residence elsewhere. (Source—Planning Regulation 2017)
Non-tidal artificial waterway	Means a constructed canal, constructed urban lake or other body of water that is designed to be: (a) a permanent body of open water; (b) ringed with hard edges or aquatic plants; (c) indirectly connected to tidal water (by a lock or weir or other system); or (d) an artificial lake (generally land locked without a direct connection to tidal waterways). (State Planning Policy Guidance Material 2017)
Obstacle limitation surface	The surface that defines the height limit for obstacles located on land surrounding an airport and includes the obstacle limitation surface area and associated obstacle limitation surface contours, as shown on the mapping. (Source – State Planning Policy July 2017)
Outermost projection	The outermost projection of a building or structure, means the outermost part of the building or structure, other than a part that is a retractable blind, a fixed screen, a rainwater fitting, an ornamental attachment. (Source—Planning Regulation 2017)

Column 1 Term	Column 2 Definition
Planning assumptions	Assumptions about the type, scale, location and timing of future growth in the local government area. (Source – Planning Regulation 2017)
Plot ratio	The ratio of the gross floor area of a building on a site to the area of the site. (Source—Planning Regulation 2017)
Projection area(s)	A part of the local government area for which the local government has carried out demand growth projection. (Source—Planning Regulation 2017)
Rear lot	A lot that has access to a road only by means of an access handle that forms part of the lot.
Secondary dwelling	A dwelling, whether attached or detached, that is used in conjunction with, and subordinate to, a dwelling house on the same lot. (Source—Planning Regulation 2017)
Semi-public space	A privately owned space accessible to the general public. Examples include private or public areas managed by a private entity but open to the public for use such as shops, internal dining, al-fresco dining or beer gardens.
Sensitive land use	Any of the following defined uses— (a) caretaker's accommodation; (b) a childcare centre; (c) a community care centre; (d) a community residence; (e) a detention facility; (f) a dual occupancy; (g) a dwelling house; (h) a dwelling unit; (i) an educational establishment; (j) a health care service; (k) a hospital; (l) a hotel, to the extent the hotel provides accommodation for tourists or travellers; (m) a multiple dwelling; (n) non-resident workforce accommodation; (o) a relocatable home park; (p) a residential care facility; (q) a resort complex; (r) a retirement facility; (s) rooming accommodation; (t) rural workers' accommodation; (u) short-term accommodation; (v) a supervised accommodation service; or (w) a tourist park. (Source – Planning Regulation 2017)
Service catchment	An area serviced by an infrastructure network. (Source—Planning Regulation 2017)

Column 1 Term	Column 2 Definition
Setback	For a building or structure, the shortest distance measured horizontally from the outer most projection of a building or structure to the vertical projection of the boundary of the lot where the building or structure is. (Source — Planning Regulation 2017)
Short-term accommodation (Dwelling)	The use of one or two, existing or proposed Dwellings for short-term accommodation for tourists for a temporary period of time not exceeding three consecutive months.
Significant attributes	The significant attributes of a heritage place or area include the streetscape, heritage character, landscape, topography, landmarks and views.
Site	The land that the development is to be carried out on. Examples— a) If development is to be carried out on part of a lot, the site of the development is that part of the lot. b) If development is to be carried out on part of 1 lot and part of an adjoining lot, the site of the development is both of those parts. (Source—Planning Regulation 2017)
Site cover	The portion of the site, expressed as a percentage, that will be covered by a building or structure, measured to its outermost projection, after the development is carried out, other than a building or structure, or part of a building or structure, that is— (a) in a landscaped or open space area, including, for example, a gazebo or shade structure; (b) a basement that is completely below ground level and used for car parking; (c) the eaves of a building; or (d) a sun shade. (Source—Planning Regulation 2017)
Social housing	Housing for a residential use, other than crisis accommodation, that is either provided by: (a) the State as public housing, as defined in the *Planning Regulation 2017*; or (b) an entity other than the State (e.g. a not-for-profit organisation or local government) as community housing. (Source—State Planning Policy July 2017)
Solar panel farm	Is a group of photovoltaic solar arrays and associated infrastructure, producing energy at scale, mainly for use off-site, but does not include solar thermal farms.
Storey	A space within a building between 2 floor levels, or a floor level and a ceiling or roof, other than— (a) a space containing only a lift shaft, stairway or meter room, a space containing only a bathroom, shower room, laundry, toilet or other sanitary compartment, or a combination of the above; (b) a basement with a ceiling that is not more than 1m above ground level; and includes a messanine; and a roofed structured that is on, or part of, a rooftop, if the

Column 1 Term	Column 2 Definition
	structure does not only accommodate building plant and equipment. (Source—Planning Regulation 2017)
Stream order~~Stream protection zone~~	A watercourse shown on the Biodiversity, waterways and wetlands overlay map – Regulated vegetation (watercourse) and classified as stream order 1 to 5 under the Strahler stream order classification system.~~An area along a shoreline, wetland, or stream where development is restricted or prohibited. The primary function of a protection zone is to physically protect and separate a stream, lake or wetland from future disturbance or encroachment.~~ (Source – Planning Regulation 2017)
Temporary use	A use that— (a) is carried out on a non-permanent basis; and (b) does not involve the construction of, or significant changes to, permanent buildings or structures. (Source—Planning Regulation 2017)
Total use area (TUA)	The sum of all the areas (exclusive of all walls and columns) of all storeys of a building which are used or intended for use for a particular purpose, plus any other area of a site which is used, or intended to be used, for the same purpose. The term does not include: (a) areas (inclusive of all walls and columns) of any lift wells, lift motor rooms, air conditioning and associated mechanical or electrical plant and equipment rooms; (b) areas of any staircases; (c) areas of any common foyer where these are not being used for commercial or retail purposes; (d) areas of any public toilets; (e) areas of any staff toilets, washrooms, recreation areas and lunchrooms, provided that such areas are not open to persons other than staff; and (f) areas used for the access, parking and associated manoeuvring of motor vehicles.
Ultimate development	The likely extent of development anticipated to be achieved when a site (or projection area or infrastructure service catchment) is fully developed. (Source—Planning Regulation 2017)
Urban area	Means: (a) an area identified in a gazette notice by the chief executive as an urban area; or (b) if no gazette notice has been published—an area identified as an area intended specifically for urban purposes, including future urban purposes (but not rural residential or future rural residential purposes) on a map in a Planning Scheme that— (i) identifies the areas using cadastral boundaries; and (ii) is used exclusively or primarily to assess development applications. (Source—Planning Regulation 2017)

Column 1 Term	Column 2 Definition
Urban purposes	A purpose for which land is used in cities or towns— (a) including residential, industrial, sporting, recreation and commercial purposes; but (b) not including rural residential, environmental, conservation, rural, natural or wilderness area purposes. (Source—Planning Regulation 2017)
Urban services	Public services and public facilities at an intensity historically and typically provided in cities. Urban services specifically include: (a) sanitary sewer systems; (b) storm drainage systems; (c) domestic water systems; (d) street cleaning services; (e) fire and police protection services; (f) public transit services; and (g) other public utilities associated with urban areas and normally not associated with rural areas.
Vulnerable uses	Includes a childcare centre, community care centre, community residence, community use, detention facility, educational establishment, emergency services, hospital, non-resident workforce accommodation, relocatable home park, residential care facility, retirement facility, rooming accommodation, rural workers' accommodation and tourist park. (Source—State Planning Policy 2017)

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Table SC 2.1.1 Map index

Schedule 2 Mapping

SC2.1 Map index

The table below lists any strategic framework, zoning, local plan and overlay maps applicable to the planning scheme area

Editor's note—Mapping for the LGIP is contained in Schedule 3 (LGIP mapping and supporting material).

Table SC 2.1.1 Map index

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Strategic framework maps		
SFM– 01:05	Strategic framework map	
Zone maps		
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ABLPT	Airlie Beach Local Plan Transport Map	
ALLPP	Airlie Beach Local Plan Boundary and Precinct Map	
BLPBP	Bowen Local Plan Boundary and Precinct Map	
HILPP – 01	Hamilton island local plan: Precinct PlanHeights plan	
Overlay maps		
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AL – 01:29	Agriculture land overlay	
AE – 01:02	Airport environs overlay	
BWW	Biodiversity, waterways and wetlands overlay	
BH	Building heights overlay	
BH – 01:29	Bushfire hazard overlay	
CP1 – 01:14	Coastal protection hazard overlay: Storm tide inundation	
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ES - 01:29	Environmental significance overlay	
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FH – 01:29	Flood hazard overlay	
HER – 01:29	Heritage overlay	
INF1 – 01:29	Infrastructure overlay: Transport infrastructure	
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WW1 - 01:29	Waterways and wetlands overlay	
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SC2.2 Overview map

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Table SC3.2.2 Sewerage network schedule of works

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Local government infrastructure plan map – PFTI SWN – 01:05 (Stormwater network plans for trunk infrastructure map)

Local government infrastructure plan map – PFTI TN – 01:05 (Transport network plans for trunk infrastructure map)

Local government infrastructure plan map – PFTI PCFN – 01:06 (Parks and land for community facilities network plans for trunk infrastructure map)

Schedule 3 Local government infrastructure plan mapping and tables

SC3.1 Planning assumption tables

Table SC 3.1.1 Existing and projected population

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected population				
		2016	2021	2026	2031	Ultimate development
Abbot Point	Single dwellings	1,491	801	801	801	809
	Multiple dwellings	92	50	50	50	51
	Other dwellings	277	149	149	149	157
	Total	1,860	1,000	1,000	1,000	1,017
Bowen North	Single dwellings	6,113	6,109	6,152	6,171	6,617
	Multiple dwellings	2,136	2,254	2,395	2,531	2,762
	Other dwellings	21	27	33	38	45
	Total	8,270	8,390	8,580	8,740	9,425
Bowen South	Single dwellings	828	1,124	1,452	1,769	7,211
	Multiple dwellings	287	399	526	654	770
	Other dwellings	5	8	12	17	110
	Total	1,120	1,530	1,990	2,440	8,091
Collinsville	Single dwellings	1,345	1,324	1,352	1,362	2,914
	Multiple dwellings	816	820	854	878	901
	Other dwellings	799	796	824	841	858
	Total	2,960	2,940	3,030	3,080	4,673
Balance former Bowen Shire	Single dwellings	1,021	1,020	1,004	1,003	994
	Multiple dwellings	194	196	194	196	196
	Other dwellings	214	214	211	211	210
	Total	1,430	1,430	1,410	1,410	1,400
Whitsunday Islands	Single dwellings	127	128	129	130	132
	Multiple dwellings	622	612	603	593	586
	Other dwellings	1,091	1,109	1,128	1,147	1,172
	Total	1,840	1,850	1,860	1,870	1,890
Jubilee Pocket / Shute Harbour	Single dwellings	1,817	2,219	2,639	3,116	4,792
	Multiple dwellings	785	1,002	1,246	1,537	1,843
	Other dwellings	8	19	35	57	100
	Total	2,610	3,240	3,920	4,710	6,735
Cannonvale / Airlie Beach	Single dwellings	4,384	5,161	6,024	6,859	15,059
	Multiple dwellings	2,869	3,365	3,913	4,438	7,102
	Other dwellings	27	34	43	53	81
	Total	7,280	8,560	9,980	11,350	22,242

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected population				
		2016	2021	2026	2031	Ultimate development
Proserpine	Single dwellings	2,985	3,056	3,124	3,197	3,260
	Multiple dwellings	647	703	761	823	886
	Other dwellings	18	22	25	29	231
	Total	3,650	3,780	3,910	4,050	4,377
Balance former Whitsunday Shire	Single dwellings	4,893	5,157	5,457	5,737	5,989
	Multiple dwellings	454	485	521	556	588
	Other dwellings	13	17	22	28	33
	Total	5,360	5,660	6,000	6,320	6,610
Inside priority infrastructure area (total)	Single dwellings	17,151	18,646	20,438	22,205	39,853
	Multiple dwellings	6,107	7,062	8,037	9,028	14,265
	Other dwellings	1,696	1,712	1,804	1,893	1,425
	Total	24,953	27,420	30,279	33,127	55,542
Outside priority infrastructure area (total)	Single dwellings	7,853	7,452	7,695	7,939	7,924
	Multiple dwellings	2,796	2,823	3,026	3,228	1,421
	Other dwellings	777	684	679	677	1,572
	Total	11,426	10,960	11,400	11,844	10,917
Whitsunday Region	Single dwellings	25,005	26,098	28,134	30,144	47,777
	Multiple dwellings	8,903	9,885	11,063	12,256	15,686
	Other dwellings	2,473	2,396	2,483	2,570	2,997
	Total	36,380	38,380	41,680	44,970	66,460

Table SC 3.1.2 Existing and projected employees

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected employees				
		2016	2021	2026	2031	Ultimate development
Abbot Point	Retail	20	21	22	22	23
	Commercial	75	78	80	83	85
	Industrial	131	166	200	234	269
	Community	38	40	41	43	44
	Other	161	182	203	224	245
	Total	425	486	546	607	667
Bowen North	Retail	624	634	643	653	663
	Commercial	1,030	1,075	1,120	1,165	1,210
	Industrial	798	816	834	852	870
	Community	529	563	596	629	662
	Other	923	914	905	896	887
	Total	3,903	4,000	4,097	4,194	4,291
Bowen South	Retail	45	50	55	59	64
	Commercial	87	91	94	97	100
	Industrial	61	63	64	66	68
	Community	41	45	49	53	57
	Other	92	100	108	116	124
	Total	327	348	369	391	412
Collinsville	Retail	101	103	105	108	110
	Commercial	194	198	202	206	210
	Industrial	125	153	181	209	238
	Community	123	124	126	127	129
	Other	146	160	174	188	202
	Total	689	739	788	838	888
Balance former Bowen Shire	Retail	57	58	59	59	60
	Commercial	93	92	92	91	90
	Industrial	37	32	27	22	18
	Community	39	37	35	33	31
	Other	1,442	1,567	1,692	1,817	1,941
	Total	1,668	1,786	1,904	2,022	2,140
Whitsunday Islands	Retail	166	174	181	189	197
	Commercial	701	740	778	817	855
	Industrial	9	9	9	9	10
	Community	31	34	36	38	40
	Other	33	36	39	43	46
	Total	940	992	1,044	1,096	1,148
Jubilee Pocket / Shute Harbour	Retail	235	247	259	270	282
	Commercial	378	401	424	447	470
	Industrial	116	118	119	121	123

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected employees				
		2016	2021	2026	2031	Ultimate development
	Community	77	91	104	117	130
	Other	149	153	156	160	164
	Total	955	1,008	1,061	1,115	1,168
Cannonvale / Airlie Beach	Retail	785	906	1,027	1,148	1,269
	Commercial	1,565	1,924	2,283	2,643	3,002
	Industrial	575	685	795	905	1,015
	Community	580	674	768	863	957
	Other	542	596	649	702	755
	Total	4,047	4,785	5,522	6,260	6,998
Proserpine	Retail	233	235	238	240	243
	Commercial	556	576	596	617	637
	Industrial	393	404	415	426	437
	Community	301	319	337	355	374
	Other	305	311	317	323	329
	Total	1,787	1,845	1,903	1,961	2,019
Balance former Whitsunday Shire	Retail	162	168	174	180	186
	Commercial	454	480	506	532	559
	Industrial	245	245	245	245	245
	Community	286	298	310	323	335
	Other	1,072	1,067	1,063	1,058	1,054
	Total	2,218	2,258	2,298	2,338	2,378
Inside priority infrastructure area (total)	Retail	1,680	1,819	1,956	2,095	2,233
	Commercial	3,551	3,962	4,374	4,788	5,205
	Industrial	1,722	1,884	2,047	2,210	2,373
	Community	1,415	1,558	1,701	1,845	1,989
	Other	3,365	3,564	3,759	3,952	4,145
	Total	11,731	12,787	13,837	14,889	15,945
Outside priority infrastructure area (total)	Retail	749	777	806	835	864
	Commercial	1,583	1,694	1,801	1,908	2,014
	Industrial	768	806	843	881	918
	Community	631	666	700	735	770
	Other	1,500	1,523	1,548	1,575	1,604
	Total	5,230	5,466	5,698	5,934	6,169
Whitsunday Region	Retail	2,428	2,595	2,762	2,929	3,096
	Commercial	5,133	5,654	6,175	6,696	7,217
	Industrial	2,489	2,689	2,890	3,090	3,290
	Community	2,045	2,223	2,401	2,580	2,758
	Other	4,864	5,085	5,306	5,527	5,748
	Total	16,959	18,246	19,534	20,821	22,109

Table SC 3.1.3 Planned density and demand generation rate for a trunk infrastructure network

Column 1 Area classification	Column 2 LGIP development type	Column 3 Planned density		Column 4 Demand generation rate for a trunk infrastructure network			
		Non-residential plot ratio (m² of GFA/dev ha)	Residential density (dwellings/dev ha)	Water supply network (EP/dev ha)	Sewerage network (EP/dev ha)	Transport network (vpd/dev ha)	Parks and land for community facilities network (ha/1000 persons)
Residential development							
Low density	Single dwellings	Not applicable	10	28	28	90	3.5
Low medium density	Single dwellings Multiple dwellings	Not applicable	20	48	48	110	3.5
Mixed use[1]	Multiple dwellings	Not applicable	30	57	57	87	3.5
Tourist Accommodation[1]	Multiple dwellings Other dwellings	Not applicable	8	38	38	58	3.5
Country living	Single dwellings Multiple dwellings Other dwellings	Not applicable	2	Not applicable	Not applicable	18	3.5
Non-residential development and mixed development							
Centre zones	Retail Commercial	4000	Not applicable	88	52	4840	Not applicable
Industrial zones	Industry	2500	Not applicable	32.5	17.5	112.5	Not applicable
Community facilities	Community purpose	2000	Not applicable	22	14	90	Not applicable
Mixed use[1]	Retail Commercial	4000	Not applicable	88	52	4840	Not applicable
Tourist accommodation[1]	Retail Commercial	100	Not applicable	33	27	1800	Not applicable

Note—1. Table SC 3.1.3~~Table SC 3.1.3~~ Column 1 Mixed use and Tourist accommodation development may generate residential or non-residential demand or both. Where development has elements of both residential and non-residential demand generation rates must be applied accumulatively considering the nature of all uses.

Table SC 3.1.4 Existing and projected residential dwellings

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected residential dwellings				
		2016	2021	2026	2031	Ultimate development
Abbot Point	Single dwellings	537	292	294	297	303
	Multiple dwellings	59	32	32	32	32
	Other dwellings	277	149	149	149	157
	Total	873	473	475	478	492
Bowen North	Single dwellings	2,416	2,434	2,471	2,498	2,701
	Multiple dwellings	1,180	1,246	1,323	1,398	1,526
	Other dwellings	21	27	33	38	45
	Total	3,617	3,707	3,827	3,934	4,271
Bowen South	Single dwellings	279	382	499	613	2,519
	Multiple dwellings	172	237	311	385	450
	Other dwellings	5	8	12	17	110
	Total	456	627	822	1,015	3,079
Collinsville	Single dwellings	587	581	596	603	1,294
	Multiple dwellings	396	398	415	426	438
	Other dwellings	799	796	824	841	858
	Total	1,782	1,775	1,835	1,870	2,590
Balance former Bowen Shire	Single dwellings	404	406	403	406	406
	Multiple dwellings	92	93	93	93	93
	Other dwellings	214	214	211	211	210
	Total	710	713	707	710	709
Whitsunday Islands	Single dwellings	50	51	52	52	54
	Multiple dwellings	295	290	286	281	278
	Other dwellings	1,091	1,109	1,128	1,147	1,172
	Total	1,436	1,450	1,466	1,480	1,504
Jubilee Pocket / Shute Harbour	Single dwellings	721	887	1,064	1,267	1,964
	Multiple dwellings	429	548	681	840	1,007
	Other dwellings	8	19	35	57	100
	Total	1,158	1,454	1,780	2,164	3,071
Cannonvale / Airlie Beach	Single dwellings	1,713	2,032	2,391	2,744	6,073
	Multiple dwellings	1,479	1,734	2,017	2,288	3,661
	Other dwellings	27	34	43	53	81
	Total	3,219	3,800	4,451	5,085	9,815
Proserpine	Single dwellings	1,166	1,203	1,240	1,279	1,315
	Multiple dwellings	412	448	485	524	564
	Other dwellings	18	22	25	29	231
	Total	1,596	1,673	1,750	1,832	2,110
Balance former Whitsunday Shire	Single dwellings	1,897	2,015	2,148	2,277	2,395
	Multiple dwellings	238	254	273	291	308
	Other dwellings	13	17	22	28	33

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected residential dwellings				
		2016	2021	2026	2031	Ultimate development
	Total	2,148	2,286	2,443	2,596	2,736
Inside priority infrastructure area (total)	Single dwellings	6,513	7,154	7,910	8,663	15,866
	Multiple dwellings	3,168	3,674	4,193	4,721	7,645
	Other dwellings	1,649	1,667	1,760	1,850	1,425
	Total	11,330	12,496	13,864	15,234	24,936
Outside priority infrastructure area (total)	Single dwellings	3,257	3,128	3,248	3,372	3,158
	Multiple dwellings	1,584	1,606	1,722	1,838	711
	Other dwellings	824	729	723	720	1,572
	Total	5,665	5,463	5,692	5,930	5,441
Whitsunday Region	Single dwellings	9,770	10,282	11,157	12,035	19,024
	Multiple dwellings	4,752	5,280	5,914	6,559	8,357
	Other dwellings	2,473	2,396	2,483	2,570	2,997
	Total	16,995	17,958	19,554	21,164	30,378

Table SC 3.1.5 Existing and projected non-residential floor space

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected non-residential floor space (m^2 GFA)				
		2016	2021	2026	2031	Ultimate development
Abbot Point	Retail	629	659	688	718	747
	Commercial	1,501	1,552	1,602	1,653	1,703
	Industrial	15,779	19,899	24,018	28,137	32,256
	Community	2,671	2,778	2,884	2,991	3,098
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	20,580	24,888	29,192	33,499	37,804
Bowen North	Retail	19,963	20,275	20,586	20,898	21,210
	Commercial	20,592	21,493	22,394	23,294	24,195
	Industrial	95,724	97,884	100,044	102,204	104,364
	Community	37,057	39,378	41,699	44,019	46,340
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	173,337	179,030	184,723	190,416	196,109
Bowen South	Retail	1,441	1,593	1,745	1,896	2,048
	Commercial	1,749	1,810	1,871	1,931	1,992
	Industrial	7,319	7,517	7,715	7,914	8,112
	Community	2,890	3,157	3,424	3,691	3,959
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	13,400	14,078	14,755	15,433	16,111
Collinsville	Retail	3,231	3,303	3,375	3,448	3,520
	Commercial	3,889	3,965	4,042	4,118	4,195
	Industrial	15,008	18,381	21,754	25,127	28,500
	Community	8,575	8,680	8,785	8,890	8,995
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	30,702	34,329	37,956	41,583	45,210
Balance former Bowen Shire	Retail	1,836	1,855	1,875	1,894	1,914
	Commercial	1,858	1,844	1,830	1,817	1,803
	Industrial	4,408	3,834	3,260	2,686	2,112
	Community	2,709	2,574	2,439	2,305	2,170
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	10,810	10,107	9,404	8,701	7,999
Whitsunday Islands	Retail	5,310	5,556	5,803	6,049	6,296
	Commercial	14,020	14,792	15,564	16,335	17,107
	Industrial	1,100	1,113	1,126	1,139	1,152
	Community	2,196	2,351	2,505	2,660	2,814
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	22,626	23,811	24,997	26,183	27,369
Jubilee Pocket / Shute Harbour	Retail	7,531	7,906	8,280	8,655	9,030
	Commercial	7,551	8,011	8,471	8,931	9,391
	Industrial	13,907	14,105	14,303	14,502	14,700

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected non-residential floor space (m^2 GFA)				
		2016	2021	2026	2031	Ultimate development
	Community	5,417	6,338	7,259	8,179	9,100
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	34,406	36,360	38,314	40,268	42,221
Cannonvale / Airlie Beach	Retail	25,126	28,993	32,859	36,726	40,592
	Commercial	31,294	38,482	45,669	52,857	60,044
	Industrial	68,970	82,181	95,391	108,602	121,812
	Community	40,571	47,173	53,775	60,377	66,980
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	165,962	196,829	227,695	258,561	289,428
Proserpine	Retail	7,448	7,530	7,612	7,694	7,776
	Commercial	11,119	11,523	11,927	12,331	12,735
	Industrial	47,121	48,436	49,750	51,065	52,380
	Community	21,062	22,333	23,604	24,874	26,145
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	86,750	89,822	92,893	95,965	99,036
Balance former Whitsunday Shire	Retail	5,182	5,370	5,559	5,747	5,936
	Commercial	9,078	9,601	10,124	10,647	11,170
	Industrial	29,344	29,370	29,396	29,422	29,448
	Community	20,024	20,876	21,728	22,580	23,433
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	63,627	65,217	66,807	68,397	69,987
Inside priority infrastructure area (total)	Retail	63,065	67,927	72,775	77,614	82,445
	Commercial	83,321	92,495	101,687	110,894	120,115
	Industrial	242,434	263,988	285,527	307,057	328,582
	Community	116,213	127,314	138,419	149,528	160,641
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	505,033	551,723	598,407	645,094	691,784
Outside priority infrastructure area (total)	Retail	14,631	15,112	15,607	16,111	16,624
	Commercial	19,330	20,578	21,807	23,020	24,220
	Industrial	56,244	58,732	61,231	63,739	66,255
	Community	26,961	28,325	29,684	31,039	32,392
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	117,166	122,748	128,328	133,909	139,491
Whitsunday Region	Retail	77,696	83,039	88,382	93,725	99,069
	Commercial	102,652	113,073	123,494	133,914	144,336
	Industrial	298,678	322,720	346,758	370,797	394,837
	Community	143,174	155,638	168,103	180,567	193,033
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	622,199	674,471	726,735	779,003	831,275

Table 3.1.6 Existing and projected demand for the water supply network

Column 1 Service catchment[1]	Column 2 LGIP development category	Column 3 Existing and projected demand (EP)				
		2016	2021	2026	2031	Ultimate development
Catchment 1- Town of Whitsunday	Residential	10,847	13,021	15,440	17,962	31,853
	Non-residential	3,166	3,700	4,234	4,769	5,302
	Total	14,012	16,721	19,674	22,730	37,155
Catchment 2 - Bowen	Residential	10,124	10,789	11,590	12,353	18,513
	Non-residential	2,743	2,835	2,927	3,020	3,112
	Total	12,866	13,624	14,518	15,373	21,625
Catchment 3 - Collinsville	Residential	4,157	4,140	4,279	4,360	6,262
	Non-residential	446	494	543	591	639
	Total	4,603	4,635	4,822	4,950	6,901
Catchment 4 - Proserpine	Residential	4,227	4,425	4,623	4,834	5,414
	Non-residential	1,253	1,294	1,336	1,378	1,420
	Total	5,480	5,719	5,959	6,212	6,834
Inside priority infrastructure area (total)	Residential	29,355	32,375	35,933	39,508	62,042
	Non-residential	7,607	8,324	9,040	9,757	10,473
	Total	36,962	40,699	44,973	49,265	72,515
Outside priority infrastructure area (total)	Residential	3,418	3,218	3,279	3,347	3,623
	Non-residential	1,818	1,898	1,978	2,058	2,138
	Total	5,236	5,116	5,257	5,404	5,761
Whitsunday Region	Residential	32,773	35,593	39,212	42,855	65,665
	Non-residential	9,425	10,222	11,018	11,815	12,611
	Total	42,198	45,815	50,230	54,669	78,276

Note—2. Table SC 3.1.6 Column 1 The service catchments for the water supply network are identified on Local government infrastructure plan maps – PFTI WN – 01A:01E (LGIP Plans for Trunk Infrastructure Water Network Catchment Map) in Schedule 3 (local government infrastructure mapping and tables).

Table 3.1.7 Existing and projected demand for the sewerage network

Column 1 Service catchment[2]	Column 2 LGIP development category	Column 3 Existing and projected demand (EP)				
		2016	2021	2026	2031	Ultimate development
Catchment 1 - Town of Whitsunday	Residential	10,847	13,021	15,440	17,962	31,853
	Non-residential	1,837	2,147	2,458	2,768	3,078
	Total	12,684	15,168	17,898	20,730	34,931
Catchment 2 - Bowen	Residential	10,124	10,789	11,590	12,353	18,513
	Non-residential	1,570	1,625	1,679	1,733	1,787
	Total	11,694	12,413	13,269	14,086	20,300
Catchment 3 - Collinsville	Residential	4,157	4,140	4,279	4,360	6,262
	Non-residential	258	284	310	336	363
	Total	4,415	4,424	4,589	4,696	6,625
Catchment 4 - Proserpine	Residential	4,227	4,425	4,623	4,834	5,414
	Non-residential	719	743	767	792	816
	Total	4,946	5,168	5,391	5,625	6,231
Inside priority infrastructure area (total)	Residential	29,355	32,375	35,933	39,508	62,042
	Non-residential	4,384	4,799	5,214	5,630	6,045
	Total	33,739	37,174	41,147	45,137	68,087
Outside priority infrastructure area (total)	Residential	3,418	3,218	3,279	3,347	3,623
	Non-residential	1,054	1,099	1,144	1,189	1,234
	Total	4,472	4,317	4,424	4,536	4,857
Whitsunday Region	Residential	32,773	35,593	39,212	42,855	65,665
	Non-residential	5,437	5,898	6,358	6,819	7,279
	Total	38,211	41,491	45,570	49,674	72,945

Note—3. Table SC 3.1.7 Column 1 The service catchments for the sewer network are identified on Local government infrastructure plan maps – PFTI SN – 01A:01E (LGIP Plans for Trunk Infrastructure Sewer Network Catchment Map) in Schedule 3 (local government infrastructure mapping and tables).

Table 3.1.8 Existing and projected demand for the stormwater network

Column 1 Service catchment[3]	Column 2 LGIP development category	Column 3 Existing and projected demand (imp ha)				
		2016	2021	2026	2031	Ultimate development
Catchment 1 - Town of Whitsunday	Residential					
	Non-residential					
	Total					
Catchment 2 - Bowen	Residential					
	Non-residential					
	Total					
Catchment 3 - Collinsville	Residential					
	Non-residential					
	Total					
Catchment 4 - Proserpine	Residential					
	Non-residential					
	Total					
Inside priority infrastructure area (total)	Residential					
	Non-residential					
	Total					
Outside priority infrastructure area (total)	Residential					
	Non-residential					
	Total					
Whitsunday Region	Residential					
	Non-residential					
	Total					

Due to incomplete network information, a table of existing and projected demand for the stormwater network is unable to be included.

Recommendations identified as a result of future network planning is anticipated to be incorporated into future amendments to the LGIP.

Note—4. Table SC 3.1.8 Column 1 The service catchments for the stormwater network are identified on Local government infrastructure plan maps – PFTI SWN – 01A:01E (LGIP Plans for Trunk Infrastructure Stormwater Network Catchment Map) in Schedule 3 (local government infrastructure mapping and tables).

Table SC 3.1.9 Existing and projected demand for the transport network

Column 1 Service catchment[4]	Column 2 LGIP development category	Column 3 Existing and projected demand (vpd)				
		2016	2021	2026	2031	Ultimate development
Catchment 1 - Town of Whitsunday	Residential	29,645	35,567	42,130	48,960	88,532
	Non-residential	111,458	130,694	149,928	169,163	188,398
	Total	141,103	166,261	192,058	218,123	276,930
Catchment 2 - Bowen	Residential	28,068	30,004	32,335	34,554	53,733
	Non-residential	75,608	78,708	81,805	84,903	88,002
	Total	103,676	108,712	114,140	119,457	141,735
Catchment 3 - Collinsville	Residential	12,307	12,251	12,655	12,886	18,975
	Non-residential	13,149	13,527	13,907	14,286	14,667
	Total	25,456	25,778	26,562	27,172	33,642
Catchment 4 - Proserpine	Residential	12,284	12,826	13,372	13,949	15,081
	Non-residential	34,063	35,284	36,503	37,721	38,939
	Total	46,347	48,110	49,875	51,670	54,020
Catchment 5 – Non-urban Balance	Residential	42,938	41,524	43,378	45,252	50,323
	Non-residential	61,809	63,644	65,477	67,310	69,145
	Total	104,747	105,168	108,855	112,562	119,468
Inside priority infrastructure area (total)	Residential	82,303	90,647	100,491	110,350	176,321
	Non-residential	234,278	258,213	282,143	306,073	330,006
	Total	316,581	348,860	382,634	416,423	506,327
Outside priority infrastructure area (total)	Residential	42,938	41,524	43,378	45,252	50,323
	Non-residential	61,809	63,644	65,477	67,310	69,145
	Total	104,747	105,168	108,855	112,562	119,468
Whitsunday Region	Residential	125,241	132,171	143,869	155,601	226,644
	Non-residential	296,087	321,857	347,620	373,383	399,151
	Total	421,328	454,028	491,489	528,984	625,795

Note—5. Table SC 3.1.9 Column 1 The service catchments for the transport network are identified on Local government infrastructure plan map – PFTI TN – 01A:1E (LGIP Plans for Trunk Infrastructure Transport Network Catchment Map) in Schedule 3 (local government infrastructure mapping and tables).

Table SC 3.1.10 Existing and projected demand for the parks and land for community facilities network

Column 1 Service catchment[5]	Column 2 LGIP development category	Column 3 Existing and projected demand (ha/1000 persons)				
		2016	2021	2026	2031	Ultimate development
Catchment 1 - Town of Whitsunday	Residential	33.3	39.9	47.1	54.5	99.0
	Non-residential	0	0	0	0	0
	Total	33.3	39.9	47.1	54.5	99.0
Catchment 2 - Bowen	Residential	31.6	33.4	35.6	37.7	58.7
	Non-residential	0	0	0	0	0
	Total	31.6	33.4	35.6	37.7	58.7
Catchment 3 - Collinsville	Residential	9.6	9.4	9.6	9.6	13.7
	Non-residential	0	0	0	0	0
	Total	9.6	9.4	9.6	9.6	13.7
Catchment 4 - Proserpine	Residential	12.8	13.2	13.7	14.2	15.3
	Non-residential	0	0	0	0	0
	Total	12.8	13.2	13.7	14.2	15.3
Catchment 5 – Non-urban Balance	Residential	40.0	38.4	39.9	41.5	46.0
	Non-residential	0	0	0	0	0
	Total	40.0	38.4	39.9	41.5	46.0
Inside priority infrastructure area (total)	Residential	87.3	96.0	106.0	115.9	186.7
	Non-residential	0	0	0	0	0
	Total	87.3	96.0	106.0	115.9	186.7
Outside priority infrastructure area (total)	Residential	40.0	38.4	39.9	41.5	46.0
	Non-residential	0.0	0.0	0.0	0.0	0.0
	Total	40.0	38.4	39.9	41.5	46.0
Whitsunday Region	Residential	127.3	134.3	145.9	157.4	232.6
	Non-residential	0	0	0	0	0
	Total	127.3	134.3	145.9	157.4	232.6

Note—6. Table SC 3.1.10 Column 1 The service catchments for the parks and land for community facilities network are identified on Local government infrastructure plan map – PFTI PCFN – 01A:1E (LGIP Plans for Trunk Infrastructure Parks and Land for Community Facilities Network Catchment Map) in Schedule 3 (local government infrastructure mapping and tables).

SC3.2 Schedules of works

Table SC3.2.1 Water supply network schedule of works

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost[7]
W1	New DN500 Main 9050m long from Lot 104 N25576 Proserpine Water Treatment Plant to Lot 22 RP882994 Coastal Water Treatment Plant, Proserpine to Mount Marlow	2017	$15,542,325
W2	Upgrade DN450 Main 333m long from Proserpine high level tank to existing DN250 in Faust St, Proserpine (replacing WM_P_964; WM_P_981; WM_P_1078; WM_P_971; & WM_P_852)	2017	$408,156
W3	New DN250 Main 130m long from Faust Street to Ann Street, Proserpine (joining WM_P_971 to WM_P_837)	2017	$111,644
W4	New Water Intake System for Bowen Water Treatment Plant at Proserpine River - Up River Road, Crystal Brook	2017	$1,130,000
W5	Upgrade Booster Pump Station No.2 capacity to 200L/s at Lot 1 RP739344 Coastal Water Treatment Plant, Mount Marlow (WCGR20)	2017/2018	$581,950
W6	New DN200 Main 100m long connecting Anzac Road to Hinschen Street (joining WM_P_844 to WM_P_1346 under railway line), Proserpine	2022-2026	$200,688
W7	One new 12ML Reservoir including two new DN500 Mains 790m long each from new Reservoir to existing trunk Main at Shute Harbour Road and 60mx100m Land (6000m²) on Lot 9 SP218209, Cannonvale	2022-2026	$13,288,800
W8	**LGIP ID W8 has been left intentionally blank**		
W9a	Upgrade DN200 Main 164m long in Bruce Highway from Main Street to Fuljames Street, Proserpine (replacing WM_P_925)	2022-2026	$151,951
W9b	New DN200 Main 186m long from Bruce Highway to Horsford Place, Proserpine (joining WM_P_925 to WM_P_1048)	2022-2026	$160,889
W10	Upgrade DN200 Main 190m long in Stanbury Street from Holmes Street to Ruge Street, Proserpine (replacing WM_P_872; & WM_P_874)	2022-2026	$171,331
W11	Upgrade DN200 Main 368m long in Ridge View Road, Cannonvale (replacing WM_P_346; WM_P_487; & WM_P_504 - first 42m only)	2022-2026	$331,840
W12	Upgrade Reservoir capacity to 90kL at Pepperberry Lane, Lot 990 SP178725, Cannon Valley (WCGR14)	2022-2026	$714,725
W13	Two new Bores including associated new DN300 Main 157m long at Foxdale Road, Foxdale and new DN300 Main 10m long at Bruce Highway, Foxdale	2027-2031	$655,400
W14	Two new Bores including two associated new DN300 Mains 100m long each at Proserpine Water Treatment Plant Crystalbrook Road, Proserpine	2027-2031	$655,400

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost[8]
W15	Upgrade DN250 Main 1124m long in Jubilee Pocket Road, Jubilee Pocket (replacing WM_P_616; WM_P_726; WM_P_727; WM_P_729; & WM_P_730)	2027-2031	$1,115,753
W16	Upgrade DN200 Main 731m long in Erromango Drive, Jubilee Pocket (replacing WM_P_668; WM_P_748; WM_P_707; WM_P_710; WM_P_712; & WM_P_714)	2027-2031	$669,819
W17	Upgrade Reservoir capacity to 100kL at Lot 94 RP748476 Moonlight Drive, Jubilee Pocket (WCGR01)	2027-2031	$991,575
W18	Upgrade Reservoir capacity to 160kL at Lot 103 RP743876 Macona Crescent, Cannonvale (WCGR07)	2027-2031	$413,354
W19	Upgrade Reservoir capacity to 110kL at Lot 163 HR1525 Parkwood Terrace, Cannonvale (WCGR06)	2027-2031	$346,684
W20	Upgrade Booster Pump Station No.2 capacity to 260L/s at Lot 1 RP739344 Coastal Water Treatment Plant, Mount Marlow (WCGR20)	2027-2031	$1,115,753
TOTAL			**$38,314,634**

[7] The establishment cost is expressed in current cost terms as at the base date.

[8] The establishment cost is expressed in current cost terms as at the base date.

Table SC3.2.2 Sewerage network schedule of works

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost[9]
S1	Upgrade Sewer Pump Station 1 capacity to 88L/s @ 62m at Lot 1 RP742660 Shute Harbour Road, Jubilee Pocket (JUBI1-PS1), including bypass of Cannonvale Sewer Pump Station 6	2018	$151,307
S2	Upgrade Sewer Pump Station 12 capacity to 64L/s @ 24m at Lot 61 RP800716 Carlo Drive, Cannonvale (CANN12-PS12)	2018	$104,751
S3	Upgrade Bowen Sewer Treatment Plant capacity at Lot 207 RP800719 Elphinstone Street, Bowen, inclusive of a recycled local water system	2021	$44,748,000
S4	Upgrade Sewer Pump Station 3 capacity to 62L/s @ 57m at Lot 1 RP725974 Dalrymple Street, Bowen (PS3)	2022-2026	$140,459
S5	Upgrade DN225 Rising Main 925m long from Cannonvale Pump Station 12 (CANN12-PS12) to Cannonvale Sewer Treatment Plant (CANN1-STP at Lot 164 HR1551), Cannonvale (replacing SM_P_3076)	2022-2026	$778,717
S6	New DN375 Combined Rising Main 870m long from SM_P_3428 at Edwards Street to Proserpine Sewer Treatment Plant Lot 1 SP241784 Bruce Highway, Proserpine, incorporating an aerial crossing at Proserpine River and a DN200 Main 40m long micro-tunnelled under Bruce Highway	2022-2026	$908,915
S7	Upgrade Sewer Pump Station Z capacity to 92L/s @ 21m (Bowen Z)	2022-2026	$115,938
TOTAL			**$46,984,087**

[9] The establishment cost is expressed in current cost terms as at the base date.

Table SC3.2.3 Stormwater network schedule of works

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost
	Due to incomplete network information, a schedule of works for the stormwater network is unable to be included. Recommendations identified as a result of future network planning is anticipated to be incorporated into future amendments to the LGIP.		
TOTAL			

Table SC3.2.4 Transport network schedule of works

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost[10]
T1	Upgrade Beach Road to Minor Collector 200m from Herring Lane to Schnapper Street, Cannonvale (21085) including road upgrade, widening and drainage	2017	$581,700
T2	Upgrade Dalrymple Street to Minor Collector 245m from Brisbane Street to Hay Street, Bowen (10185) including road upgrade, widening and drainage	2017/2018	$811,112
T3	Upgrade Leichhardt Street to Minor Collector 705m from Don Street to Sunset Crescent, Bowen (10345) including road upgrade, widening, drainage and footpath	2017/2018	$1,001,804
T4	Upgrade West Street to Minor Collector 760m from Richmond Road to Russell Street, Bowen (10585) including road upgrade, widening and drainage	2017/2018	$759,223
T5	Upgrade Abell Road to Major Collector 180m from Hamilton Avenue to Parker Road, Cannonvale (21005) including road upgrade, widening and drainage	2019	$549,707
T6	Upgrade Erromango Drive to Major Collector 695m from Shute Harbour Road to end, Jubilee Pocket (21275) including road upgrade, widening and drainage	2019	$2,122,478
T7	New road part Erromango Drive to Major Collector 640m from Erromango Drive end to St Bees Boulevarde, Jubliee Pocket (new part 21275) including road resumption and new road construction to Major Collector standard	2020	$2,001,048
T8	Upgrade Bootooloo Road to Minor Collector 1000m from Bruce Highway to Catherine Drive, Bowen (10095) including road upgrade, widening and drainage	2020	$1,720,892
T9	Upgrade Dalrymple Street to Minor Collector 245m from Herbert Street to Brisbane Street, Bowen (10185) including road upgrade, widening and drainage	2021	$653,672
T10	Upgrade Golf Links Road to Minor Collector 1300m from Tollington Road to Mt Nutt Road, Bowen (11165) including road upgrade, widening and drainage	2022-2026	$3,499,997
T11	Upgrade Jasinique Drive to Rural Collector 889m from Shute Harbour Road to end, Flametree (21425) including road upgrade, widening and drainage	2022-2026	$1,521,710
T12	Upgrade Mt Nutt Road to Major Collector 2000m from Richmond Road to Golf Links Road, Bowen (11285) including road upgrade, widening and drainage	2022-2026	$6,631,380
T13	**LGIP ID T13 has been left intentionally blank**		
T14	Upgrade Riordanvale Road to Sub-Arterial 1650m from Dunning Road to Cutuli Road, Cannon Valley/Cannonvale (21730) including road upgrade, widening and drainage	2027-2031	$6,832,980
T15	Upgrade Tollington Road to Major Collector 980m from Soldiers Road to Argyle Park Road, Bowen (11435) including road upgrade, widening and drainage	2027-2031	$3,306,383

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost[10]
T16	Upgrade Country Road to Minor Collector 545m from Links Drive to Tropic Road, Cannonvale (21215) including road upgrade, widening and drainage	2027-2031	$1,533,401
T17	New road part Parker Road to Major Collector 200m from end Parker Road to start new Quarry Road, Cannonvale (new part 21645) including new road construction to Major Collector standard	2027-2031	$680,589
T18	Upgrade Argyle Park Road to Major Collector 1400m from Hillview Road to Golflinks Road, Bowen (11005) including road upgrade, widening and drainage	2027-2031	$4,764,123
T19	New road Quarry Road to Major Collector 1200m from Shute Harbour Road to new part Parker Road, Cannonvale including road resumption and new road construction to Major Collector standard	2027-2031	$4,083,534
T20	Upgrade Riordanvale Road to Rural Collector 1350m from Dunning Road to Sugarloaf Road, Cannonvale (21730) including road upgrade, widening and drainage	2027-2031	$2,391,890
T21	Upgrade Queens Road to Major Collector 960m from Powell Street to Avoca Road, Bowen (10463) including road upgrade, widening and drainage	2027-2031	$3,322,670
T22	Upgrade Queens Road to Major Collector 1100m from Avoca Road to Tollington Road, Bowen (10463) including road upgrade, widening and drainage	2027-2031	$3,807,227
T23	Upgrade Richardson Road to Sub-Arterial 3310m from Gregory-Cannon Valley Road to Riordanvale Road, Cannon Valley (21725) including part new road, part road resumption, road upgrade, widening and drainage	2027-2031	$14,180,040
T24	Upgrade Chapman Street to Major Collector 500m from Taylor Street to Marathon Street, Proserpine (20085) including road upgrade, widening and drainage	2027-2031	$1,745,100
T25	Upgrade Links Drive to Minor Collector 310m from Valley Drive to Country Road, Cannonvale (21500) including road upgrade, widening and drainage	2027-2031	$902,286
TOTAL			**$69,404,945**

[10] The establishment cost is expressed in current cost terms as at the base date.

Table SC3.2.5 Parks and land for community facilities schedule of works

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost[11]
P1	New Regional Sports Park 10-18Ha, Cannon Valley area	2027-2031	$5,327,700
TOTAL			**$5,327,700**

[11] The establishment cost is expressed in current cost terms as at the base date.

SC3.3 Local government infrastructure plan maps

Local government infrastructure plan map – PAM – 01:06 Projection area, priority infrastructure area and zone map

Local government infrastructure plan map – PFTI WN – 01:06 Water network plans for trunk infrastructure map

Local government infrastructure plan map – PFTI SN – 01:05 Sewerage network plans for trunk infrastructure map

Local government infrastructure plan map – PFTI SWN – 01:05 Stormwater network plans for trunk infrastructure map

Local government infrastructure plan map – PFTI TN – 01:05 Transport network plans for trunk infrastructure map

Local government infrastructure plan map – PFTI PCFN – 01:06 Parks and land for community facilities network plans for trunk infrastructure map

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SC4.2 Notation of resolution(s) under Chapter 4, Part 2, Division 2 of the Act 4:7

SC4.3 Notation of registration for urban encroachment provisions under section 267 of the Act 4:7

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Tables of Schedule 4

Table SC 4.1.1 Notation of decisions under section 89 of the Act
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Table SC 4.3.1 Notation of registrations made under section 267 of the Act

Schedule 4 Notations required under the *Planning Act 2016*

SC4.1 Notation of decisions affecting the planning scheme under section 89 of the Act

Table SC 4.1.1 Notation of decisions under section 89 of the Act

Date of decision	Location (real property description)	Decision type	File/Map reference
20/04/2004	2SP220384 155 Main Street, Proserpine	Development permit for material change of use and era - roof and sheet metal manufacturing.	20040024
19/12/2005	900, 901, 951, 953, 957 & 959SP194473 & 1& 2SP172275 Mount Gordon	Preliminary approval - all stages including residential use, tavern, golf club, service station, commercial uses, child care centre, medical centre, motel and motor home site and retirement resort.	DA04/398
28/09/2006	4RP743558 Africandar Road, Bowen	Development permit for material change of use and reconfiguration of a lot - 34 lots.	DA05/388
20/12/2006	6, 14, 15, 131, 132, 200 & 201 SP225070 & 16SP178753 Riordanvale Road, Riordanvale	Preliminary approval for a material change of use to override council planning scheme under section 3.1.6 of the integrated planning act for a staged integrated community titled development comprising residential (short and long term accommodation), retail and commercial premises, eighteen (18) hole golf course and ancillary uses in accordance with the Whitsunday springs master plan.	20050622
12/12/2006	~~Part~~ 2 ~~-~~RP741932, ~~Part~~ 4 ~~-~~RP726985 Riordanvale Road, Riordanvale	Preliminary approval for a material change of use overriding Council's Planning scheme under Section 3.1.6 of the Integrated Planning Act for Stage Integrated Development comprising residential, showroom and commercial premises in accordance with the Whitsunday Springs Master Plan.	20050619
18/12/2007	102SP219982 Cascara Street, Proserpine	Development permit for reconfiguration of a lot - two (2) lots into two hundred and fifty two (252) lots comprising two hundred and forty (240) residential lots, two (2) buffer lots, ten (10) public open space lots in stages.	20070500
4/12/2008	31RP885979 Bruce Highway, Delta	Development permit for material change of use - rural service industry and reconfiguration of a lot - one (1) lot into thirteen (13) lots.	DA07/414

Date of decision	Location (real property description)	Decision type	File/Map reference
4/12/2008	Part of 2RP729167, being proposed 21SP201458 80 Collinsville Road, Bowen	Development permit for material change of use - rural service industry/produce store and warehouse.	DA08/013
11/12/2008	101 & 100 SP167803 Seaview Drive, Airlie Beach	Development permit for reconfiguration of a lot and material change of use of land - residential subdivision comprising sixty eight (68) dwelling house lots including two (2) lots for multiple dwellings/accommodation units and preliminary approval for material change of use for accommodation units/multiple dwelling units over proposed lot 76 (175 persons) and proposed lot 100 (216 persons) and clearing of vegetation.	20070807
17/04/2009	6RP737335 Valley Drive, Cannonvale	Development permit for material change of use from rural zone to urban residential zone; development permit for staged reconfiguration of a lot - stage 1a - one (1) lot into twenty residential lots, one (1) drainage lot and balance lot; and stage 1c - one (1) lot into twenty (20) urban residential lots and one(1) single dwelling lose, easement and preliminary approval overriding the planning scheme to alter the level of assessment for material change of use of premises for eleven (11) code assessable dual occupancy lots.	20070720
19/01/2010	1 & 8 HR1875 Hayman Island	Preliminary approval – overriding the *Whitsunday Shire Scheme 2009* for an integrated island resort complex and associated infrastructure. PA is valid for a period of 15 years from date of approval.	20090005
10/03/2010	35RP705716 23 Argyle Park Road, Bowen	Development permit for material change of use of premises for forty-three (43) dwelling houses & reconfiguration of a lot - one (1) lot into forty-three (43) lots.	DA09/035
11/08/2010	1 & 2 RP710765 182A Main Street, Proserpine	Development permit for material change of use - sales or hire premises.	20100051
~~8/09/2010~~	~~15RP745336~~	~~Preliminary approval to override the Bowen shire planning scheme - material change of use to facilitate industrial development - changes to levels of assessment for produce store, caretaker's residence, rural service industry, light industry, vehicle depot and machinery repair station; change to~~	~~DA09/324~~

Date of decision	Location (real property description)	Decision type	File/Map reference
		~~the development assessment provisions for caretakers residence; introduction of new definitions being bulk store, freight store, machinery showroom and warehouse.~~	
28/10/2010	42RP727501 17 Bowen Developmental Road, Bowen	Preliminary permit to override the planning scheme for a material change of use of premises to facilitate industrial development in accordance with the industrial zone.	DA09/006
13/12/2011	6SP171809 Botanica Drive, Woodwark	Development permit for reconfiguration of lot (1 into 43 lots) and material change of use (43 dwelling houses).	20101136
26/04/2012	6RP706708 & 5K103854 174 Main Street, Proserpine	Development permit for material change of use - commercial premises consisting of four (4) refreshment premises and ancillary car parks and structures.	20110549
15/07/2013	7RP729788 & 259HR1534 Parker Road, Cannonvale	Development permit for reconfiguration of a lot - stage development - two (2) lots into one hundred and fifty two (152) lots and open space/parkland.	20120784
25/07/2013	111SP129633 Ricks Lane, Collinsville	Preliminary approval for material change of use and reconfiguration of a lot to vary the effect of the 2006 Bowen shire planning scheme to facilitate future industrial development.	20121022
23/04/2014	121SP232106, T: EMT I, 122 SP232106, T: EMT J 28 Cove Road, Airlie Beach	Preliminary approval – Overriding the Whitsunday Shire Scheme 2009 for the development of 'The Cove and The Landing', Port of Airlie, comprising multiple dwelling units and accommodation units.	20130990
14/04/2014	102 & 103 SP232115 2 Ocean Road, Airlie Beach	Preliminary approval – for development of 'The Point', Port of Airlie, comprising Material change of use of premises for ten (10) dwelling houses with guest accommodation and ancillary recreation facilities and development permit for Reconfiguring a lot – one (1) lot into ten (10).	20130884
9/12/2015	122SP260214 28 Cove Road, Airlie Beach	Development application for a material change of use - multiple dwelling under section 242 preliminary approval.	20150932
2/06/2015	2RP743420 2549 Shute Harbour Road, Jubilee Pocket	Preliminary approval (s242) varying the effect of the planning scheme for material change of use, reconfiguration of a lot and operational works development applications.	20150033

Date of decision	Location (real property description)	Decision type	File/Map reference
2/03/2015	1-13 SP232114 Jurgens Place, Bowen	Development application for development permit for preliminary approval overriding the Planning Scheme and Bowen TLPI for material change of use for thirteen (13) industrial allotments.	20140365
09/09/2017	7SP137723 159 Duval Road, Preston	Development Application for Material Change of Use of Premises - Eco-Community (Integrated Resort/Residential Development) comprising One-hundred and Eighty-five (185) Accommodation Units & Tourist Facilities; One-hundred and Ninety-one (191) Detached Dwellings; Community Centre; General Store and Associated Community Facilities & Infrastructure; Reconfiguration of a Lot - Four (4) Lots into approximately Two-hundred and Eighty-four (284) Lots; Environmentally Relevant Activity - Sewerage Treatment Plan (ERA No. 15B); and Operational Works for the proposed building of a Retaining Wall	20090030
13/09/2017	101SP289278, 101SP167803 R/SP248725; Q/SP248743, 101SP271519, 100SP268394 Kara Crescent, Airlie Beach and 39-53 Seaview Drive, Airlie Beach	Development application for preliminary approval varying the effect of the Whitsunday Shire Planning Scheme 2009 for sixteen (16) residential house lots; and development permit for reconfiguration of a lot- two (2) lots into sixteen (16) residential lots and one (1) balance (Englobo) lot.	20150770
4/04/2018	110HR1989, 1SP285375, 2SP285375 T: & EMT H & K 19329 Bruce Highway, Bowen	Development application for preliminary approval overriding the planning scheme - material change of use, reconfiguration of a lot, operational works and building works- staged industrial estate.	DA09479
14/06/2018	901SP299922 Langford Road, Flametree	Development Approval - Preliminary Approval - for Material Change of Use for Mainland Urban Tourist Facility Focus Comprising Of: One (1) Integrated Eco-Tourism Resort Precinct Including Accommodation Units (172 X Dwelling Units And/or Rooming Units), Hotel (Resort Hotel), Indoor Entertainment (Function Centre), Place Of Assembly (Wedding Chapel), Refreshment Premises (Resort Restaurants, Bars And Cafes), Shop (Resort Retail); Dwelling House And Ancillary Uses; And One (1) Local Community Facility Precinct	20060232

Date of decision	Location (real property description)	Decision type	File/Map reference
		(Environmental, Cultural and Interpretive Research Centre) and Ancillary Uses; And Five (5) Holiday Apartment Resort Precincts Including Indoor Entertainment (Amenity Centres, Spas And Gymnasiums), Multiple Dwellings (402 X Dwelling Units), Refreshment Premises (Resort Cafes) and Ancillary Uses; and Development Permit For Operational Works (Marine Plants Disturbance)	
27/02/2019	105CP894264 2489 Shute Harbour Road, Jubilee Pocket	Development application for preliminary approval to vary the Whitsunday Regional Planning Scheme 2017 for building works (height relaxation).	20181676
27/03/2020	22SP208207 T: PT TL239765, 23SP208207 Shute Harbour Road, Shute Harbour	Development application for preliminary approval to vary the Whitsunday Regional Council Planning Scheme - material change of use - Shute Harbour Marina Resort Development Code.	20181552
27/05/2020	80SP189752, 164SP285380, 165SP285380 Sanctuary Avenue, Jubilee Pocket	Development Permit for Reconfiguration Of A Lot – One (1) Lot into One Hundred and Fifteen (115) Lots; and Preliminary Approval Under Section 3.1.6 of the Integrated Planning Act 1997 to override the Whitsunday Shire Planning Scheme 2000	20080306
29/05/2020	69SP289273 4 Marina View Court, Airlie Beach	Preliminary approval for building works and development permit for material change of use - dwelling house.	20191370
11/06/2020	15RP734591 17 Woodwark Crescent, Cannonvale	Preliminary approval for building works and development permit for material change of use - dwelling house.	20191226
25/09/2020	56SP303776, 57SP303776, Part Lot 400 SP303773 Air Whitsunday Road, Flametree	Preliminary approval (variation request) for material change of use and reconfiguration of a lot to vary the Whitsunday Regional Council Planning Scheme 2017.	20181728
28/10/2020	1SP172275, 1SP303790, 2SP172275, 959SP194473, 958SP194473, 902SP212269, 900SP225370, 15SP194473 McDonald Close Mount Gordon, Turquoise Way Bowen, Ocean	Preliminary Approval for Variation Approval Pursuant to Section 50 of the Planning Act; and Development Permit For Reconfiguration of a Lot: Four (4) Lots into One Hundred and Ninety-eight (198) Lots; Park; Road and Access Easements; and Development Permit for Material Change Of Use: Drive-Thru Takeaways; Tavern; Sporting Ground, Club House & Park; Service Station; Shopping Centre; Child Care Centre; Food and Drink Outlet; Medical Centre;	20180816

Date of decision	Location (real property description)	Decision type	File/Map reference
	View Drive, Bowen and Bruce Highway, Mount Gordon	Shops and Supermarket; and Development Permit for Operational Works for Excavation or Filling	
29/10/2020	70SP289273 4 Marina View Court, Airlie Beach	Preliminary approval for building works and development permit for material change of use - dwelling house.	20190655

Editor's note—This schedule must include details of:

- Development approvals that are substantially inconsistent with the planning scheme
- variation approvals
- decisions agreeing to a superseded planning scheme request to apply to a superseded scheme to a particular development.

SC4.2 Notation of resolution(s) under Chapter 4, Part 2, Division 2 of the Act

Table SC 4.2.1 Notation of resolutions under Chapter 4, Part 2, Division 2 of the Act

Date of	Date of effect	Details	Contact
13/06/2018	29/08/2018	Infrastructure Charges Resolution (No. 3) 2018	Strategic Planning 4945 0200
13/08/2019	15/08/2019	Infrastructure Charges Resolution (No.1) 2019	Strategic Planning 4945 0200
25/11/2020	26/11/2020.	Infrastructure Charges Resolution (No.1) 2020	Strategic Planning 4945 0200

Editor's note—This schedule must provide information about the adopted infrastructure charges for the local government and where a copy of the adopted charges can be obtained.

SC4.3 Notation of registration for urban encroachment provisions under section 267 of the Act

Table SC 4.3.1 Notation of registrations made under section 267 of the Act

Date of decision	Location of premises (real property description)	Details of registration	Term of registration

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Table SC 5.1 Designation of premises for development of infrastructure under section 42 of the Act

Schedule 5 Designation of premises for development

Table SC 5.1 Designation of premises for development of infrastructure under section 42 of the Act

Date the designation, amendment, extension or repeal takes effect	Location of premises (real property description)	Street address	Type of infrastructure
23/11/2012	2SP204635	Power House Road, Collinsville	Powerlink Queensland's proposed Collinsville Substation Replacement (Collinsville North) Project, which consists of a new 132 kilovolt substation to replace the existing Collinsville Substation, and reconfiguration of the transmission lines from the existing Collinsville Substation into the new Collinsville North Substation.
Designation matters Nil			
18/11/2011	5 on Crown Plan B6677, 1 & 3 RP700122, 11 & 12 SP166797, 13 & 14 SP194471	Gregory Street, Bowen	Bowen Health Service which will provide public and private health facilities plus support facilities including relative, staff and non-acute accommodation, paediatric, commercial and medical services, engineering and maintenance services, teaching and research facilities, car parking and helipad.
Designation matters Nil			
27/02/2009	2RP742329, 61 & 86 DK155, 5047PH370, 33RP802431, 38RP908340, 161SP122361, 31SP108590, 3RP739389, 121SP122358, 101SP122357, 28HR410, 3RP738754, 4RP738754, 25HR1317, 1SP115943, 551H12423, 698, 491 & 162 SP138969, 1RP730524, 1 & 4 RP730832, 1RP740830		Whitsunday Regional Council - Powerlink Queensland's proposed Strathmore to Bowen 132 kilovolt transmission line (Stage 1).
Designation matters			

Date the designation, amendment, extension or repeal takes effect	Location of premises (real property description)	Street address	Type of infrastructure
Nil			
17/04/2009	AP12411, AP12412, AP12413, SR2500, SR2501	Unnamed road, Springlands Strathalbyn Road, Bogie Unnamed Road, Bogie Tabletop Road, Springlands Johnny Cake Road, Springlands	Whitsunday Regional Council; Burdekin Shire Council; Townsville City Council - Queensland Electricity Transmission Corporation Limited, trading as Powerlink Queensland, proposes to build community infrastructure.
Designation matters Nil			
30/10/2009	43K12448, 33RP746283, 41SP122354, 23SP106414, 3RP742547, 16SP129649, 3RP742546, 111HR1821, 110HR1989, 72 – 79 M4881		Whitsunday Regional Council - Powerlink Queensland's proposed Strathmore to Bowen 132 kilovolt (kV) transmission line (Stage 2) and Bowen North substation.
Designation matters Nil			
29/06/2001	121HR687	18 Mill Street, Proserpine	Proserpine Magistrates Court & Queensland Police Service (joint facility)
Designation matters Nil			
06/02/2016	121SP117924	56 Coral Esplanade, Cannonvale	Cannonvale State School
Designation matters Nil			
10/04/2015	25C74042	Garrick St Collinsville QLD 4804	Collinsville Healthcare Precinct
Designation matters Nil			
27/11/2015	170SP277854, 236HR1153	Kelsey Creek Road Proserpine	Proserpine Substation and the Upgrade Project consisting of the installation of a new 132/66 kV transformer, capacitor bank and associated equipment to expand the existing Powerlink Queensland substation at Kelsey Creek Road, Kelsey Creek, which is located approximately 4.3

Date the designation, amendment, extension or repeal takes effect	Location of premises (real property description)	Street address	Type of infrastructure
			kilometres north of Proserpine.
Designation matters Nil			

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Schedule 6 Planning scheme policies

SC6.1 Planning scheme policy index

The table below lists all the planning scheme policies applicable to the Planning Scheme area.

Table SC 6.1.1 Planning scheme policy index

Policy	Planning scheme policy title
SC6.2	Environmental features planning scheme policy
SC6.3	Heritage planning scheme policy
SC6.4	Landscaping planning scheme policy
SC6.5	Natural hazards planning scheme policy
SC6.6	Third party advice or comment planning scheme policy
SC6.7	Growth management planning scheme policy
SC6.8	Whitsunday Regional Council development manual planning scheme policy
SC6.9	Waste Management Policy

SC6.1.1 Scope of the Planning Scheme Policies

The table below lists the scope of all the planning scheme policies, providing an indication as to when Council may request an applicant to provide further information in the form of a planning scheme policy.

Table SC 6.1.1.1: Scope of the Planning Scheme Policies

Planning Scheme Policy/Report	Scope
Environmental features planning scheme policy	
Acid sulfate soils assessment report	Applications triggering assessment against the Acid sulfate soils overlay code.
Acid sulfate soils management plan	Applications triggering assessment against the Acid sulfate soils overlay code and found to be disturbing acid sulfate soils within the acid sulfate soils assessment report.
Ecological assessment report	Applications triggering assessment against the: ~~a) Environmental significance overlay code; or~~ ~~b)~~a) Biodiversity, w~~W~~aterways and wetland overlay code.
Renewable energy facility visual impact report	Applications triggering assessment against the Renewable energy facilities code.
Stormwater Management Plan	Applications triggering assessment against the Healthy Waters Code.
Vegetation management plan	Applications triggering assessment against the: a) Construction management code; or b) Biodiversity, Waterway and wetlands overlay code.
Heritage planning scheme policy	
Heritage impact assessment report	Applications triggering assessment against the Heritage overlay code.
Heritage management plan	Applications triggering assessment against the Heritage overlay code.

Archaeological management plan	Applications triggering assessment against the Heritage overlay code.
Landscaping planning scheme policy	
Landscaping plan	Applications triggering assessment against the Landscaping code.
Landscaped separation buffer	Applications triggering assessment against the: a) Landscaping code; or b) Reconfiguring a lot code; or c) Agricultural land overlay code.
Planting species list	All development is to have regard for the Planting species list.
Natural hazard planning scheme policy	
Bushfire hazard assessment report	Applications triggering assessment against the Bushfire hazard overlay code.
Bushfire hazard management plan	Applications triggering assessment against the Bushfire hazard overlay code.
Coastal hazard assessment report	Applications triggering assessment against the Coastal environment overlay code.
Flood hazard assessment report	Applications triggering assessment against the Flood hazard overlay code
Landslide hazard (geotechnical) assessment report	Application triggering assessment against the Landslide hazard overlay code.
Growth management planning scheme policy	
Development needs assessment report	At Council discretion. Applications proposing the development of five (5) or more lots (including those lots created under a community title scheme), outside of the existing urban footprint may be required to undertake this report.
Economic impact assessment report	At Councils discretion. Applications proposing the development of Business or Entertainment Activities may be required to undertake this report where the development is: a) outside of a designated Centre zone and exceeding a GFA of 150m^2; or b) within a designated Centre zone, but exceeding the maximum GFA for that Centre zone; or c) within the Mixed use zone and exceeding a GFA of 1,500m^2.
Structure plan	At Councils discretion. Applications proposing the development of five (5) or more lots (including those lots created under a community title scheme) may be required to undertake this report.
Traffic impact assessment report	At Councils discretion. Applications proposing the development of the following activities may be required to undertake this report: a) Accommodation activities: Five (5) or more lots (including those lots

	created under a community title scheme); or b) Business, Entertainment, Industry, Recreation or Other Activities: Exceeding a GFA of 1,500m^2; or c) Community Activities: Exceeding a GFA of 500m^2.
Waste Management planning scheme policy	
Waste Management Policy	Applications proposing development of: (a) residential subdivision with 4 or more lots; (b) Multiple dwelling; (c) Short-term accommodation; (d) Relocatable home park; (e) Retirement facility; (f) Tourist park; (g) Rooming accommodation; (h) Resort complex; or (i) Mixed use development with two or more uses onsite.

SC6.2 Environmental features planning scheme policy

SC6.2.1 Introduction

SC6.2.1.1 Relationship to the Planning Scheme

(1) This planning scheme policy provides:

(a) information the Council may request for a development application; and

(b) guidance or advice about satisfying an assessment benchmark which identifies this planning scheme policy as providing that guidance or advice.

SC6.2.1.2 Purpose

(1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:

(a) Acid sulfate soil assessment report;

(b) Acid sulfate soils management plan;

(c) Ecological assessment report;

(d) Renewable energy facility visual impact assessment report;

~~(c)~~(e) Stormwater management plan; and

~~(d)~~(f) Vegetation management plan.

SC6.2.1.3 Environmental features overlay mapping

(1) Environmental features overlay mapping has been prepared for the local government area, showing the areas of environmental and waterway (water quality) health. This mapping has been prepared in accordance with the requirements of the State Planning Policy (SPP). The specific environmental and waterways overlays to which this PSP applies are:

(a) Acid sulphate soils overlay code. Mapping:
  (i) identifies the Known presence of acid sulfate soils for; Land at or below 5m AHD and Land above 5m AHD and below 20m AHD sub-categories; and
  (ii) has been prepared at a scale at which a site specific investigation of acid sulfate soils will be necessary to determine the presence and extent of acid sulfate soil on a site (Acid sulfate soils assessment report) and the necessity for an Acid sulfate soils management plan;

~~(b) Environmental significance overlay code. Mapping:~~
  ~~(i) identifies Regulated vegetation, Wildlife habitat, Protected and Regulated vegetation features; and~~
  ~~(ii) is not a substitute for a site based assessment. A site specific Ecological assessment report should be undertaken and prepared to verify, specific to the site, the presence of Matters of environmental significance on a site and necessity for a Vegetation management plan;~~

~~(c)~~(b) Biodiversity,~~W~~ waterways and wetlands overlay code. Mapping:

(i) identifies Regulated vegetation, Wildlife habitat, Protected and Regulated vegetation features; and

(ii) is not a substitute for a site based assessment. A site specific Ecological assessment report should be undertaken and prepared to verify, specific to the site, the presence of Matters of environmental significance on a site and necessity for a Vegetation management plan;

(iii) identifies Matters of state environmental significance: High ecological value waters (watercourse), High ecological value waters (wetlands), High ecological significance wetlands, Marine parks and Declared fish habitat area and Matters of local environmental significance: Stream order 1 - 5 sub-categories; and

(iv) is not a substitute for a site based assessment. A site specific Ecological assessment report should be undertaken and prepared to verify, specific to the site, the presence of matters of environmental significance on a site and necessity for a Vegetation management plan.

SC6.2.2 Requirements of environmental features documentation

(1) Environmental features documentation is to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.2.2.1 (Requirements of Environmental features documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

Table SC 6.2.2.1 Requirements of environmental features documentation

Documentation	Preparation	Report requirements
Acid sulfate soils assessment report	• Prepared by a suitably qualified professional with appropriate technical expertise in the field of acid sulfate soils identification and management. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Acid sulfate soils assessment report may be requested to provide additional information to Council. • A site specific Acid sulfate soil assessment report is to be prepared in accordance with SC6.2.3 (Acid sulfate soils assessment report). • An Acid sulfate soils assessment is to be prepared in accordance with the Queensland Acid Sulfate Soils Technical manual (Queensland Government, 2014), or any later guideline as agreed by Council and is to be provided as part of the site specific Acid sulphate soil assessment report. • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.
Acid sulfate soils management plan	• Prepared by a suitably qualified professional with appropriate technical expertise in the field of acid sulfate soils identification and management. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Acid sulfate soils management plan may be requested to provide additional information to Council. • A site specific Acid sulfate soil management plan is to be prepared in accordance with: a) SC6.2.4 (Acid sulfate soils management plan); and b) State Planning Policy – State interest guideline: Water quality, August 2014, or any later guideline as agreed by Council.
Ecological assessment report	• Prepared by a suitably qualified professional with a relevant tertiary qualification in ecology, conservation biology or environmental planning and at least 5 years' experience in ecology surveys, assessment and reporting. • Consultation with other entities may also be necessary including Council, State	• A site specific Ecological assessment report may be requested to provide additional information to Council. • A site specific Ecological assessment report is to be prepared in accordance with SC6.2.5 (Ecological assessment report).

	government and other relevant agencies or individuals.	
Renewable energy facility visual impact assessment report	• Prepared by a suitably qualified professional with appropriate technical expertise in visual impact assessment. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (eg business owners)	• A site specific Renewable energy facility visual impact assessment report in accordance with SC6.2.6 may be requested to provide additional information to Council.
Stormwater Quality Management Plan	• Prepared by a suitably qualified professional with appropriate technical expertise in stormwater assessment • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (eg business owners)	• A site specific Stormwater Quality Management Plan may be requested to provide additional information to Council. • A site specific stormwater quality management plan is to be prepared in accordance with SC6.2.7 (Stormwater Management Plan) and the Whitsunday Regional Council Stormwater Quality Guidelines, or any later guideline as agreed by Council.
Vegetation management plan	• Prepared by a suitably qualified professional with a relevant tertiary qualification in ecology, conservation biology or environmental planning and at least 5 years' experience in vegetation management, assessment and reporting. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Vegetation management plan may be requested to provide additional information to Council. • A site specific Vegetation management plan is to be prepared in accordance with SC6.2.86 (Vegetation management plan).

SC6.2.3 Acid sulfate soils assessment report

SC6.2.3.1 Purpose of an Acid sulfate soils assessment report

(1) An Acid sulfate soils assessment report is required to:

(a) quantify the extent and severity of acid sulfate soils for a particular site;

(b) ensure appropriate methods are implemented to mitigate or avoid the disturbance of acid sulfate soils; and

(c) provide information and guidance to support the outcomes required by the Acid sulfate soils overlay code.

SC6.2.3.2 Preparation of an Acid sulfate soils assessment report

(1) The site-specific Acid sulfate soils assessment report is to include an acid sulfate soils assessment, as detailed in Table SC 6.2.2 (Requirements of environmental features documentation) of this planning scheme policy.

(2) An Acid sulfate soil assessment report is to:

(a) explain the methodology and findings of the acid sulfate soils assessment to determine the presence, extent and severity of any actual acid sulfate soils or potential acid sulfate soils on the site;

(b) evaluate the potential for harm to the environment or to constructed assets as a result of the development; and

(c) make recommendations as to whether management measures are needed.

(2) If the acid sulfate soil assessment report finds that acid sulfate soils will be affected by the development, then an Acid sulfate soil management plan is to be prepared in accordance with SC6.2.4 (Acid sulfate soils management plan).

SC6.2.4 Acid sulfate soils management plan

SC6.2.4.1 Purpose of an Acid sulfate soils management plan

(1) An Acid sulfate soils management plan is required to:

(a) explain how acid sulfate soils will be managed on the site to minimise or prevent harm to the environment or to constructed assets; and

(b) provide information and guidance to support the outcomes required by the Acid sulfate soil overlay code.

SC6.2.4.2 Preparation of an Acid sulfate soils management plan

(1) An Acid sulfate soil management plan is to include at a minimum:

(a) a two-dimensional map of the actual or potential acid sulfate soils to the depth of disturbance;

(b) details that reflect potential on-site and off-site impacts of the disturbance on the soil and the groundwater levels;

(c) the methods that will be used to avoid, treat or otherwise manage acid sulfate soils, including the contained on-site management and treatment of potential and actual acid sulfate soils;

(d) the details of any pilot project or field trial to be undertaken to prove the effectiveness of any new technology or innovative management practice being proposed;

(e) details of the management of the height of the groundwater table on-site and off-site both during and after construction;

(f) details of all soil and water monitoring, both manual and automated, to be performed during and after treatment, and including verification testing of soils;

(g) details of the handling and storage of neutralising agents;

(h) details of contained on-site treatment and management of potentially contaminated stormwater run-off, and leachate including details of groundwater management associated with the works both in the short and long term;

(i) a description of contingency measures to be implemented on and off the site if the management procedures prove to be unsuccessful and acid is generated or leachate problems occur; and

(j) details of the treatment and management of surface drainage waters for disturbed acid sulfate soils.

(2) The Acid sulfate soil management plan is to provide for the ongoing management and monitoring of impacts of acid sulfate soil material throughout the construction and operation of the project and describe the construction schedules and environmental management procedures.

(3) The development is to be staged so that the potential impact of any area disturbed at any one time is limited and easily managed. Documentation containing the schedule of monitoring is to be made available for Council inspections.

(4) Action is to be taken to prevent or minimise any adverse impacts on surface water, groundwater, the site and surrounding areas. These actions are to be documented in the acid sulfate soil management plan and include:

(a) objectives and outcomes;

(b) management measures;

(c) performance indicators;

(d) elements to be monitored;

(e) a monitoring schedule;

(f) contingency plans;

(g) responsibilities;

(h) reporting and review requirements; and

(i) training arrangements.

SC6.2.5 Ecological assessment report

SC6.2.5.1 Purpose of an Ecological assessment report

(1) An Ecological assessment report is required to:

(a) quantify the matters of environmental significance on a particular site;

(b) ensure appropriate methods are implemented to appropriately protect, manage or restore matters of environmental significance on the site; and

(c) provide information and guidance to support the outcomes required by the ~~Environmental significance overlay code and~~ Biodiversity, ~~W~~waterways and wetlands overlay code.

SC6.2.5.2 Undertaking an Ecological assessment report

(1) An Ecological assessment report is to incorporate a tree survey plan in accordance with SC6.2.5.3 (Preparation of a Tree survey plan), which identifies all the trees on the development site.

(2) Prior to any field survey work commencing, records are to be investigated to identify likely regional ecosystems, flora, and fauna species (including weed and pest animal species) which may occur on the site or on adjoining lands within a one kilometre radius of the site. Records to be investigated include:

(a) research reports;

(b) local knowledge (such as from local catchment and environment groups);

(c) databases, such as the Council and Queensland Government regional ecosystem mapping, and flora and fauna records held by the Queensland Government (Wildnet), Queensland Museum and Queensland Herbarium; and

(d) published literature.

(3) The field survey is to assess the presence or likely presence of ecological features, significant vegetation communities, and flora and fauna species (including weed and pest animal species) on the site. Specifically, it should:

(a) incorporate coverage of all major habitat types on the site;

(b) use survey techniques suited to a diversity of flora and fauna; and

(c) consider seasonal variations, survey duration and climatic conditions.

(4) Ecological features and processes are essential to the conservation of biodiversity and the maintenance of ecosystem services. Some examples of ecological features and processes which need to be identified on or adjoining the site are:

(a) areas that contain nationally and internationally important flora, fauna, ecological communities and heritage places as identified in the *Environment Protection and Biodiversity Conservation Act 1999*;

(b) areas declared as Fish Habitat Areas under the *Fisheries Act 1994*;

(c) areas prescribed under the *Nature Conservation Act 1992*, including areas subject to an Interim Conservation Order and areas subject to a conservation plan;

(d) areas identified as having conservation significance under the *Coastal Protection and Management Act 1995*;

(e) important habitat features or evidence of fauna species, such as trees supporting scratch marks and hollows, stags, scats, tracks and other traces, fruit and seed falls, fauna trails, fallen logs, termite mounds, ground diggings, rock outcrops, nests in banks and roost, nest and den trees;

(f) areas that would be suitable for habitat restoration, consolidating any existing habitat on site or on adjoining sites.

(5) To identify flora and vegetation communities, plot or transect-based survey methods are to be used when establishing a flora species inventory, weed survey, or searching for significant flora species. All vegetation communities, including wetlands and, within these, all microhabitats (such as dry gullies) are to be identified. The regional ecosystem type is to be classified and the age, structure, composition and condition of the vegetation is to be assessed. Plans and literature may also have flora and fauna records.

(6) For fauna surveys, a minimum of 4 days and 4 nights of survey time are recommended to minimise any sampling duration influences within any given sampling period. Regard must also be had for any migratory species which may not be present but habitually use the location. In circumstances where less sampling effort is proposed, appropriate justification is to be provided in the ecological assessment report. The biodiversity survey principles to be considered when undertaking a fauna survey include:

(a) survey methodology which accounts for habitat diversity and species requirements;

(b) survey design to minimise factors which may reduce the quality of the survey results;

(c) data is collected in a consistent format; and

(d) ecological investigations in accordance with best-practice research ethics.

(7) Fauna data is to be supported by the start and end dates of the survey, coordinates of the survey location, scientific and common name of identified species and the location precision.

(8) Identify any existing impacts or threatening processes to the ecological features, vegetation communities (regional ecosystems) and flora and fauna species on the site.

(9) Outline the likely impacts of development on the ecological features and flora and fauna species. Examples of spatial and temporal impacts from development include:

(d) loss or fragmentation of habitat;

(e) decrease or change in structure, composition, complexity and connectivity of vegetation;

(f) increased edge effects, such as noise and light;

(g) earthworks and installation of infrastructure, such as retaining walls, paths, roads, stormwater treatment devices;

(h) weed and pest animal invasion;

(i) changes to fire risks and regimes;

(j) changes to flow regimes, nutrients, sediment and pollutant loads;

(k) barriers to safe wildlife movement such as roads or fences; and

(l) introduction of domestic animals.

SC6.2.5.3 Preparation of a Tree survey plan

(1) A Tree survey plan forms part of the Ecological assessment report (SC6.2.5.4 Preparation of an Ecological assessment report) and involves identifying, assessing and surveying all trees on a site and provides a description of the site and the proposed works.

(2) The Tree survey plan comprises a map and a supporting table or report outlining the location and other attributes of trees located on the site. It is to incorporate the following information:

(a) a scaled tree survey map overlaid on the development layout, identifying the location of:
  (i) individual trees, ensuring each tree is numbered and the area of the canopy spread is shown indicatively;
  (ii) those trees proposed for retention;
  (iii) those trees proposed for removal; and
  (iv) any tree protection zones;

(b) a table which includes:
  (i) the number for each tree identified on the tree survey map;
  (ii) tree species (botanical and common names);
  (iii) height;
  (iv) diameter at breast height;
  (v) canopy spread (in square metres);
  (vi) condition/health;
  (vii) evidence of fauna use or habitat value including scratch marks, hollows, nests, termites and scats;
  (viii) trees to be removed or root zones to be impacted; and
  (ix) trees to be retained;

(c) photographs of the site, key tree species and evidence of fauna use, where relevant; and

(d) any other supporting information provided by a qualified arborist.

SC6.2.5.4 Preparation of an Ecological assessment report

(1) The Ecological assessment report informs the design of the development layout and footprint and is to be completed prior to the development design and layout.

(2) The level of detail contained within the Ecological assessment report will vary, reflecting the nature of the development and site attributes. The report is to include at a minimum:

(a) a description of the methodology used to complete the assessment:
  (i) provide a full description of the field survey methodology used and assumptions made;

(ii) detail all background investigations undertaken including literature reviewed, and recognised specialists, authorities and local naturalists consulted or referenced; and
(iii) reports that rely primarily on desktop research with little or no field-based work are not acceptable;

(b) a description and map of the ecological features and processes, vegetation communities and flora and fauna species of the site and adjacent lands will at a minimum:
(i) identify and detail ecological features and provide a map displaying the location and extent of the ecological features. This is referred to as an ecological features map. Appropriate photographs and figures will enable the identification and location of ecological features on the ground;
(ii) in addition to identifying ecological features, the Ecological Features map is also to include:
(A) 1m contours for the existing site topography;
(B) areas included in the ~~Environmental significance~~Biodiversity, waterways and wetlands overlay map;
(C) location of waterway corridors and wetlands as shown on the Waterway and wetlands overlay map;
(D) existing buildings and infrastructure such as roads or sewer lines; and
(E) nature and extent of any vegetation protected under the *Vegetation Management Act 1999*;
(iii) describe key ecological processes occurring on the site and adjacent lands;
(iv) include appropriate photographs, figures and maps that will enable the identification and location of ecological features on the ground;
(v) accurately map and describe the vegetation communities, (remnant and non-remnant vegetation) in the site and on adjacent lands. Include details such as age, structure, composition and condition of vegetation communities on the site and on adjacent lands;
(vi) describe and map accurately the terrestrial and aquatic flora species and vegetation communities (including details such as age, structure, composition, condition, State/national significance and regional ecosystem status) in the site and on adjacent lands. A table outlining the location and attributes of trees on the development site should also be provided;
(vii) document and describe the presence of any flora species listed as threatened under Commonwealth or State legislation;
(viii) provide any past flora and fauna records of the site and adjoining lands within a 1km radius of the site. Records include research reports, local knowledge and databases, such as the Queensland Museum and Queensland Herbarium records;
(ix) identify terrestrial and aquatic fauna species present or likely to be present within the site and adjacent lands;
(x) prepare an appropriately scaled map identifying the location of key habitat features or evidence of fauna species, including trees supporting scratch marks and hollows, stags, fruit and seed falls, fauna trails, fallen logs, termite mounds, ground diggings, rock outcrops, nests in banks and roost, nest and den trees; and
(xi) document and describe the presence of any fauna species.

(c) document potential development impacts on ecological features and processes including:
(i) an outline of the proposed development:
(A) nature of the land use;

(B) the extent of the development footprint and details of the site layout; and
(C) development design including the building height in metres, location of any outdoor lighting, audio systems or other noise generating activities;

(ii) identification of the proposed hours of operation if non-residential including:
(A) the number of people anticipated on site at various times during the day and night; and
(B) the number and type of vehicle movements anticipated on site during the ongoing operation phase;

(iii) for the construction phase, details of the sequence of any proposed vegetation clearing, type of construction machinery and proposed barriers to restrict site access to ecologically sensitive areas;

(iv) differentiation between the impacts likely to occur during the construction of the development versus those impacts resulting from the ongoing operation of the development (including cumulative impacts of the development); and

(v) details of potential spatial (on-site and off-site) and temporal (short- and long-term) direct and in-direct impacts from the development on flora and fauna species and vegetation communities, including consideration of the construction and operational phases of the development. Specifically discuss the likely consequences of the identified impacts for the site and adjacent lands;

(vi) the degree of confidence with which the impacts of the action are known and understood;

(d) detail how the layout of the development avoids impacts to the ecological features and processes and significant flora and fauna species and outline the impact mitigation measures that will be undertaken to reduce the impacts to ecological features and processes by:

(i) clearly demonstrating how the proposed mitigation strategies will enable the development to meet the nature conservation obligations as described in the relevant statutory planning mechanisms; and

(ii) providing information about development designs to mitigate impacts to ecological features and processes, such as:
(A) protecting ecological connectivity;
(B) enhancing habitat extent and condition; and
(C) rehabilitating degraded areas.

SC6.2.6 Renewable Energy Facility Visual Impact Assessment

SC6.2.6.1 Purpose of a Renewable Energy visual impact assessment

(1) A Renewable energy facility visual impact assessment report is required to:

(a) Assess sensitive receptors and roads visual exposure to a proposed Renewable energy facility;

(b) Assess the visual impact of a Renewable energy facility on sensitive receptors, roads and public areas; and

(c) Outline mitigation strategies to reduce the visual impact on public areas and sensitive receptors, such as Accommodation activities;

SC6.2.6.2 Undertaking a Renewable energy facility visual impact assessment

(1) A Renewable energy visual impact assessment involves an assessment of a proposed development to determine its potential impact upon surrounding sensitive receptors and roads, including potential for glint or glare from solar panels and suitability as a land use within the landscape;

(2) In developing a Renewable energy visual impact assessment, due regard should be given to the location of surrounding sensitive receptors, roads, topography, vegetation, solar panel type and development layout; and

(3) The steps to be followed and information provided when preparing a Renewable energy visual impact assessment are outlined below:

Step 1: Describe the project and its visual components

(a) Description of the project, including site layout, landscaping, major electricity infrastructure, lighting, scale and type of solar panel to be utilised (where applicable), such as fixed, dual axis or single axis trackers;

Step 2: Evaluate visual environment, landscape of development site and surrounding area

(b) Provide photos and descriptions of key elements within the surrounding landscape to provide local context, including existing infrastructure, topography, vegetation, aesthetic landforms, buildings, public spaces and land uses, having regard to potential future residential growth;

(c) Assess the surrounding Landscape character type, surrounding high or medium amenity areas and scenic gateways based upon scenic preferences and mapping from the Whitsunday Scenic Amenity Study, refined by applying site-specific analysis of local context;

Note - Landscape character types are defined within Table 4 and high amenity areas are defined within Appendices of the Whitsunday Scenic Amenity Study online at http://www.whitsunday.qld.gov.au/566/Studies-and-Superseded-Planning-Schemes. GIS Tab files of high, medium and low amenity areas can be provided at request.

Step 3: Assess visual receptor sensitivity within the study area and assess impact of development upon viewpoints

(d) Identify surrounding scenic corridors and sensitive receptors, such as Accommodation activities, future residential growth areas and public roads that have visibility of the proposed Renewable energy facility;

Note – Scenic corridors defined by AO1.2 of the Renewable energy facilities code include Gregory Cannon Valley Road, Conway Road, Crystal Brook Road, or Bowen-Developmental Road between Bogie River and Strathmore Road

(e) If necessary, undertake a field of view analysis to provide a detailed assessment of the impact of development intruding upon a scenic corridor or sensitive receptor's views of high amenity landscapes or key landscape features;

(f) Assess receptor sensitivity based upon Table SC6.2.6.1;

Step 4: Identify potential impacts upon sensitive receptors, scenic corridors and roads,

(g) Operational aspects of the Renewable energy facility, including construction and operation, with regard to lighting, vegetation clearing and movement of heavy machinery;

(h) Glare or glint from solar panels on sensitive receptors and public roads at all times of the day and year based upon the angle of the fixed or moving panels, including:
i. frequency; and
ii. intensity;

(i) Assess magnitude of change of the proposed development upon view corridors of high amenity landscapes or landscape features viewed by identified sensitive receptors or scenic corridors in accordance with Table SC6.2.6.24;

(j) Summarise visual impact upon sensitive receptors in terms of intrusion upon high or medium amenity landscapes, landscape features and potential for glint and glare from solar panels upon sensitive uses and public roads utilising Table SC 6.2.6.32;

Step 5: Renewable energy facility visual impact mitigation strategies

(k) Specify mitigation strategies to limit the potential visual impact as a result of glare or glint from solar panels upon sensitive receptors or public roads;

(l) Specify mitigation strategies to limit intrusion upon views of high amenity landscapes from sensitive receptors or scenic corridors identified by the Whitsunday Scenic Amenity Study; and

(m) Summarise the potential visual impact following the implementation of mitigation measures.

Table SC6.2.6.41: Determination of receptor sensitivity and magnitude of change.

Relative sensitivity	Receptor which may be exposed to the development	Magnitude of change	Explanation
High	• Elevated Accommodation activities that maintain a predominately open view of high amenity areas or key landscape characteristics that are intruded upon by the development; and • Motorists and passengers on Scenic corridors.	High	• Loss or major alteration of key landscape features identified as high amenity landscape when viewed from sensitive uses; and • Glint and glare from solar panels affecting open views of sensitive uses or users of arterial roads.

Medium	• Accommodation activities that have views from windows or partially obscured views of high amenity areas or key landscape characteristics that are intruded upon by the development; or • Motorists and passengers on arterial roads.	Medium	• Loss or major alteration of key landscape features or medium amenity landscapes when viewed from sensitive uses; and • Glint and glare from solar panels affecting partially obscured views or windows of sensitive uses or users of rural roads.
Low	• All other receptors	Low	• Minor loss of or alteration to one or more key features of the landscape character or medium amenity area; and • No glint or glare from solar panels affecting sensitive uses or any road users.

Note – Scenic corridors defined by AO1.2 of the Renewable energy facilities code include Gregory Cannon Valley Road, Conway Road, Crystal Brook Road, or Bowen-Developmental Road between Bogie River and Strathmore Road. Key landscape features may include aspects, such as valleys or gorges, mountains, waterfalls, waterways or significant trees. High amenity and medium amenity areas are defined within Appendices of the Whitsunday Scenic Amenity Study online at http://www.whitsunday.qld.gov.au/566/Studies-and-Superseded-Planning-Schemes

Table SC 6.2.6.52: Assessment of visual impact.

Assessment of Visual Impact		**Sensitivity to visual change**		
		High	Medium	Low
Magnitude of change to views	High	Major	Major	Moderate
	Medium	Major	Moderate	Minor
	Low	Moderate	Minor	Minor

SC6.2.7 Stormwater management plan

SC6.2.7.1 Purpose

(1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:
  (a) a stormwater quality management plan (SQMP).

SC6.2.7.2 Requirements of stormwater quality documentation

(1) Stormwater documentation is to be prepared in a clear and concise manner, consistent with the elements identified in Table SC6.2.7.1 (Requirements of Stormwater documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

Table SC6.2.7.1 Requirements of Stormwater Quality Documentation

Documentation	Preparation	Report requirements
Stormwater Quality Management Plan & associated drawings	• Prepared by a suitably qualified professional with appropriate technical expertise in stormwater assessments. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. business owners).	• Stormwater Quality Management Plan may be requested to provide additional information to Council. • A site specific stormwater quality management plan is to be prepared in accordance with the Whitsunday Regional Council Stormwater Quality Guidelines, or any later guideline as agreed by Council

SC6.2.7.3 Preparation of a Stormwater Quality Management Plan (SQMP)

1) A stormwater quality management plan is required to:

  (a) provide guidance on the policy and standards required in relation to the provision of stormwater infrastructure for new development; and
  (b) ensure stormwater infrastructure design and construction satisfies Council's requirements and environmental and safety expectations.

2) A stormwater quality management plan comprises of the following for MCU/ROL applications:

Section	Contents
Cover page	Development name and reference
Document information page	Table outlining information relevant to the development of the SQMP, including document title (reference number, date and version), document authors and reviewers, suitably qualified persons details (qualifications and experience), names of the project team and signature and name of the client.
Table of contents	Structure of the SQMP.
Introduction	Description of the proposed development (works, address and RP) and purpose of the SQMP.
Previous reports	Summary of other reports which deal with stormwater management that are superseded by this report
Related reports	Summary of reports (such as waterway assessments and soil investigations) that should be read in conjunction with the SQMP.

Previous approvals or requests for information (if relevant)	Details of any previous approvals or requests for information for the development site.
Site description	Description of the development site including details of topography, geology, relevant hydrological/ drainage features, existing natural features, imperviousness etc. Site survey details including spot levels, contours, boundaries, waterways, vegetation (including regional ecosystem mapping), easements and other relevant site features. Description of site constraints.
Development description	Description of the proposed development including land use, scale, densities, site coverage (percent impervious), lawful point of discharge and general urban design.
Stormwater management objectives	List of all the stormwater management objectives (see Section 2) which apply to the development. Justification for any objectives not adopted.
Stormwater management strategy	Description of the selected stormwater management initiatives required to comply with each objective applicable to the development. This should include figures providing conceptual catchments, location and scale of the stormwater management initiatives. It must demonstrate that sufficient space is available for the stormwater management initiatives. This includes both horizontal and vertical space. The proposed system must be able to drain. If the proponent is proposing a bioretention system for the site to comply with the stormwater quality design objectives, they may, if they wish, adopt a filter media sized at 1.5% of the catchment, and allow a total of 3 times this area for the total footprint of the system. If the proponent is proposing a vegetated stormwater asset other than a bioretention system (typically a wetland or swale) they may, if they wish, adopt a size of that system's treatment area using MUSIC and allow a total of 3 times this area for the total footprint of the system. Note that the above does not negate the need to demonstrate that sufficient vertical space has been allowed and that the system can freely drain.
Assessment, modelling and calculations	Detailed description, calculations and models used to determine the stormwater management strategy and compliance with the relevant objectives.
Lifecycle costs (if relevant)	Where the stormwater management strategy involved proprietary devices, lifecycle costs shall be provided.
Conclusion	Relevant concluding information.
References	List of reference documents.
Appendix 2	Where MUSIC modelling has been completed, completed versions of the relevant reporting forms contained in Appendix A of the MUSIC Modelling Guidelines (Water by Design, 2016) shall be provided.
Other appendices (if relevant)	Other appendices as relevant.

a) all stormwater models and calculations used in the creation of the SQMP and development application

3) A stormwater quality management plan comprises of the following for OPW applications:

Section	Contents
Cover page	Development name and reference
Document information page	Table outlining information relevant to the development of the SQMP, including document title (reference number, date and version), document authors and reviewers, suitably qualified persons details (qualifications and experience), names of the project team and signature and name of the client.
Table of contents	Structure of the SQMP.
Introduction	Description of the proposed development (works, address and RP) and purpose of the SQMP.
Previous reports	Summary of other reports which deal with stormwater management that are superseded by this report
Related reports	Summary of reports (such as waterway assessments and soil investigations) that should be read in conjunction with the SQMP.
Previous approvals or requests for information (if relevant)	Details of any previous approvals or requests for information for the development site.
Site description	Description of the development site including details of topography, geology, relevant hydrological/ drainage features, existing natural features, imperviousness etc. Site survey details including spot levels, contours, boundaries, waterways, vegetation (including regional ecosystem mapping), easements and other relevant site features. Description of site constraints.
Development description	Description of the proposed development including land use, scale, densities, site coverage (percent impervious), lawful point of discharge and general urban design.
Stormwater management objectives	List of all the stormwater management objectives (see Section 2) which apply to the development. Justification for any objectives not adopted.
Stormwater management strategy	Description of the selected stormwater management initiatives required to comply with each objective applicable to the development. This should include a scale figures providing conceptual catchments, location and scale of the stormwater management initiatives.
Assessment, modelling and calculations	Detailed description, calculations and models used to determine the stormwater management strategy and compliance with the relevant objectives.
Lifecycle costs (if relevant)	Where the stormwater management strategy involved proprietary devices, lifecycle costs shall be provided.
Construction, establishment, bonding and handover	Detailed description of the construction, establishment, bonding and handover processes to be used (see Section 7)
Conclusion	Relevant concluding information.
References	List of reference documents.
Appendix 1	Detailed engineering and landscape design drawings shall be shown.
Appendix 2	Where MUSIC modelling has been completed, completed versions of the relevant reporting forms contained in Appendix A of the MUSIC Modelling Guidelines (Water by Design, 2016) shall be provided.
Other appendices (if relevant)	Other appendices as relevant.

a) detailed engineering and landscape drawings ; and

b) working copies of all stormwater models and calculations used in the creation of the SQMP and development application; and
c) suitably qualified person certification.

SC6.2.7.4 Preparation of a Stormwater Quality Management Plan Additional Guidelines

For the purposes of the performance outcomes and acceptable outcomes in the Healthy Waters code, the following are relevant guidelines for preparation of a stormwater quality management plan: -

a) Whitsunday Regional Council Stormwater Quality Guideline.

~~SC6.2.6~~SC6.2.8 Vegetation management plan

~~SC6.2.6.1~~SC6.2.8.1 Purpose of a Vegetation management plan

(1) A Vegetation management plan is required to ensure appropriate methods are implemented to appropriately protect against, manage or restore the disturbance of vegetation before, during and after construction works on a site.

(2) A Vegetation management plan may be required prior to or as a condition of a development approval; in which case it is required to be lodged before the commencement of site works or any interference with vegetation.

~~SC6.2.6.2~~SC6.2.8.2 Preparation of a Vegetation management plan

(1) A Vegetation management plan is to comprise a plan of layout and supporting text.

(2) The plan of layout is to include the following standard features as a minimum:

(a) cadastral and property boundaries and dimensions adequate to interpret the plan;

(b) layout of development, including existing and proposed alignments of services and infrastructure;

(c) location and description of vegetation to be retained, cleared and restored, including drainage lines, waterway corridors, wetlands and other ecological features;

(d) location of protective fences or other vegetation protection measures such as designated vehicle access, signage, tree guards and retaining clumps of trees for wind and storm protection;

(e) contours (including areas for proposed filling and excavation);

(f) location and type of erosion measures;

(g) location of dedicated work areas including stockpile and disposal sites; and

(h) location of machinery access ways.

(3) The supporting text is a critical component of a Vegetation management plan and reports on the four main steps of vegetation management processes, namely:

(a) project management;

(b) vegetation protection;

(c) clearing and disposal; and

(d) rehabilitation and maintenance.

(4) Each step is presented in Table SC 6.2.6.2.1 (Vegetation management plan preparation) with suggested approaches as to how to achieve the key aims and outcomes.

Table ~~SC~~ 6.2.8.2.1 Vegetation management plan preparation

Key aims or outcomes	Suggested approach
A. Project Management	

• To formulate and implement vegetation management actions. • To clearly identify objectives, methods and reporting lines. • To inform all relevant people, companies and workers of their responsibilities.	• Vegetation management plan to be prepared in conjunction with engineering requirements. • Vegetation management to be an integral part of the construction and operational phases. • Nominate a person with responsibility for overseeing development works (such as the site supervisor), a person responsible for implementing vegetation management plan actions on site, and a person for point-of-contact for the Council. • Instruct all workers and contractors as to their role in vegetation management. • Provide the method of assessing compliance with the vegetation management plan.
B. Vegetation protection	
• To effectively protect vegetation during construction and operational phases.	• Identify vegetation for removal and protection on a vegetation retention plan. • Refer to appropriate Australian Standards e.g. AS 4970-2009 (Protection of trees on development sites), and AS 4373-2007 (Pruning of amenity trees). • Implement vegetation protection measures during construction. These commonly include designated vehicle access ways, signage, protective barrier fences, silt fences, tree guards and dedicated work areas. Establish these measures prior to works commencing and maintain the measures throughout the construction phase. • Protect the root zones of individual trees or clumps of trees from compaction, filling, stockpiling or excavation. Refer to AS 4373-2007 (Pruning of amenity trees). • Identify a replacement formula for trees which are damaged.
C. Clearing and disposal	
• To minimise the adverse impacts of vegetation clearance. • To maximise recycling or re-use of cleared vegetation. • To minimise the impacts on existing fauna.	• Clearly identify and indicate on a plan the area of vegetation proposed to be cleared in relation to tree protection zones and structural root protection zones. • Use clearing methods that will not damage adjacent protected vegetation and that will minimise soil profile disturbance. Match the type of equipment to be used with the specific clearing task. There are many options available, including excavator-mounted hydraulic grabs etc. • Recycle cleared vegetation for re-use on or off site. Recycling techniques include mulching, tub-grinding, wood chipping

	and salvage. Do not recycle weed materials as this has potential to spread weed propagules. • Obtain advice from a qualified arborist when work is proposed within the tree protection zone. • Clear vegetation sequentially to allow for natural retreat of fauna. • Employ a suitably qualified fauna spotter and a fauna catcher during the vegetation clearing and disposal phase of the project.
D. Rehabilitation and maintenance	
• To restore and enhance areas in the post- construction phase. • To maximise survival opportunities for areas of retained vegetation and newly rehabilitated areas.	• Use species native to the site, including species known to provide food and habitat for native fauna or those species identified in SC6.4.5 (Planting species list). • Use a mix of species which replicate all strata in the nominated Regional Ecosystem that was originally on site pre-clearing. • Use species to augment the functioning of ecological corridors and nodes through the site. • Do not use plants that will compete with or displace existing local native species, or that have the potential to become new and emerging weed species. • Specify a maintenance program in the Vegetation management plan to ensure the long-term health and vigour of retained vegetation and healthy growth of new plantings, including specified growth targets. Give details on mulching, watering and fertiliser regimes, regular inspection schedules for damage or disease, replacement planting criteria and weed control measures.

SC6.3 Heritage planning scheme policy

SC6.3.1 Introduction

SC6.3.1.1 Relationship to the Planning Scheme

(1) This planning scheme policy provides:

(a) information the Council may request for a development application; and

(b) guidance or advice about satisfying an assessment benchmarks which identifies this planning scheme policy as providing that guidance or advice.

Note – This planning scheme policy does not remove obligations under the *Queensland Heritage Act 1992* for places identified on the Queensland Heritage Register.

SC6.3.1.2 Purpose

(1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:

(a) Heritage impact assessment report;

(b) Heritage management plan; and

(c) Archaeological management plan.

SC6.3.1.3 Heritage overlay mapping

(1) Heritage overlay mapping has been prepared for the local government area, showing the areas of local and state heritage significance. This mapping has been prepared in accordance with the requirements of the SPP. The specific overlay to which this PSP applies is:

~~(i)~~ Heritage overlay code. Mapping ~~:~~
~~(ii)~~(i) identifies the Commonwealth, State heritage place and Local heritage place features.

SC6.3.2 Requirements of heritage documentation

(1) Heritage documentation to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.3.2.1 (Requirements of heritage documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

Table SC 6.3.2.1 Requirements of heritage documentation

Documentation	Preparation	Report requirements
Heritage impact assessment report	• Prepared by a suitably qualified professional with tertiary qualification in an area related to heritage conservation and appropriate technical expertise in the field of cultural heritage identification and mitigation. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Heritage impact assessment report may be requested to provide additional information to Council. • A site specific Heritage impact assessment report is to be prepared in accordance with: a) SC6.3.3 (Heritage impact assessment report); b) the Burra Charter: The Australian ICOMOS Charter for places of cultural heritage significance (1999); and c) the *Aboriginal Cultural Heritage Act 2003*. • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.
Heritage management plan	• Prepared by a suitably qualified professional with tertiary qualification in an area related to heritage conservation and appropriate technical expertise in the field of cultural heritage identification and mitigation. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Heritage management plan may be requested to provide additional information to Council. • A site specific Heritage management plan is to be prepared in accordance with: a) SC6.3.4 (Heritage management plan); b) the Burra Charter: The Australian ICOMOS Charter for places of cultural heritage significance (1999); and c) the *Aboriginal Cultural Heritage Act 2003*. • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.
Archaeological management plan	• Prepared by a suitably qualified professional with tertiary qualification in archaeology and appropriate technical expertise in the surveying, identification, recording, assessment and	• A site specific Archaeological management plan may be requested to provide additional information to Council. • A site specific Archaeological management plan is to be prepared in accordance with:

	evaluation archaeological sites. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	c) SC6.3.5 (Archaeological management plan); d) Guideline: Archaeological investigations, DEHP, 2013. e) the Burra Charter: The Australian ICOMOS Charter for places of cultural heritage significance (1999); and f) the *Aboriginal Cultural Heritage Act 2003*. • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.

SC6.3.3 Heritage impact assessment report

SC6.3.3.1 Purpose of a Heritage impact assessment report

(1) A Heritage impact assessment report is required to:

(a) quantify the extent and severity of potential damage to or impacts on a Heritage place; and

(b) provide information and guidance to support the outcomes required by the Heritage overlay code.

SC6.3.3.2 Preparation of a Heritage impact assessment report

(1) A Heritage impact assessment report is to include at a minimum:

(a) a description of the history of the place and a description of the place (including any relevant components, contents, spaces and views that contribute to the significance of the place noted in the Place Card);

(b) a review of the Statement of Significance of the place;

(c) reference to an existing Conservation management plan or Archaeological management plan and the management policies included in either plan (if available);

(d) plans or some form of documentation that illustrate the development plan and site layout;

(e) a heritage impact statement (based on the principles of the Burra Charter: The Australian ICOMOS Charter for places of cultural heritage significance), including:
  (i) photographs of the Heritage place;
  (ii) the identification of the aesthetic, architectural, historical, scientific and social or technological significance; and
  (iii) the demonstration that proposed development conserves, or minimises the impact on, the significance of the place and, if relevant, reflects the management policies contained in the Conservation management plan or Archaeological management plan;

(f) if it is determined that the proposed development will impact the significance of the place, information must be provided to demonstrate why the change is required, what options were considered and what measures are provided to reduce the detrimental impact that may result from the change; and

(g) list any references used in the production of the statement and any relevant technical information or correspondence from government departments.

SC6.3.4 Heritage management plan

SC6.3.4.1 Purpose of a Heritage management plan

(1) A Heritage management plan is required to:

(a) identify the strategies and management techniques a development is to implement to mitigate or reduce adverse impacts on a Heritage place as a result of development; and

(b) provide information and guidance to support the outcomes required by the Heritage overlay code.

SC6.3.4.2 Preparation of a Heritage management plan

(1) A Heritage management plan is to include at a minimum:

(a) an outline of the significance of the place, the conditions of approval for development to a Heritage place and particular requirements to manage the significance of the place during development, including where necessary an archival recording of the place where demolition or removal is required;

(b) a description of the extent of the heritage boundary and the specific heritage features within the boundary;

(c) an outline of the requirements for the management of any approved works within sensitive areas, including:
(i) council conditions of approval for the work;
(ii) work method statements for work requiring particular care and attention to appropriate conservation methods; and
(iii) training of contractors, including 'tool box talks';

(d) an assessment of the risk inherent in particular activities to the significance of the place and appropriate mitigation and/or monitoring responses; and

(e) a procedure for the incidental discovery of items of potential cultural heritage significance, including archaeological artefacts.

SC6.3.5 Archaeological management plan

SC6.3.5.1 Purpose of an Archaeological management plan

(1) An Archaeological management plan is required to:

(a) provide additional information regarding the extent and severity of ground-breaking activities on a site;

(b) identify the management activities which will be undertaken to reduce adverse impacts as a result of development that has been identified as an archaeological place; and

(c) provide information and guidance to support the outcomes required by the Heritage overlay code.

SC6.3.5.2 Preparation of an Archaeological management plan

(1) An Archaeological management plan is to be prepared in accordance with Table SC6.3.2 (Requirements of heritage documentation) and include at a minimum:

(a) descriptions of the significant archaeological features and artefacts of a place, or the potential for archaeological features and artefacts to be present, and the proposed methodology to manage impacts on the features and artefacts during approved ground-breaking activity, including the procedure to manage unexpected discoveries;

(b) outline of the methodology for evaluating the extent, nature and integrity of the site and its significance should ground breaking activities be unavoidable;

(c) definitions of the appropriate management measures for the site, having regard to its potential significance, inclusive of the establishment of any ground disturbance exclusion zones and/or monitoring areas;

(d) specification of the process for dealing with new/unexpected finds of an archaeological nature resulting from ground-breaking activities, including advising Council of any such discovery; and

(e) an outline of the process for the curation and long-term ownership and management of any archaeological material collected as a result of development activities within the curtilage of a Heritage place that has been identified as an archaeological place.

SC6.4 Landscaping planning scheme policy

SC6.4.1 Introduction

SC6.4.1.3 Relationship to the Planning Scheme

(1) This planning scheme policy provides:

(a) information the Council may request for a development application; and

(b) guidance or advice about satisfying an assessment benchmarks which identifies this planning scheme policy as providing that guidance or advice.

SC6.4.1.4 Purpose

(1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:

(a) Landscaping plan;

(b) Landscaped separation buffer plan; and

(c) Planting species list.

SC6.4.2 Requirements of landscaping documentation

(1) Landscaping documentation to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.4.2.1 (Requirements of landscaping documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

Table SC 6.4.2.1 Requirements of landscaping documentation

Documentation	Preparation	Report requirements
Landscaping plan	• Prepared by a suitably qualified professional with appropriate technical expertise in landscape architecture, horticulture or similar • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Landscaping plan may be requested to provide additional information to Council. • A site specific Landscaping plan is to be prepared in accordance with a) SC6.4.3 (Landscaping plan); b) SC6.4.5 (Planting species list); and c) SC6.8 (WRC development manual).
Landscaped separation buffer plan	• Prepared by a suitably qualified professional with appropriate technical expertise in the identification and mitigation of agricultural or industrial impacts or the design of landscaped buffers. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific landscaped separation buffer plan may be requested to provide additional information to Council. • A site specific Landscaped separation buffer plan is to be prepared in accordance with a) SC6.4.4 (Landscaped separation buffer plan); b) SC6.4.5 (Planting species list); and c) SC6.8 (WRC development manual).
Planting species list	-	-

SC6.4.3 Landscaping plan

SC6.4.3.1 Purpose of a Landscaping plan

(1) A landscaping plan is required to:

(a) identify the suitable purposes and specifies plants recommended to be established on the site; and

(b) ensure appropriate methods and management activities are implemented to ensure survival of vegetation; and

(c) provide information and guidance to support the outcomes required by the Landscaping code.

SC6.4.3.2 Preparation of a Landscaping plan

(1) A Landscaping plan is to include a plan of layout and supporting text.

(2) A description and dimensioned site plan (drawn to an appropriate metric scale) is to include at a minimum:

(a) the project description and location;

(b) landscape architect / designer's name and contact details;

(c) the date on which the plan was prepared together with a plan number which clearly identifies the plan and any amendments thereof;

(d) the location of property boundaries, road alignments and street names;

(e) the location of underground and overhead services, including drainage, sewerage, power lines, electricity, telephone and gas;

(f) the location, botanical name and size of existing trees and shrubs and intended retention or removal of these plants to be clearly nominated;

(g) contours and spot levels, both existing and proposed to all surfaces, including levels at the base of all existing vegetation to be retained, and surface levels of paved areas and access covers;

(h) location and design of proposed stormwater drainage works including direction of overland flow, location of field inlets (as required) and methods to ensure erosion control;

(i) details of the location of any earth cuts, fills or mounds within landscaped areas and details of proposed measures to ensure stability, including location, height and materials of retaining walls;

(j) location of all existing and proposed buildings, landscape structures, storage areas, pathways, driveways and parking areas, outdoor furniture (where relevant e.g. centres) and fencing;

(k) details including design, materials used and colours of proposed edging, surface treatments, fencing, pergolas and raised gardens;

(l) location and nature of all proposed vegetation including:
  (i) a graphic code/key (as nominated on the plan);
  (ii) scientific or botanical names of plants;
  (iii) common names of plants (not essential);

(iv) spread at maturity;
(v) height at time of planting (measured from pot soil level to top of growing tip) (not essential);
(vi) crown width at time of planting (not essential); and
(vii) quantity of each species used;

(m) evidence of measures taken for conservation, protection and maintenance of sites which have environmental, ecological, cultural, architectural, historic, scenic, visual, streetscape or scientific significance; and

(n) a maintenance plan, detailing the intended arrangements for maintenance of the landscaping, and the conservation, protection and maintenance of significant sites, including at a minimum, the schedule for:
(i) weed control;
(ii) irrigation and watering;
(iii) plant maintenance and pruning; and
(iv) fertilizer management.

SC6.4.4 Landscaped separation buffer plan

SC6.4.4.1 Purpose of a Landscaped separation buffer plan

(1) A landscaped buffer plan is required to:

(a) achieve appropriate separation between:
(i) sensitive land uses and Rural, Special industry or High impact industry zones; or
(ii) major infrastructure elements (such as State-controlled roads) and sensitive uses; or
(iii) environmentally significant areas or edges of existing Native vegetation from development;

(b) ensure appropriate mitigation methods and management activities are implemented to reduce the potential conflict between incompatible uses; and

(c) provide information and guidance to support the outcomes required by the Landscaping code, Reconfiguring a lot code and the Agricultural land overlay code.

SC6.4.4.2 Preparation of a Landscaped separation buffer plan

(1) A Landscaped separation buffer plan is to include a plan of the layout and supporting text.

(2) A description and dimensioned site plan (drawn to an appropriate metric scale) is to include at a minimum:

(a) the project description and location;

(b) landscape architect / designer's name and contact details;

(c) the date on which the plan was prepared together with a plan number which clearly identifies the plan and any amendments thereof;

(d) the location of property boundaries, road alignments and street names;

(e) consideration and descriptions of the existence and location of surrounding land uses. The development should be in a position which will not result in the potential for land use conflict between neighbouring land uses;

(f) consideration of the nature of the buffer. Buffer areas may be temporary and can be reserved for public open spaces or further residential development once conflicting land use has ceased. Residential subdivision applications may contain mandatory identified buffer areas for development unless the development occurs after neighbouring agricultural activities have ceased;

(g) the extent of the buffer area, the location and spacing of the trees and shrubs with the provision of a list of tree and shrub species, having regard to the type of buffer required.

(10) Separation buffers are to be provided between sensitive uses or any part of a lot included in a Residential zone, Emerging community zone or Rural residential zone and Rural or Industry zones. This buffer may be provided in the form of a landscaped separation buffer (distances set out in Table SC 6.4.4.2.1) or as an open space separation buffer (distances set out in Table SC 6.4.4.2.2).

(a) To be effective, a landscaped separation buffer is to meet the following criteria:
  (i) be located as close as practicable to the point of release of the spray;
  (ii) not be located on land used for a Rural activity;
  (iii) provide a minimum landscaped separation distance in accordance with the dimensions of Table SC 6.4.4.2.1 (Landscaped separation buffer distances).

Table SC 6.4.4.2.1 Landscaped separation buffer distances

Zone/Existing Use	Total landscaped separation buffer distance (including fire break)
Rural zone	40m
Low impact industry zone	
Medium impact industry zone	
Waterfront and marine industry zone	
Low impact industry use	
Marine industry use	
Medium impact industry use	
Research and technology industry use	
Service industry use	
Warehouse use	
High impact industry zone	50m
High impact industry use	
Special impact zone	60m
Special industry use	

  (iv) provide a 10m cleared fire break area on either side of a vegetated strip (this fire break area is included within the total width of the landscaped separation buffer. Where the total width of landscaped separation buffer is 40m, 10m cleared area is located either side of a 20m wide vegetated area).
  (v) the vegetated area is to be comprised of a minimum of three rows ensuring there is foliage from base to crown with no gaps in the lower canopy:
    (A) rows 1 and 3 are composed of short to medium sized tree species; and
    (B) row 2 is composed of taller tree species.
  (vi) contain random plantings of a variety (at least 3) of tree and shrub species of differing growth habits, at a spacing of 2.5m and listed in Table SC 6.4.5.2.3 (Large screening shrubs and windbreaks) of PSP SC6.4.5 (Planting species list);
  (vii) provide a permeable barrier which allows air to pass through the buffer. A porosity of 0.5 is acceptable (that is, approximately 50% of the screen should be air space);
  (viii) have a mature tree height of 1.5 times the spray release height or target vegetation height, whichever is the highest;
  (ix) have mature height and width dimensions which do not detrimentally impact upon adjacent cropped land;
  (x) be planted in accordance with PSP SC6.8 (WRC development manual);
  (xi) be contained within a legal covenant which outlines maintenance requirements; and
  (xii) will not be considered operational until the trees reach the minimum effective height to control spray drift (1.5 times the spray release height or target vegetation height, whichever is the highest). Until then the landscaped separation buffer is to be maintained in line with a scheduled maintenance plan. The maintenance plan is to include at a minimum a schedule for:

(A) weed control;
(B) irrigation and watering;
(C) plant maintenance and pruning; and
(D) fertilizer management.

(xiii) Residential areas should not be developed within 300metres of the incompatible land uses until the buffer is considered as operational;

Note –

(1) The precise design of the buffer will depend on many different factors including the chemicals used, method of application, the site, the proposed land-uses and the adjacent or nearby land uses and characteristics including road reserves and existing vegetation; and

(2) Natural geographical features (watercourses and ridge lines), public open spaces, road reserves etc. can be incorporated into meeting the required distances.

(b) To be effective, an open space buffer is to meet the following criteria:
(i) be located as close as practicable to the point of release of the spray;
(ii) not be located on land used for a Rural activity; and
(iii) provide a minimum open space separation distance in accordance with Table SC 6.4.4.2.2 (Open space separation distances).

Table SC 6.4.4.2.2 Open space buffer distances

Industry	Open Space
Sugarcane	300m
Small Crops	300m
Orchards	300m
Grazing	60m

(11) Landscaped separation buffers between major infrastructure elements (such as State-controlled roads) and sensitive uses or between environmentally significant areas or edges of existing native vegetation and development are to meet the following criteria:

(a) earth mounding is provided where necessary to achieve satisfactory attenuation, visual screening or land use separation;

(b) selected plant species are appropriate to the location, drainage and soil type; meet the buffer's functional requirements and require minimal ongoing maintenance;

(c) plant selection includes a range of species in accordance with the SC6.4.5 (Planting species list) to provide variation in form, colour and texture to contribute to the natural appearance of the buffer;

(d) planting density results in the creation of upper, mid and understorey strata with:
(i) large trees planted at 6m centres;
(ii) small trees planted at 2m centres;
(iii) shrubs planted at 1m centres;
(iv) one plant per 1m along each row;
(v) each row being 3m apart;
(vi) a minimum of six species used in the buffer with a maximum species of 2 species of shrubs; and
(vii) tufting plants, vines and groundcovers are planted at 0.5m to 1m centres;

(e) where adjoining the edge of native vegetation or waterway understorey, shrubs and vines are used to bind appropriately the buffer edges against degradation and weed infestation; and

(f) is maintained in line with a scheduled maintenance plan until reaching its growth maturity. The maintenance plan is to include at a minimum a schedule for:
  (i) weed control;
  (ii) irrigation and watering;
  (iii) plant maintenance and pruning; and
  (iv) fertilizer management.

SC6.4.5 Planting species list

SC6.4.5.1 Purpose of the planting species list

(1) The purpose of this planting species list is to:

(a) identify suitable species of plants for establishing within the region; and

(b) identify suitable purposes for the species of plants recommended.

SC6.4.5.2 Planting species list

(1) It should be noted that plants have been categorised according to their most likely purpose, but some will be multipurpose, for example most street trees can also be used in parks, and some of the smaller, compact street or park trees will also be useful screening plants.

(2) The Planting species list contains the following recommended species:

Table SC 6.4.5.2.1 Verge/street trees plant list

Species	Common name	Wet/Dry	Height (m)	Locally Available
Acacia leptostachya	Townsville Wattle	D	2-5	
Acacia oraria	Coastal Wattle	W/D	5-10	Y
Acmena smithii	Lilly pilly	W	5-10	
Alphitonia excelsa	Red Ash	W	8-10	Y
Brachychiton acerifolius	Flame tree	W	10-15	Y
Brachychiton australis	Broad-leaved Bottle Tree	D	6-10	
Callistemon viminalis	Weeping Bottlebrush	W/D	8-18	Y
Cassia brewsteri syn Senna brewsteri	Leichardt Bean	W/D	2-8	
Cassia tomentella	Velvet Bean tree	W/D	6-12	Y
Chionanthus ramiflora	Native Olive	W	3-5	Y
Cupaniopsis anacardioides	Tuckeroo	W/D	15-25	Y
Cupaniopsis wadsworthii	Cut leaf tuckeroo	W	3-5	Y
Diploglottis obovata	Blunt Leaved Tamarind	W	5-10	Y
Evodiella muelleri	Little pink evodia	W	5-10	Y
Gossia bidwillii	Python wood	W	5-10	
Grevillea baileyana	Scrub Beefwood	W/D	10-15	
Harpulia hillii	Tulipwood	W	10-20	Y
Harpulia pendula	Tulip wood	W	10-20	Y
Hymnosporum flavum	Native frangipani	W	5-12	
Larsenaikia jardinei	Shiny Leaved Larsenaikia	W/D	10-15	Y
Lysiphyllum hookeri	White Bauhinia	D	4-8	
Petalostigma pubescens	Quinine Berry	D	5-10	
Pittosporum ferrugineum	Rusty Pittosporum	W	8-10	Y
Planchonia careya	Cocky apple	W/D	8-15	Y
Randia fitzlanni	Native Gardenia	W/D	5-10	Y
Syzigium australe	Lilly pilly	W	5-12	Y
Syzigium luehmanni	Lilly pilly	W	5-12	
Syzigium paniculatum	Magenta Lilly Pilly	W	10-15	
Xanthostemon chrysanthus	Golden penda	W	8-20	Y

Table SC 6.4.5.2.2 Large and/or park trees plant list

Species	Common name	Wet/Dry	Height (m)	Locally Available
Alphitonia petriei	Pink Ash	W	10-25	Y
Auranticarpa rhombifolia	Diamond Leaf Pittosporum	W	20-25	
Arytera divaricata	Gap Axe	W	30-35	
Alstonia scholaris	Milky pine	W	15-30	Y
Agathis robusta	Qld Kauri	W	20+	
Araucaria cunninghammii	Hoop pine	W/D	20-30	
Backhousia citriodora	Lemon Ironwood	W	5-10	Y
Brachychiton acerifolius	Flame tree	W/D	10-15	Y
Brachychiton compactus	Whitsunday bottle tree	W/D	10-20	Y
Cassia brewsteri	Brewsters Cassia	W/D	6-12	
Cassia tomentella	Velvet Bean tree	W	6-12	Y
Casuarina cunninghamiana	River She-oak	W/D	10-30	Y
Cordia subcordata	Orange cordia	W	8-15	
Corymbia tessellaris	Moreton Bay Ash	W/D	10-30	Y
Cupaniopsis anacardioides	Tuckeroo	W/D	15-25	Y
Commersonia bartramia	Brown Kurrajong	W	12-20	
Elaeocarpus grandis	Blue Quandong	W	20-30	Y
Elaeocarpus obovatus	Hard Quandong	W	30-40	
Eucalyptus raveretianna	River Black Butt, Black Ironbox	W/D	18-25	Y
Eucalyptus tereticornis	Blue Gum, Forest Red Gum	W/D	20-30	Y
Euroschinus falcata	Ribbonwood, Pink Poplar	W/D	20-30	Y
Flindersia australis	Crows Ash	W	15-25	Y
Flindersia schottiana	Bumpy Ash	W	25-40	Y
Harpulia hillii	Tulipwood	W	10-20	Y
Harpulia pendula	Tulip wood	W	10-20	Y
Jagera pseudorhus	Pink tamarind, Foambark	W	6-10	Y
Lophostemon confertus	Brush box	W	20-30	Y
Mallotus philippensis	Red Kamala	W	10-20	Y
Melaleuca dealbata	Blue tea tree	W	12-25	Y
Melaleuca leucadendra	Weeping paperbark	W/D	20-30	Y
Melaleuca quinquenervia	Broad-leaved Paperbark	D	15-20	
Millettia pinnata	Pongamia	W/D	8-20	Y
Melicope elleryana	Pink Euodia	W	15-30	Y
Mimusops elengi	Spanish cherry	W/D	15-18	Y
Nauclea orientalis	Leichardt tree	W	20-30	Y
Paraserianthes toona	Mackay Cedar	W/D	20-30	Y
Pleiogynium timorense	Burdekin plum	W/D	10-20	Y
Syzigium australe	Lilly pilly	W	5-12	Y
Terminalia porphyrocarpa		D	10-15	
Terminalia sericocarpa	Damson	W	20-30	Y
Toona australis	Red Cedar	W	15-25	Y
Waterhousia florabunda	Weeping Lilly Pilly	W/D	20-30	Y
Xanthostemon chrysanthus	Golden penda	W	8-20	Y

Table SC 6.4.5.2.3 Large screening shrubs and windbreaks plant list

Species	Common name	Wet/Dry	Height (m)	Locally Available
Acacia decora		W/D	2-5	
Acacia flavescens	Yellow wattle	W/D	4-10	Y
Acacia holosericea	Soapbush Wattle	D	4-5	Y
Acacia leptocarpa		D	6-10	Y
Acacia leptostachya	Townsville wattle	D	2-5	Y
Callistemon spp.	Bottlebrush	W/D	5-12	Y
Cassia brewsteri	Brewsters Cassia	W/D	6-12	
Cassia brewsteri syn Senna brewsteri	Leichardt Bean	W/D	1-8	
Cassia tomentella	Velvet Bean tree	W	6-12	
Clerodendrum floribundum	Lolly Bush	W/D	3-5	
Cordia subcordata	Orange cordia	W	8-15	
Cupaniopsis wadsworthii	Cut leaf tuckeroo	W/D	3-5	
Dodonaea triquetra	Large-leaved Hop Bush	W/D	3-5	
Dodonaea viscosa	Sticky Hop Bush	W/D	1.5-4	Y
Eugenia reinwardtiana	Beach Cherry	W/D	2-6	
Glochidion lobocarpum	Cheese Tree	W/D	1-6	Y
Glochidion summatranum	Umbrella Cheese Tree	W	3-8	Y
Hibiscus tiliaceus	Native hibiscus	W	4-10	Y
Macaranga involucrata	Brown Macaranga	W/D	4-10	
Macaranga tanarius	Macaranga	W/D	4-10	
Pipturis argenteus	Native mulberry	W	4-10	
Syzigium australe	Lilly pilly	W/D	5-12	Y

Table SC 6.4.5.2.4 Small to medium shrubs plant list

Species	Common name	Locally Available
Abelia grandiflora 'Dwarf'	Glossy Abelia	
Acalypha Inferno		Y
Acalypha Firestorm		Y
Ardisia crenulata		
Baeckia 'La Petite'		
Baeckia virgata	Twiggy Health Myrtle	
Banksia robur	Swamp Banksia	
Banksia spinulosa	Hairpin Banksia	
Bauhinia galpinii	Orange Bachinia	
Bouganvillea-Smarty Pants	Dwarf Bonganvillea	
Breynia disticha	Snow Bush	
Bromeliad Spp.		
Calathea zebrina	Zebra Plant - Ground cover	
Calliandra tweedi		
Callistemon 'Little John'		
Callistemon 'Wildfire'		
Callistemon pachyphylus - green		
Canna Lily - all varieties		
Cassia odorata		
Codiaem - all varieties	Croton	
Codiaeum 'Golddust'		
Codiaeum 'Norma'		
Codiaeum 'Petra'		
Cordyline - all varieties		
Cordyline 'Rubra'		
Cordyline stricta		
Cordyline terminalis		
Cuphea ignea	Cigar Flower	
Dracaena - all varieties		Y
Drejerella guttata	Shrimp Plant	
Duranta 'Aussie 2000'		Y
Duranta 'Sheena's Gold'		Y
Duranta repens 'Alba'		Y
Euphorbia pulcherrima	Poinsetta	
Gordonia exillaris		
Graptophyllum excelsum	Scarlet Fuchsia	
Graptophyllum pictum	Caricature Plant	
Graptophyllum tricolor		
Grevillia 'Superb'	Gordonia	
Hakea plurinervia		
Hakea purpurea		
Heliotropium arborescens	Cherry Pie	
Hemerocallis littoralis	Spider Lilly	
Hibiscus - all varieties		
Hibiscus spp.	Chinese Rose	
Ixora - 'Red Sunkist, Little Willy'		Y
Ixora - dwarf varieties		Y
Ixora 'Prince of Orange'		Y
Ixora 'Pygmy Pink' Twilight Glow		Y
Ixora 'Sunshine'		Y
Justica carnea	Flamingo Plant	
Leea indica	Hawaiian Holly	Y
Leptospermum flavescens		
Melaleuca 'Claret Tops'		Y
Melaleuca thymifolia	Thyme honey myrtle	
Melaleuca trichoscatachya 'Compacta'		

Metrosideros Springfire		
Metrosideros Tahiti		
~~*Murraya paniculata*~~	~~Mock Orange~~	~~Y~~
Murraya Min a Min	Mini Mock Orange	Y
Mussaenda sp	Bankock Rose	
Odontonema strictum	Firespike	
Pachystachys lutea	Lollipop Plant or Super Goldie	
Pedilanthes - 'Exotica & Tricolour'		
Pentas lanceolata	Star – cluser	
Persoonia falcata	Geebung	Y
Philodendron 'Xanadu'		
Philodendron roystonii		
Philodendron selloum	Lacy Tree Philodendron	
Phyllanthus multiflorus	Waterfall Plant	Y
Phyllanthus cuscutiflorus		Y
Plumbago capensis 'Blue'		
Poinsettia - all varieties		
Polyscias sp.	Aralia	Y
Russellia equisetiformis	Coral Plant	
Scaevola taccada	Sea Lettuce	Y
Schefflera arboricola	Dwarf Umbrella Tree	
Steptosolen jamesohnii	Marmalade Bush	
Syzygium paniculatum - 'Dwarf'		
Syzygium var 'Aussie Copper'		
Syzygium var 'Bush Christmas'		
Syzygium zeherii		
Szyzigium wilsonnii	Powder Puff Lilly Pilly	
Thuja orientalis		
Tibouchina 'Jules'		
Westringia fruticosa Zena		Y

Table SC 6.4.5.2.5 Groundcover, boarders and tufted or clumping plants plant list

Species	Common name	Locally Available
Abelia grandiflora 'Nana'		
Adenium obesum		Y
Agapanthus orientalis 'White' & 'Blue'		
Aglaonema sp	Chinese Evergreen	
Ajuga reptans 'Burgundy'	Wild Mint	
Alpinia caerulia	Native Ginger	Y
Alpinia zerumpet	Green Ginger	Y
Ardisia crenata	Spice berry	
Aspidistra elatior	Cast Iron Plant	
Babingtonia tozerensis		
Babingtonia bidwillii	Howies Sweet Midget	
Baeckia virgata 'Mt Tozer'		
Baeckia virgata 'Sweet Midget'		
Baeckia virgata dwarf		
Beaucarnia recurvata	Ponytail palm	Y
Brachycome spp	Rock Daisy	
Chlorophytum spp.	Spider Plant	Y
Clivia miniata 'Belgian Hybrid'	Kaffir Lilly	
Cordyline australis		
Crinum pedunculatum	Native Spider Lilly	Y
Cuphea 'Madhatter'	False heather	Y
Cuphea 'Mexican Heath'		Y
Dampiera diversifolia		
Dianella Border Silver		Y
Dianella caerulea	Paroo Lilly	Y
Dieffenbachia maculata	Dumb Cane	
Dietes bicolor	Flax Lilly	Y
Dietes grandiflora	Fortnight Lilly	
Erigeron karvinskianus	Seaside Daisy	
Eustrephus latifolius	Wombat Berry	Y
Evolvulus 'Blue Saphire'	Wild Ins	Y
Ferns - all varieties		
Furcraea foetida varigata	Hemp Plant	Y
Gardenia 'Radicans'	Minature Gardenia	Y
Gazania - perennial varieties		
Gazania 'Sunshine'		
Gloriosa superba	Glowy Lily	
Grevillea 'Bronze Rambler'		
Grevillea 'Fanfare'		
Grevillea biternata		
Heliconia psittacorum'	'Parrot Flower'	
Heliconia spp		
Hemerocallis	Day Lilies	
Hemigraphis alternata	Purple Wattle Plant	Y
Heterocentron elegans	Lascondra 'Peal Flower'	
Hibertia scandens		Y
Hippeastrum sp		
Hymenocallis	Thai Spider lilly	Y
Liriope evergreen giant		Y
Liriope Stripey White		Y
Lomandra hystrix	Mat-rush	Y
Lomandra longifolia	Mat Rush	
Lonicera nitida	Box Honeysuckle	
Medinilla magnifica		Y
Medinilla Pixie Pink		Y
Ophiopogon japonicus	Mondo Grass	Y

Philodendron xanadu		Y
Scaevola 'Purple Fanfare'		
Sedum spp.		Y
Spathiphyllum	Madonna Lily	Y
Spathiphyllum 'La Petite'	Peace Lilly	Y
Strelitzia reginae	Bird of Paradise	Y
Strelitzia nicholai		Y
Tropaeolum sp	Nasturtium	
Verberba xhlybrida	Gloria Lily	
Viola hedracea	Native Violet	
Xanthorrhoea australis	Grasstree	
Xanthorrhoea fulva	Grasstree	
Xerochrysum bracteatum	Everlasting Paper Daisy	Y
Zamioculcas zammifolia	Zanzibar Gem	Y
Zoyzia	No Mow Grass	Y

Table SC 6.4.5.2.6 Palms, ferns and cycads plant list

Species	Common name	Locally Available
Archontophoenix alexandrae	Alexander Palm	Y
Archontophoenix cunninghamiana	Bangalow Palm	
Asplenium Nidus	Bird Nest Fern - Shade	
Bismarckia nobilis	Bismarch Palm	
Carpentaria acuminata	Carpentaria Palm	
Chamaedorea atrovirens	Cascade Palm	
Chamaedorea metalica		
Chamaedorea safritzii	Bamboo Palm	
Chrysalidocarpus cabadae		
Chrysalidocarpus lucubensis	Madagascar Palm	
Chrysalidocarpus lutescens	Golden Cane Palm	
Cyathea cooperii	Tree Fern	
Cycas revoluta	Sago Palm	
Cyrtostachys renda	Sealing Wax	
Dictyosperma album	Princess Palm Red Hurricane Palm	
Elaeis guineensis	African Oil	
Howea forsteriana	Kenna Palm	
Hyophorbe lagenicaulis	Bottle Palm	
Hyophorbe verschaffeltii	Spindle Palm	
Laccospadix australasica	Atherton Palm	
Licuala grandis	Fan	
Licuala ramsayi		
Livistona australis	Cabbage Palm	
Livistona chinensis	Chinese Fan palm	
Livistona decora	Weeping Cabbage Palm	Y
Macrozamia miquellii		
Macrozamia moorei	Cycad	
Neodypsis decaryi	Triangle Palm	
Normanbya normanbyi	Black Palm	
Pandanus pedunculatus	Screw Pine	
Phoenix canariensis	Canary Island Date	
Pritchardia pacifica	Fijian Fan Palm	
Ptychosperma elegans	Solitaire Palm	
Ptychosperma macarthurii	Macarthur Palm	
Ravenea rivularis	Majestic Palm	
Rhapis excelsa	Lady Palm	
Rhapis hunillis	Dwarf Lady cluster	
Roystonea oleracea	Carribean Royal	
Roystonea regia	Cuban Royal	
Sabal palmetto	Palme Ho Palm	
Veitchia joannis	Handsome solitany feather palm	
Veitchia mernillin	Christmas Palm	
Washingtonia robusta	Cotton Palm	
Wodyetia bifurcata	Foxtail Palm	
Zamia furfuracea	Jamaica sagotree cardboard cycad	
Zamia furfuracea	*Cardboard Cycad*	

Table SC 6.4.5.2.7 Climbers and creepers plant list

Species	Common name	Locally Available
Aristolochia acuminata	Native Dutchman's Pipe	Y
Clamatis Vitalba	Old Man's Beard	
Cougea tomenhosa	Shower orchid	

Species	Common name	Locally Available
Ficus pumila	Climbing Fig	
Hardenbergia violacea	Sarsparilla vine	
Hibbertia scandens	Twining guinea flower	
Hoya carnosa	Wax Plant	
Jasminum aemulum		
Jasminum didymum	Coastal Jasmine	Y
Jasminum sambac	Grand Duke of Tuscany	
Lonicera – multiflora	Honeysuckle	
Lonicera heckrottii	Honeysuckle	
Lonicera japonica	Japanese Honeysuckle	
Mandevilla x amabilis	Dipladenia	
Milletia megasperma	Native Wisteria	
Mucuma Bennettii	New Guinea Creeper	
Pandorea jasminoides	Bower of Beauty	
Pandorea pandorama	Wonga-Wonga Vine	Y
Passiflora coccinea	Red Passion Flower	
Passiflora edulis	Passionfruit	
Quisqualis indica	Rangoon Creeper	
Solanum jasminoides	Jasmine Nightshade	
Stephanotis floribunda	Clustered Wax Flower	
Strongylodon macrobotrys	Jade Vine	
Trachelospernum jasminoides	Star Jasmine	
Vitex rotundifolia	Creeping vitex	Y

SC6.5 Natural hazards planning scheme policy

SC6.5.1 Introduction

SC6.5.1.1 Relationship to the Planning Scheme

(1) This planning scheme policy provides:

(a) information the Council may request for a development application; and

(b) guidance or advice about satisfying an assessment benchmarks ~~which identifies this planning scheme policy as providing that guidance or advice~~.

SC6.5.1.2 Purpose

(1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:

(a) Bushfire hazard assessment report;

(b) Bushfire management plan;

(c) Coastal hazard assessment report;

(d) Flood hazard assessment report;

(e) Landslide hazard (geotechnical) assessment report.

SC6.5.1.3 Hazard overlay mapping

(1) Natural hazard mapping has been prepared for the local government area, showing the areas natural hazard susceptibility. This mapping has been prepared in accordance with the requirements of the SPP. The specific hazard overlays to which this PSP applies are:

(a) Bushfire hazard overlay code. Mapping:
  (i) identifies the Very high risk, High risk and Medium risk sub-categories; and
  (ii) has been prepared at a scale at which a site specific investigation of bushfire hazard will be necessary to determine the exact nature of the hazard on a site (Bushfire hazard assessment report) and the necessity for a Bushfire management plan;

(b) Coastal environment overlay code. Mapping:
  (i) identifies Maritime development areas, High hazard and Medium hazard sub-categories for storm tide inundation, Coastal erosion and Permanent inundation due to sea level rise at 2100 sub-category;
  (ii) is not a substitute for a site based assessment. A site specific Coastal hazard assessment should be undertaken to verify, specific to the site, the coastal hazard risk (unless provided by council) and appropriate mitigation responses to this;

(c) Flood hazard overlay code. Mapping:
  (i) identifies predicted 1% AEP flood extent at 2100 and Flood hazard area;

(ii) is not a substitute for a site based assessment. A site specific flood hazard assessment should be undertaken to verify, specific to the site, the flood hazard risk (unless provided by council) and appropriate mitigation responses to this;

(d) Landslide hazard overlay code. Mapping:
   (i) identifies slope of 15% or greater; and
   (ii) is not a substitute for a site based assessment. A site specific geotechnical assessment report should be undertake to verify, specific to the site, the landslide risk and appropriate mitigation responses to this.

SC6.5.2 Requirements of natural hazard documentation

(1) Natural hazard documentation is to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.5.2.1 (Requirements of natural hazard documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

Table SC 6.5.2.1 Requirements of natural hazard documentation

Documentation	Preparation	Report requirements
Bushfire hazard assessment report	• Prepared by a suitably qualified professional with appropriate technical expertise in the identification of bushfire hazard. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. Rural fire brigade).	• A site specific Bushfire hazard assessment report may be requested to provide additional information to Council. • A site specific Bushfire hazard assessment report is to be prepared in accordance with SC6.5.3 (Bushfire hazard assessment report). • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.
Bushfire hazard management plan	• Prepared by a suitably qualified professional with appropriate technical expertise in the identification and mitigation and have: a) knowledge and experience in applying relevant legislation, plans, policies, standards and guidelines relating to bushfire hazard and fire ecology relating to Queensland requirements; or b) have knowledge and experience in developing bushfire management plans in accordance with the methodology set out in SC6.5.4 (Bushfire hazard management plan) of this planning scheme policy; or c) be accredited practitioner (BPAD Level 2/3) under the Bushfire Planning and Design Accreditation Scheme from the Fire Protection Association of Australia; or d) have qualifications and experience in the field of ecology, environmental management or similar to assess and protect site-	• A site specific Bushfire hazard management plan may be requested to provide additional information to Council. • A site specific Bushfire hazard management plan is to be prepared in accordance with SC6.5.4 (Bushfire hazard management plan) • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.

	based and strategic biodiversity values. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. Rural fire brigade).	
Coastal hazard assessment report	• Prepared by a Registered Professional Engineer Queensland or equivalent with experience in coastal or flood management. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. Utility providers).	• A site specific Coastal hazard assessment report may be requested to provide additional information to Council. • A site specific Coastal hazard assessment is to be carried out in accordance with: a) SC6.5.5 (Coastal hazard assessment report); b) Guideline: A risk assessment approach to development assessment in coastal hazard areas, DEHP, 2013; c) AS/NZS ISO 31000: 2009 Risk management– Principles and guidelines; d) Draft SPP Guideline, state interest—natural hazards, Guidance on coastal hazards; and e) current engineering best practice. • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.
Flood hazard assessment report	• Prepared by a Registered Professional Engineer Queensland or equivalent with experience in flood hazard assessment and flood management. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. Utility providers).	• A site specific Flood hazard assessment report may be requested to provide additional information to Council. • A site specific Flood hazard assessment is to be conducted in accordance with: a) SC6.5.6 (Flood hazard assessment report); and b) AS/NZS ISO 31000: 2009 Risk management – Principles and guidelines; • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.
Landslide hazard (geotechnical) assessment report	• Prepared by a Registered Professional Engineer Queensland or equivalent: a) who holds a degree in civil engineering or engineering geology with current membership of a	• The site-specific Landslide hazard (geotechnical) assessment report may be requested to provide additional information to Council.

	recognised professional institution and whose primary business (with a minimum of 10 years of experience) is in the field of geotechnical engineering or engineering geology; or b) who has local experience with landslides or demonstrable general experience with landslides and their mitigation and rehabilitation. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Landslide hazard (geotechnical) assessment report is to be prepared in accordance with SC6.5.7 • A Landslide risk assessment is to be prepared in accordance with the Landslide Risk Management Guidelines (Australian Geomechanics Society 2007, c and d) in Australian Geomechanics, Volume 42, No. 1 March 2007, or any later guideline of the Australian Geomechanics Society as agreed by Council and is to be provided as part of the site specific Landslide hazard (Geotechnical) assessment report. • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.

SC6.5.3 Bushfire hazard assessment report

SC6.5.3.1 Purpose of a Bushfire hazard assessment report

(1) A Bushfire hazard assessment report is required to:

(a) quantify the bushfire hazard for a particular site;

(b) ensure appropriate methods are implemented to appropriately mitigate or avoid the risk of bushfire hazard; and

(c) provide information which supports the outcomes required by the Bushfire hazard overlay code.

SC6.5.3.2 Undertaking a Bushfire hazard assessment report

(1) The method for assessing bushfire hazard involves quantitative and qualitative assessments. The quantitative element requires an assessment of three key characteristics of land that have been found to be the main determinants of the severity of bushfire hazard. These factors are vegetation communities, slope and aspect. The qualitative review should consider the known bushfire behaviour.

(2) For most types of development, bushfire risk is assessed based on the vegetation existing on and in proximity to the site. However if reconfiguring a lot, the level of bushfire hazard should be assessed as if the vegetation in that area, including any areas designated for revegetation, has reached its mature state.

(3) The steps to be followed and information provided when preparing a Bushfire hazard assessment report are outlined below.

Step 1: Assessment of vegetation communities
The type of vegetation community can determine the rate at which dry fuel accumulates and its susceptibility to bushfire. Some vegetation communities protect fuel from drying out in all but extreme bushfire seasons and can then be susceptible to very destructive bushfires.

Alternatively, vegetation communities may expose fuels to drying and therefore be frequently available for burning. Frequent bushfires can result in the development of bushfire-tolerant grassy woodlands or grasslands and less destructive bushfire behaviour.

Table SC 6.5.3.2.1 (Hazard scores and associated fire behaviours for vegetation communities) lists hazard scores for a range of vegetation community types for the purpose of assessing bushfire hazard.

Table SC 6.5.3.2.1 Hazard scores and associated fire behaviours for vegetation communities

Vegetation Communities	Fire behaviour	Hazard score
Wet sclerophyll forest, tall eucalypts (>30 m), with grass and mixed shrub understorey.	Infrequent fires under severe conditions, flame lengths may exceed 40 m, floating embers attack structures for 1 hour, radiant heat and direct flame are destructive for 30 minutes.	10
Paperbark heath and swamps, eucalypt forest with dry-shrub ladder fuels.	Fire intensity depends on fuel accumulation, but can be severe, with flame lengths to 20 m, spot fires frequent across firebreaks, radiant heat and direct flame for 15 minutes.	8
Grassy eucalypt and acacia forest, exotic pine plantations,	Fire intensity may be severe with flame lengths to 20 m, but less attack from embers.	6

cypress pine forests, wallum heath.		
Native grasslands (ungrazed), open woodlands, canefields.	Fast moving fires, available to fire annually to 4 years. Usually no ember attack, radiant heat for >10 m, duration <2 minutes.	5
Intact acacia forests, with light grass to leaf litter, disturbed rainforest.	Fires infrequent, usually burn only under severe conditions, relatively slow fires, usually little ember attack.	4
Orchards, farmlands, kikuyu pastures.	Fires very infrequent, slow moving, may be difficult to extinguish, frequent fire breaks.	2
Grazed grasslands, slashed grass.	Grazing reduces intensity and rate of spread of fire, duration <2 minutes.	2
Desert lands (sparse fuels), mowed grass.	Gaps in fuel, usually slow fire spread.	1
Intact rainforest, mangrove forest, intact riverine rainforest.	Virtually fireproof.	0

Note – Vegetation assessment should be based upon examination of the vegetation on and surrounding the subject site. Narrow strips of vegetation may be flammable; however, bushfires will not generally reach their full intensity where bushfire fronts are less than 100 metres wide. For this reason the following examples may be viewed as having the next lower hazard score (i.e. paperbark heath would have a score of 6 not 8, cypress pine forest 5 not 6):

a) areas with a linear shape (e.g. roadside vegetation beside a cleared paddock); and
b) units of vegetation less than 50 hectares in area and more than one kilometre from the nearest extensive vegetation.

Where the vegetation community is assessed as having a vegetation community hazard score of zero, no other factors need to be taken into account. No further action is required.

Step 2: Assessment of slope

Studies have shown that fires burn more quickly and with greater intensity up slopes, generally doubling every 10 degrees of slope. Also, the steeper the slope, the more difficult it is to construct ring roads, firebreaks and provide access for emergency crews. Trees situated downhill from structures will have their crowns close to the structures. This presents bushfire hazards particularly for exposed structures such as timber decks.

Table SC 6.5.3.2.2 (Hazard scores for slope) presents the hazard scores for different categories of slope.

Table SC 6.5.3.2.2 Hazard scores for slope

Slope	Hazard score
Gorges and mountains (>30%)	5
Steep hills (>20% to 30%)	4
Rolling hills (>10% to 20%)	3
Undulating (>5% to 10%)	2
Plain (0% to 5%)	1

Note – For site-specific assessment of bushfire hazard, if the site is downhill from the hazard, the slope effect may be taken as zero as the fire intensity will be less. However, burning heavy fuels may roll downhill and trees may fall down, so recommended setbacks from the hazard still need to be observed.

Step 3: Assessment of aspect

Aspect affects bushfire hazard due to the effects that exposure to direct sunlight has on different vegetation communities, including the drying rates of fuels. Aspect also correlates closely with exposure to low humidity winds that increase bushfire intensity. In extremely broken country where there is a range of aspects, the predominant aspect should be used.

As aspect has only a minor influence on flatter land, aspect is not considered to be significant on land with a slope less than 5%. Table SC 6.5.3.2.3 (Hazard score for aspect) lists the hazard score for different aspects.

Table SC 6.5.3.2.3 Hazard score for aspect

Aspect	Hazard score

North to north-west	3.5
North-west to west	3
West to south	2
North to east	1
East to south and all land under 5% slope	0

Step 4: Combining scores to identify the severity of bushfire hazard
The scores for the individual factors determined for vegetation communities, slope and aspect are added to give a total for each sub-unit as follows:

Total hazard score = vegetation community hazard score + slope hazard score + aspect hazard score.

The total hazard score determines the severity of bushfire hazard for each sub-unit as set out in Table SC 6.5.3.2.4 (Hazard score ranges to identify the severity of bushfire hazard).

Table SC 6.5.3.2.4 Hazard score ranges to identify the severity of bushfire hazard

Total hazard score	Severity of bushfire hazard
13 or greater	High
6 to 12.5	Medium
1 to 5.5	Low

Note – Buildings in High severity bushfire hazard areas should be constructed in accordance with the Level 1 requirements of AS 3959:1999 (Construction of Buildings in Bushfire-Prone Areas).

Step 5: Field verification
Preliminary bushfire hazard maps should be prepared based on the results of Step 4 above by aggregating all sub-units with similar levels of bushfire hazard severity into 'high' and 'medium' severity classifications. Field verification or ‘ground truthing’ of these preliminary results should then be undertaken. A number of sample areas should be evaluated to test the accuracy of the preliminary bushfire hazard findings.

Step 6: Qualitative assessment
Known bushfire behaviour complements the quantitative assessment and should be considered as part of the qualitative review.

Known bushfire behaviour is extremely difficult to use as a quantitative planning tool. This is because the absence of bushfire, even for an extended period of time, does not mean that an area will not burn and may lead to massive fuel accumulation with dangerous bushfire behaviour if it does ignite. Known bushfire behaviour may identify sites where combinations of slope and wind have led to severe bushfire behaviour in the past, and where extra precautions to protect assets might be required. The reliability of known bushfire behaviour may be difficult to assess and Queensland Fire and Rescue Service should be consulted if problems are indicated.

Step 7: Safety buffer
The final step in identifying bushfire hazard areas is to add a safety buffer, as land adjacent to a bushfire hazard area is vulnerable to bushfire attack from these areas.

Any land within 100m of an area identified as having a high bushfire severity classification should be included in the High bushfire hazard area and any land within 50m of an area identified as having a Medium bushfire severity classification should be included in the Medium bushfire hazard area. The safety buffers should be integrated into the preparation of maps that identify bushfire hazard areas.

Table SC 6.5.3.2.5 (Total hazard score and severity of bushfire hazard with safety buffers) shows the width of the safety buffers that apply to the various bushfire hazard severity classifications.

Table SC 6.5.3.2.5 Total hazard score and severity of bushfire hazard with safety buffers

Total hazard score	Severity of bushfire hazard	Extent of safety buffer
13 or greater	High	100m
6 to 12.5	Medium	50m
1 to 5.5	Low	Not applicable

SC6.5.4 Bushfire hazard management plan

SC6.5.4.1 Purpose of a Bushfire management plan

(1) A Bushfire management plan is required to:

(a) identify the strategies a development is to implement for mitigating the impacts of bushfire on life, property and the environment, where a site has been identified as having a medium or high bushfire; and

(b) provide information and guidance to support the outcomes required by the Bushfire hazard overlay code.

SC6.5.4.2 Preparing a Bushfire hazard management plan

(1) A Bushfire management plan identifies specific risk factors associated with the development, planning for the separation of at-risk elements and potential hazards, and providing access and treatments to facilitate an effective response to bushfire.

(2) A Bushfire management plan is to be prepared having regard to the principles outlined in SC6.5.4.3 (Managing bushfire hazard risks) and is to include the following information:

(a) a site specific Bushfire hazard assessment report using the methodology set out in SC6.5.3 (Bushfire hazard assessment report) of this planning scheme policy;

(b) an assessment of other site-specific factors that are important in devising suitable bushfire mitigation strategies, such as likely direction of bushfire attack, environmental values that may limit mitigation options, location of evacuation routes and safety zones and identification of the risks on site and from nearby sites;

(c) an assessment of the specific risk factors associated with the development including:
  (i) the intended future population size and characteristics;
  (ii) the likely usage patterns on the site;
  (iii) the estimated traffic generation;
  (iv) the nature of activities to be conducted on the site;
  (v) the storage or handling of hazardous chemicals;
  (vi) the use of the site for emergency services or disaster response purposes;
  (vii) particular warning or evacuation requirements; and
  (viii) the total extent of clearing, revegetation and landscaping proposed for the site which is to be indicated on a site plan;

(d) mitigation measures identified for the development that address major factors in bushfire attack, including embers and burning debris, radiant heat, direct flame contact and wind. Smoke should also be addressed where it is relevant to mitigation measures for vulnerable uses, such as hospitals, aged-care facilities and facilities in which aged or disabled persons reside, or where resident populations are susceptible to respiratory disorders;

(e) a plan for mitigating the bushfire risk identified in the Bushfire hazard assessment report. The plan is to recommend specific mitigation actions for the development including:
  (i) appropriate land uses;

(ii) access, including road layout, accessways, driveways, evacuation routes, including an easement on site and on adjoining lands, access routes for two-wheel drive vehicles and fire-fighting appliances and evacuation requirements;
(iii) lot layout and orientation;
(iv) site layout including identification of proposed locations of buildings or building protection zones;
(v) the need and construction standards for fire maintenance trails;
(vi) access requirements and access routes for two-wheel drive vehicles and fire- fighting appliances;
(vii) warning and evacuation procedures, plans and routes including capacity of public roads especially perimeter roads and traffic management treatments, and responsibility for their maintenance;
(viii) fire-fighting requirements including infrastructure and water supply;
(ix) landscaping, including details of new vegetation or landscape treatments to be used on site, particularly in the building protection zone;
(x) operational, design, construction or management measures for responding to particular requirements of some land uses, such as air quality management and design standards of tanks and fittings;
(xi) any other specific measures such as external sprinkler systems which are only as an adjunct to other passive controls, and alarms;
(xii) ongoing purchaser or resident education and awareness programs; and
(xiii) ongoing maintenance, management and response awareness programs, including tenure and community title arrangements. This should also include identification of specific responsibilities for actions required in the bushfire management plan for owners or occupiers of the development, the developer and Council.

SC6.5.4.3 Principles for managing bushfire hazard risks

Separation distances from sources of bushfire hazard

(1) Topographical features of the site and design elements are used to maximise separation between sources of bushfire hazard and dwellings or buildings, and manage risk. These features include the following:

(a) roads, particularly perimeter roads and roads separating building locations on lots from vegetation with a hazard score higher than 4;

(b) fire maintenance trails where used;

(c) parkland and other areas maintained with reduced fuel loads such as mown grass, sports ovals, golf courses and car parks;

(d) water bodies and waterways;

(e) landscaped areas; and

(f) easements and other reserves such as future road reserves and maintained overland flow paths.

Design and construction of building protection zones

(2) Building protection zones are to be established for the protection of buildings from bushfire:

(a) the inner 10m of the building protection zone is to be maintained in a very low fuel state. This area is designed to prevent continuity of fuel, such as shrubs or build-up of leaf litter extending to the building through:
  (i) paving, lawn or non-combustible mulch such as gravel;
  (ii) tree retention only if there is a vertical and horizontal separation of 2m between plants to ensure the canopy is not continued.

(3) The outer 10m of the building protection zone is to be maintained in a reduced fuel state. This area is designed to reduce bushfire intensity and shield buildings from radiant heat, and prevent flames transferring from ground fuels to the canopy. In the outer zone, trees may be retained or planted in small clumps, retaining vertical and horizontal separation between any other plants to ensure that canopy is not continuous.

(4) In all areas of the building protection zone, trees should be a distance 1.5 times the mature canopy height away from buildings, and should not overhang buildings.

Design of roads and public access

(5) When reconfiguring a lot involves the opening of a new road, a perimeter road is the preferred option to separate bushland from urban areas. The public road system in a bushfire-prone area is to provide alternative access or egress for firefighters and residents during a bushfire emergency if part of the road system is cut by fire. Roads should provide sufficient width to allow fire-fighting vehicle crews to work with fire-fighting equipment about the vehicle.

(6) New lots do not back directly onto hazardous vegetation. The perimeter road allows for fire-fighting access. If a perimeter road is not used to isolate a cul-de-sac from the hazardous vegetation, alternative formal access and egress are provided (E.g. a fire maintenance trail). Using public roads is preferable to using easements.

Fire maintenance trails

(7) Fire maintenance trails are only effective in the context of a strategic advantage and access for hazard-reduction operations. Fire maintenance trails present difficulties and costs associated with maintaining fire maintenance trails on private land. Proposals for fire maintenance trails will need to demonstrate clear benefits over the use of a perimeter road. A perimeter fire trail cannot be imposed on the adjoining lands.

(8) Fire maintenance trails are primarily used as access for firefighters. They are also used for fire control lines and maintenance of buffers protecting development. In non-urban areas, they may surround isolated dwellings or groups of dwellings. In suburban subdivisions, they may function as a strategic control line around the hazard side of the development, if they are connected to the public road system at frequent intervals.

(9) Fire maintenance trails are to be designed and located in accordance with a Bushfire hazard management plan prepared in accordance with this planning scheme policy. The bushfire management plan is to demonstrate that the fire maintenance trails:
  (a) are located, designed and constructed to buffer development from bushfire hazard and allow access for fire-fighting vehicles to strategic areas of the site for firefighting;

  (b) adjacent to Council parkland are to be on private land where no public road interface can be achieved;

  (c) are unfenced and accessible at all times by fire-fighting vehicles;

(d) connect through to a road network or network of other fire maintenance trails;

(e) respond to site topography and bushfire characteristics of the site and surrounding area;

(f) are located, designed and constructed to protect firefighter safety and provide for movement, manoeuvring and access to water supplies for firefighting.

(g) are designed so that dead ends are avoided; however if a dead end exists, a turnaround of sufficient radius for a full lock by a Category 1 fire tanker should be constructed (radius[3] 12m) and if there is insufficient space for such a turnaround due to the topography, provision should be made to allow a maximum three-point turn (radius[3] 10m);

(h) are designed and constructed to avoid adverse environmental impacts, including soil erosion, impacts on natural hydrological flows, or other land degradation;

(i) link to existing fire maintenance trails or roads at each end and at maximum intervals of 200m, having regard to site topography, firefighter safety and the need to regularly access water supplies;

(j) do not alter natural hydrological flows or expose acid sulfate soils; and

(k) primary trails are maintained to provide safe four-wheel drive access by fire-fighting vehicles.

Landscaping

(10) The preparation of a landscaping plan is to be guided by best practice ensuring the design and species selection in the landscape plan:

(a) prevents flame impingement on the dwelling;

(b) provides space and access for property protection;

(c) reduce fire spread;

(d) deflects and filter embers;

(e) provides shelter from radiant heat;

(f) reduces wind speed;

(g) meets the spacing requirements in the bushfire protection zone;

(h) uses site features including topography and driveways to manage hazards;

(i) maximises separation distances between structures and sources of bushfire hazard; and

(j) identifies the use of appropriate materials and species in landscaping to manage fuel loads.

(11) All vegetative material can burn under the influence of bushfire. Careful attention must be paid to species selection, their location relative to their flammability, avoidance of continuity of vegetation horizontally and vertically, and ongoing maintenance to readily remove flammable fuels such as leaf litter, twigs and debris.

Selection of plant species is not to be relied upon as a primary measure to reduce bushfire risk.

SC6.5.5 Coastal hazard assessment report

SC6.5.5.1 Purpose of a Coastal hazard assessment report

(1) A Coastal hazard assessment report is required to:

(a) demonstrate that a development will not increase risk to people and property from coastal hazards impact or create an adverse coastal hazard impact including an impact on the ongoing operation of development in coastal hazard areas; and

(b) provide information and guidance to support the outcomes required by the Coastal environment overlay code.

SC6.5.5.2 Desired outcomes for a Coastal hazard assessment report

(1) The following minimum outcomes have been identified to guide the consideration of risk to development from a costal hazard. These outcomes in Table SC 6.5.5.2.1 (Outcomes for a coastal hazard assessment report) are not necessarily exhaustive having regard to a site or development.

Table SC 6.5.5.2.1 Outcomes for a coastal hazard assessment report

Outcome 1	Development in an area subject to a coastal hazard protects safety and amenity.
Outcome 2	Buildings and structures are designed to withstand coastal hazards and minimise cost and disruption to the community associated with responding to coastal hazard impacts.
Outcome 3	An acceptable standard of amenity for future users of the premises is achieved.
Outcome 4	Difficult to evacuate uses and vulnerable uses are to be located outside of Medium storm-tide sub-category areas and the High storm-tide sub-category coastal hazard areas.
Outcome 5	Development relying on an evacuation route or supporting infrastructure located elsewhere demonstrates that those elements in themselves are not susceptible to a coastal hazard.
Outcome 6	Any action taken to mitigate the impacts of coastal hazards does not impact adversely on an adjacent premise or the ability of others to implement their future adapt, defend or retreat actions.
Outcome 7	Development in an area subject to coastal hazards protects biodiversity, the integrity of environmental networks and coastal resources.

SC6.5.5.3 Undertaking a Coastal hazard assessment report

(1) The nature and severity of flood actions is to be established for the site and is to inform the appropriate site and use mitigation measures that are development specific.

(2) The coastal hazard assessment is to address the sources of coastal hazards, specifically including both the impacts of storm tide and longer term salt-water inundation due to tidal flooding.

(3) The flood actions to be considered in the coastal hazard assessment include the following:

(a) the extent of inundation;

(b) flow velocities and depths of inundation through the assessment area;

(c) hydrostatic and hydrodynamic forces on a structure and a building;

(d) debris impacts;

(e) proximity to coastal waters and associated wave actions;

(f) erosion and associated scour;

(g) distance to land unaffected by flooding; and

(h) duration of flooding.

SC6.5.5.4 Preparation of a Coastal hazard assessment report

(1) The Coastal hazard assessment report is to:

(a) include a Coastal risk assessment, as detailed in Table SC 6.5.2.1 (Requirements of natural hazard documentation) of this planning scheme policy;

(b) describe the impacts of coastal hazards on the site;

(c) describe all proposed mitigation measures for the site. These mitigation measures are to:
  (i) address the full extent of exposure to flood action;
  (ii) address the location, design, siting, construction, and operational procedures for the development;
  (iii) determine the risk of scour or erosion for the particular coastal hazard area and mitigation methods;
  (iv) be specific to the full extent, nature and characteristics of the intended use, including affected populations;
  (v) be contained wholly on the site; and
  (vi) include existing or committed defence measures in developing a site-specific response.

(d) address the outcomes for a Coastal hazard assessment report as detailed in Table SC 6.5.5.2 (Desired outcomes for a Coastal hazard assessment report) detailed in this planning scheme policy;

(e) describe any residual risks likely to be experienced on site or created by the development external to the site.

SC6.5.6 Flood hazard assessment report

SC6.5.6.1 Purpose of a Flood hazard assessment report

(1) A Flood hazard assessment report is required to:

(a) quantify the flood hazard for a particular site at the year 2100;

(b) ensure appropriate methods are implemented to appropriately mitigate or avoid the risk of flood hazard; and

(c) provide information and guidance to support the outcomes required by the Flood hazard overlay code and the Coastal ~~environment~~hazard overlay code.

SC6.5.6.2 Preparing a Flood hazard assessment report

(1) The Flood hazard assessment report is to include the following key elements:

(a) assessment of the flood risk and implications up to and in excess of the defined flood event at the year 2100; the flood risk does not stop at the defined flood event so the suitability of a land use must consider the implications of larger floods, particularly in regard to the risk to people. The following should be identified:
  (i) the potential impacts of flood hazard on the development;
  (ii) the potential impacts of the development on flood hazard;
  (iii) the location and height of buildings, particularly habitable floor areas;
  (iv) the location and design of plant and equipment, including electrical fittings; and
  (v) impact of increases in rainfall intensity at ~~2050 and~~ 2100 in regard to safety and property damage;
  (vi) in the case of overland flow flooding a severe storm impact assessment being provided in accordance with Queensland Urban Drainage Manual;
  (vii) as relevant, include accurate hydrological and hydraulic modelling for the waterway network and assessment of existing flooding and flood levels of major water systems, including modelling of the 50%, 10%, 1%, 0.5% and 0.2% AEP flood events and the Probable Maximum Flood (PMF);
  (viii) address the potential impacts of climate change, including the projected sea level rise of 0.8m; and
  ~~(vii)~~(ix) the 1% AEP flood event at the year 2100 to inform the DFE;

(b) identification of the stakeholders exposed to or affected by the risk of flooding and their compatibility to the risk and how flood risk to people is managed. specifically identifying:
  (i) number of people likely to be at risk and who may need to be evacuated;
  (ii) special care uses (the publication Evacuation Planning by Emergency Management Australia (Commonwealth Government 2005) provides a list of special needs groups);

(c) identification of public and private premises, social systems and environmental elements at risk of flooding, including consideration of extreme flood events;

(d) identification of all critical electrical services, hazardous storages and other high risk elements;

(e) evacuation routes – identify applicable routes, if relied upon, and flood immunity of those routes, and an assessment of the safety of people moving to those routes;

(f) isolation – potential to have evacuation route cut off early in the flood;

(g) burden placed on emergency services – while important to allow safe access for emergency services, they cannot be relied on as a solution to egress difficulties and evacuation;

(h) special care requirements at evacuation destination – uses focused on vulnerable people such as children or elderly and their special requirements for care and the ability of evacuation centres to provide that care;

(i) length of flood recovery and social and economic impacts; that is, the likelihood and consequences of flooding. This evaluation requires a quantitative analysis that uses numerical values, rather than the descriptive scales used in qualitative and semi-quantitative analysis for both consequences and likelihood. The quality of the analysis depends on the accuracy and completeness of the numerical values used

(j) flood-resilient design – this may include both using flood-compatible materials and building design aspects such as locating the least flood-tolerant uses at the highest development levels; and

(k) definition of flood hazard management strategies is to include:
  (i) a description and evaluation as to the impact of the proposed mitigation strategies on the existing and likely future use of land and buildings in proximity to the proposed development;
  (ii) the proposed method of perpetuating the restricted use and required mitigation measures through appropriate forms of legal documentation, notation on titles and methods for conveying the risk management data to future owners and leaseholders; and
  (iii) the procedure to conduct emergency flood management, evacuation and rescue operations including flood emergency management plans.

(2) Development which proposes a lowering of flood immunity standards through a risk assessment (usually an industrial use) is to ensure the building materials are constructed of flood-compatible materials.

(3) A flood hazard assessment report must identify the Flood hazard category in accordance with Table SC6.5.6.2.1 Flood risk, which will be applied in the assessment of the development.

Table SC 6.5.6.2.1 Flood risk

Flood Hazard Category	Description	Depth/Velocity Limit	Depth Limit	Velocity Limit
Low	Unsafe for small vehicles.	≤ 0.6 m²/s	≤ 0.5 m	≤ 2.0m/s
Medium	Unsafe for vehicles and people	> 0.6 m²/s to ≤ 1.0 m²/s	≤ 1.2 m to ≤ 2.0 m	≤ 2.0m/s

High	Unsafe for vehicles and people. All building types considered vulnerable to failure.	> 1.1 m²/s	> 2.1m	> 2.0m/s

SC6.5.7 Landslide hazard (geotechnical) assessment report

SC6.5.7.1 Purpose of a Landslide hazard (geotechnical) assessment report

(1) The Landslide hazard (geotechnical) assessment report is required to:

(a) quantify the landslide hazard for a particular site;

(b) ensure appropriate methods are implemented to appropriately mitigate or avoid the risk of landslide hazard; and

(c) provide information and guidance to support the outcomes required by the Landslide hazard overlay code.

SC6.5.7.2 Risk assessment criteria

(1) For the purposes of completing the risk assessment, tolerable risk criteria apply and are specified by the Australian Geomechanics Society in Table 1 (AGS Suggested Tolerable loss of life individual risk) in the Practice Note Guidelines for Landslide Risk Management 2007, except where societal risk applies as noted below.

(2) 'Acceptable risk' criteria as described in *Australian Geomechanics Society 2007 Practice note guidelines for landslide risk management 2007* are one order of magnitude lower than 'tolerable risk' as specified in Table 1 (AGS Suggested Tolerable loss of life individual risk) and are to apply to:

(a) essential community infrastructure;

(b) sensitive uses;

(c) assembly uses;

(d) difficult to evacuate uses; and

(e) hazardous materials.

SC6.5.7.3 Preparing a Landslide hazard (geotechnical) assessment report

(1) The site-specific Landside hazard (geotechnical) assessment report is to include a landslide risk assessment, as detailed in Table SC 6.5.2.1 (Requirements of Natural hazard documentation) of this planning scheme policy and demonstrate that development on land susceptible to landslide has had appropriate regard to the geological elements including landslide risk on the site.

(2) The site specific Landslide hazard (geotechnical) assessment report is to:

(a) include recommendations and a conclusion that are supported by the data and all stated assumptions contained in the assessment;

(b) be capable of being verified by a peer review;

(c) state whether the site is suitable for the development in compliance with the risk assessment criteria in SC6.5.7.2 (Risk assessment criteria) for the loss of life and for property loss; and

(d) identify the risk mitigation measures for the site.

(3) As a guide the following report format and contents description indicates the depth of detail required:

(a) an introduction including details of the development, such as site location and description including the real property description and the proposed development, reconfiguring a lot or construction details;

(b) a description of existing conditions, including existing research material:
  (i) aerial photographs;
  (ii) geological maps;
  (iii) geological reports;
  (iv) site classification;
  (v) geology (local and regional), including:
    (A) surface and sub-surface materials; and
    (B) geomorphology (slopes, ground contours, natural features, terrain analysis, landslide features);
  (vi) site history, including the location size and type of previous landslips on or affecting the site and hazards outside the site but likely to affect it, such as landslides or rockfalls upslope of the site;
  (vii) groundwater, including:
    (A) watertable; and
    (B) springs and seepage areas in the local area of interest;
  (viii) surface drainage patterns;
  (ix) vegetation cover on and around the site; and
  (x) buildings, other structures, earthworks;

(c) an assessment of land stability/suitability, including:
  (i) proposed development components;
  (ii) a landslide risk assessment for the site indicating the likelihood and consequences of landslides on, above or near the site affecting the development and the calculated risk to life and property having regard to SC6.5.7.2 (Risk assessment criteria) in accordance with *Australian Geomechanics Society 2007 Practice note guidelines for landslide risk management 2007*; and
  (iii) potential geotechnical effects of the development on land stability;

(d) an assessment of development impacts, including:
  (i) site layout;
  (ii) roadworks, driveways and other pavements;
  (iii) earthworks (excavation, materials usage);
  (iv) foundations;
  (v) surface drainage;
  (vi) wastewater (treatment and disposal);
  (vii) detailed existing stability of the site and of geotechnical constraints on buildings or other development work on the site as well as on land above and below the site;
  (viii) overall effect of development on the stability of the site as well as on land above and below the site; and
  (ix) overall effect of any site sewage disposal system or rainwater run-off system on slope stability;

(e) recommendations on appropriate measures required to avoid or minimise risks of instability or other adverse environmental effects, on the site as well as land above or below the site, including:
  (i) preferred locations for buildings, other structures and driveways;
  (ii) foundation requirements;
  (iii) pavement types and design;
  (iv) construction methods to avoid problem areas;
  (v) preferred excavation, retention and stabilisation techniques and the suitability of excavated materials for use in on-site earthworks;
  (vi) surface and sub-surface drainage requirements;
  (vii) preferred methods of wastewater disposal;

(viii) storage of hazardous materials;
(ix) safety of key evacuation routes;
~~(viii)~~(x) vegetation protection and revegetation requirements; and
~~(ix)~~(xi) design life adopted;

(f) a Management plan for engineering solutions anticipated to become Council assets, detailing design life, maintenance requirements, maintenance costs and possible alternatives analysis considering long-term stability, risk and life cycle cost;

~~(f)~~(g) a summary and conclusions on the overall suitability of the land for the proposed development; and

~~(g)~~(h) appendices for field and laboratory test results, including the location and level of field investigations such as boreholes and trench pits.

Note – Overall or Global Slope Stability Certification may be assigned where the development has been assessed as Very low risk in accordance with *Australian Geomechanics Journal Vol 42., No.1. March 2007*, and the following has been met:

(a) Slope has been reduced by cut and fill, with fill being laid under Level 1 supervision in accordance with AS3798;
(b) All fill is retained by means of appropriately designed retaining walls, certified by an RPEQ engineer competent in geotechnical design;
(c) Cuts and cut angles to promote long-term stability are determined by a detailed geotechnical investigation and are assessed for stability; and
(d) Prior to signing of the Plan of subdivision, applicant provides geotechnical certification written by an experienced and qualified geotechnical professional, certifying that the subdivision has been constructed in accordance with the approved plans and the landslide risk level is very low in accordance with *Australian Geomechanics Society 2007 Practice note guidelines for landslide risk management 2007.*

Development within an area assigned an Overall or Global Slope Stability Certification will still require certification by a suitably qualified geotechnical professional to ensure works maintain landslide risk as Low in accordance with *Australian Geomechanics Society 2007 Practice note guidelines for landslide risk management 2007*. Works shall be carried out in accordance with the Overall or Global Slope Stability Certification.

SC6.6 Third party advice or comment planning scheme policy

SC6.6.1 Introduction

SC6.6.1.1 Relationship to the Planning Scheme

(1) This planning scheme policy applies to any development application which has been 'properly made' with Council for assessment against the Planning Scheme. Council may require further expert advice or want to seek comments from a special interest person or group on the development application.

SC6.6.1.2 Purpose

(1) This planning scheme policy:

(a) allows Local government to seek advice or comment, where appropriate, about an application in any circumstances the Local government determines, including, in the Local government's opinion if:

(i) the development may conflict with an overlay;

(ii) specialised technical advice is required to assess the development; or

(iii) the development may affect premises being of special interest to a person.

(b) describes the methods which may be used by Council to obtain third party advice or comment on a particular development application prior to the commencement of the Decision Stage.

SC6.6.2 Third party consultation

(1) The purpose of Consultation is to seek third party advice or comment on any development application prior to the commencement of the Decision Stage. The advice may be sought from any individual, stakeholder or interest group.

(2) The advice or comment may be sought in any appropriate way, including:

(a) public notification in the newspaper; or

(b) placing a notice on the premises; or

(c) placing a notice on public land; or

(d) personal notification or contact; or

(e) public meetings; or

(f) meeting with a person having a special interest.

(3) When seeking third party advice or comment, Council will provide appropriate information on the proposal including:

(a) a description of the proposal;

(b) details of where the development application can be inspected;

(c) provide a copy of relevant information;

(d) details of where comments may be lodged; and

(e) the last day upon which Council will accept advice or comment.

(4) The providing of third party advice or comment for a development application under this planning scheme policy does not provide the consulted party with any Appeal Rights as described by The Act.

SC6.7 Growth management planning scheme policy

SC6.7.1 Introduction

SC6.7.1.1 Relationship to the Planning Scheme

(1) This planning scheme policy provides:

(a) information the Council may request for a development application; and

(b) guidance or advice about satisfying an assessment benchmarks which identifies this planning scheme policy as providing that guidance or advice.

SC6.7.1.2 Purpose

(1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:

(a) Development needs assessment report;

(b) Economic impact assessment report;

(c) Structure plan; and

(d) Traffic impact assessment report.

SC6.7.2 Requirements of growth management documentation

(1) Growth management documentation is to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.7.2.1 (Requirements of growth management documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

Table SC 6.7.2.1 Requirements of growth management documentation

Documentation	Preparation	Report requirements
Development needs assessment report	• Prepared by a suitably qualified professional with appropriate technical expertise in economics and economic assessments. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. business owners).	• A Development needs assessment report may be requested to provide additional information to Council. • A Development needs assessment report is to be prepared in accordance with SC6.7.3 (Development needs assessment report)
Economic impact assessment report	• Prepared by a suitably qualified professional with appropriate technical expertise in economics and economic assessments. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. business owners).	• An Economic impact assessment report may be requested to provide additional information to Council. • An Economic impact assessment report is to be prepared in accordance with SC6.7.4 (Economic impact assessment report)
Structure plan	• Prepared by a suitably qualified professional with appropriate technical expertise in planning and design and the preparation of Structure plans. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A Structure plan may be requested to provide additional information to Council. • A Structure plan is to be prepared in accordance with SC6.7.5 (Structure plan)
Traffic impact assessment report	• Prepared by a traffic engineer who is a Registered professional Engineer Queensland. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A Traffic impact assessment report may be requested to provide additional information to Council. • A Traffic impact assessment report is to be prepared in accordance with: a) SC6.7.6 (Traffic impact assessment report); b) Guidelines for Assessment of Road Impacts of Development, Queensland Government, Department of Main Roads; and c) SC6.8 (WRC development manual). • All investigations, testing and design should be undertaken in

		accordance with industry practice and the provisions of relevant Australian Standards.

SC6.7.3 Development needs assessment report

SC6.7.3.1 Purpose of a Development needs assessment report

(1) A Development needs assessment report is required to:

(a) justify the need for the development given the current demand and supply of existing land and uses; and

(b) ensure the development is economically feasible, with appropriate methods implemented to mitigate or avoid any negative impacts that may result from the development.

SC6.7.3.2 Preparation of a Development needs assessment report

(1) A Development needs assessment report is to include at a minimum:

(a) a supply analysis of land zoned for the same or similar purpose as that proposed by the development within the broader locality, having regard for:
- (i) existing supply of developed and undeveloped land zoned for the same or similar purpose as that proposed;
- (ii) current competition for undeveloped land zoned for the same or similar purpose as that proposed;
- (iii) the consistency of the location with regard to the function and accessibility of the development, including infrastructure provision; and
- (iv) whether, if not satisfactorily located, it would jeopardise the provision of facilities in a location better placed to provide a higher level of choice or degree of convenience and accessibility;

(b) a demand analysis of land zoned for the same or similar purpose as that proposed by the development within the broader locality, having regard for:
- (v) the existing population currently serviced by existing development and the socio-economic characteristic of this population;
- (vi) the population anticipated to be serviced by the proposal over a short, medium and long term planning horizon and the socio-economic characteristic of this population;
- (vii) the existing and anticipated demand for floor space/dwellings over a short, medium and long term planning horizon; and
- (viii) establishment as to whether the proposed development would result in an excess of developed land (for that purpose) locally and within the broader context of the area; and whether the proposed development may be premature or inappropriate in this regard;

(c) the economic feasibility of the proposed development, having regard for:
- (ix) the identified existing supply and demand (and future anticipated demand);
- (x) the capacity/capability/maturity of the market to achieve what is required at a feasible rate and scale;
- (xi) the development size;
- (xii) nature of the services proposed to be included within it;
- (xiii) configuration of the general road network which is likely to provide access to the development;
- (xiv) location of any physical or psychological barriers to movement;
- (xv) location of complimentary, competing/similar development;
- (xvi) expected direct and indirect development employment during construction and operations;
- (xvii) changing trends in lifestyle choices and social behaviour relating to community needs which may affect the proposal; and

(xviii) any other benefits or detriments to the local area or the community in general; and

(d) outline and detail the measures that will be implemented to avoid or mitigate significant impacts identified in the assessment.

SC6.7.4 Economic impact assessment report

SC6.7.4.1 Purpose of an Economic impact assessment report

(1) An Economic impact assessment report is required to:

(a) quantify the economic effects a development may have on surrounding uses; and

(b) ensure appropriate methods are implemented to appropriately mitigate or avoid any negative impacts that may be result from the development.

SC6.7.4.2 Preparation of an Economic impact assessment report

(1) An Economic impact assessment report is to include at a minimum:

(a) the extent of existing floor space and approved new floor space in the area likely to be serviced by the proposed facility and in surrounding areas which could be affected by it;

(b) the likely trade area of the proposed facility having regard to the developments:
  (i) size;
  (ii) nature of the services proposed to be included within it;
  (iii) configuration of the general road network which is likely to provide access to the facility;
  (iv) location of any physical or psychological barriers to movement; and
  (v) location of competing facilities;

(c) the nature and adequacy of existing facilities and approved new facilities in the trade area referred to above and the level of convenience provided by such facilities;

(d) the population, existing and projected, for the likely future trade area and the socio-economic characteristics of that population;

(e) the demand, or likely future demand, for commercial floor space in the area referred to above;

(f) whether the establishment of the proposed facilities would result in:
  (i) an excess of commercial floor space of the type proposed in the area; or
  (ii) would result in an excess of commercial floor space generally; and
  (iii) whether the proposal may be premature or inappropriate in this regard;

(g) the likely impact of the proposed development together with the additional cumulative effect of any approved new commercial developments within the same area on existing businesses, with such impacts clearly articulated together with the means by which they can be ameliorated;

(h) whether the proposed location:
  (i) is consistent with the function of the facility;
  (ii) maximises accessibility within its potential trade area; and
  (iii) maximises the use of public transport and pedestrian and cycle accessibility;

(i) whether, if not satisfactorily located, it would jeopardise the provision of facilities in a location better placed to provide a higher level of choice or degree of convenience and accessibility;

(j) the expected direct and indirect development employment during construction and operations;

(k) changing trends in shopping and other behaviour relating to community needs which may affect the proposal;

(l) the environment effects and urban design implications of the proposal;

(m) any other benefits or detriments to the local area or the community in general, including the expected direct and indirect development employment during construction and operations; and

(n) outline and detail the measures that will be implemented to avoid or mitigate significant impacts identified in the assessment.

SC6.7.5 Structure plan

SC6.7.5.1 Purpose of a Structure plan

(1) A Structure plan is required to:

(a) identify and align with any structure planning undertaken by Council on the premises or surrounding locality;

~~(a)~~(b) identify the major elements of the locality surrounding a development that may impact on the planning and design of the site, ensuring the integration of the development and the continuation of corridors, networks and linkages with and beyond the development site;

~~(b)~~(c) identify how constraints (within the various overlays) or completing interests have been addressed and reconciled; and

~~(c)~~(d) reconcile how the site will fit into the future development of the surrounding area without compromising the effective and efficient development of those lands.

SC6.7.5.2 Preparation of a Structure plan

(1) The extent of the information contained in a Structure plan will depend upon the issues and their resolution, the context of the development in the surrounding area, integration with any Structure plan, and the number of overlays that impact on the area and the site. The more constrained the site, the greater the level of detail required to justify the development.

(2) The major components of the development are to be designed with consideration of this broader context. The Structure plan is to be clear about how the proposed development will integrate with the surrounding community, Structure plans and with the existing parks, service and infrastructure networks and the movement system (road network, public transport facilities and pedestrian and cyclist paths) in the area, including as required by the Transport and parking code.

(3) The scope of a Structure plan is tailored to match the scale and likely impact of the proposed development and depends on the nature and extent of the:

(a) issues associated with the site and the immediate locality surrounding the site, such as land uses, availability of infrastructure, topographical features, significant vegetation, movement systems, natural features, historical features and existing character; and

(b) proposal, its uses, the sequence of development and external impacts such as stormwater quality and quantity management, traffic generation, public transport availability, infrastructure capacity, wildlife corridor linkages and social impacts.

(4) In addition to the general requirements of a Structure plan, an industrial structure plan is to also identify:

(a) the most appropriate location for different types of industries to minimise land use incompatibilities and conflicts;

(b) the integration of the site with any Structure plan surrounding development including any necessary buffering; and

(c) that any reconfiguring a lot is appropriate for the intended industry for the locality.

(5) The steps to be followed and information provided when preparing a Structure plan are outlined below.

Step 1: Site and context assessment
Prior to preparing a Structure plan, an assessment of the site and its context is undertaken and a site description of land prepared, supported by a map containing the following features as a minimum the:

a) relation to any relevant Structure plan;

~~a)~~b) development layout;

~~b)~~c) topography – contours and levels;

~~c)~~d) existing street network and intersections and future connections (identifying minor road connections required to facilitate efficient movement and connectivity of the local road network), and their treatments and public transport routes and their stops;

~~d)~~e) existing residences and structures (such as pool, tennis court or shed), land uses and approvals on surrounding sites;

~~e)~~f) location of nearby schools, shopping centres, employment generators and other community facilities;

~~f)~~g) location of surrounding existing and proposed park network and pedestrian and cyclist paths; and

~~g)~~h) existing infrastructure.

Step 2: Identification of constraints
~~Land in the Emerging community zone or Industry investigation zone is generally suitable for development. However s~~Some land has values or constraints that will influence the location, form and density of development. As a minimum, values and constraints as identified in any overlays are mapped and considered in the design of the overall development.

Step 3: Analysis of the site characteristics and constraints and allocation of land uses
Once the site characteristics and constraints have been identified, they are addressed by the Structure plan as recommended by the relevant codes and local plans where applicable. In some cases it may be possible to develop all or part of constrained sites carefully and sensitively. Alternative approaches may be required to accommodate development, for example lower development yields or sensitive residential design to ensure the retention of land with environmental or scenic constraint or other values. For other sites, development will not be possible. In many cases, a Structure plan, a local plan or provisions within codes will articulate whether development is possible, and if so, how it should occur.

The application must demonstrate integration, namely:

a) compatibility with any Structure plan and ~~of~~ surrounding uses (existing and proposed) with the proposed use/s;

b) that consideration has been given to the potential for the development and coordinated and integrated development of adjoining ~~Emerging community zone or Industry investigation zone~~land uses; and

c) that the development does not prejudice the development of an adjoining premises by shifting unreasonable costs of infrastructure onto adjoining premises, such as parks, stormwater management facilities, roads and bridges.

On a smaller site, where it is not possible to include the full range of land uses that support a sustainable community, it is particularly important to demonstrate that the parks are well planned (either on the site, or already approved on adjoining land) and an integrated road network can be achieved.

If a site is in the Residential or Emerging community zone, a Structure plan is to demonstrate that the allocation of land uses ensures the following:

a) land is used primarily for residential purposes and where relevant aligns with any Structure plan;

b) residential communities are well serviced and enjoy high amenity by providing for a range of complementary business and employment opportunities and community uses and facilities as early as possible. These may include centres, education facilities, parks, health care facilities, youth clubs and emergency services;

c) residential development has good access to public transport, local parks, education facilities, shops and community facilities. As such, these uses must be accommodated in locations that maximise the service they provide to the community and minimise any associated impacts. These uses must be centrally located or highly accessible to their respective catchments and wherever possible to be co-located in or near centres. Uses that are likely to draw significant levels of non-local traffic into residential streets will not be approved unless there is a significant offsetting of community benefit and traffic impacts can be minimised;

d) residential development provides appropriate housing choices for all people and allows residents the opportunity to remain within their neighbourhoods during all stages of their life, with a range of housing choices provided throughout the area. However, houses at low density should predominate; and

e) development does not impinge on the legitimate operation of existing uses and is suitably buffered from incompatible existing uses on the site or on adjacent land.

Industrial development may occur in the Industry investigation zone subject to the identification of environmental performance of the development and the mechanism for the provision of infrastructure in the development.

When allocating industry investigation zoned land for future industrial development, the nature of the industry and the intended industry zone is to align with the separation distances to sensitive zones as detailed in the Reconfiguring a lot code and the assessment benchmarks of the applicable codes.

If a site in the Centre zone or Mixed use zone, a Structure plan is to detail the following:

a) integration with any Structure plan, the mixture and proportion of uses and how these will contribute to economic vitality and the physical environment;

b) key site planning and design elements of the development and how these contribute to the overall centre or corridor structure, movement and circulation network and built form character;

c) building, open space and landscape siting and how these promote and support:
   i) economic activity and community service delivery;
   ii) public transport interchange;
   iii) accessibility and connectivity;
   iv) safety and security;

v) community use and meeting;
vi) higher density residential living;
vii) the character and identity of the centre or mixed use area; and
viii) design for climatic comfort, energy efficiency and subtropical outdoor living;

d) the streetscape and public space interface including public and publicly accessible spaces and linkages, active frontages or significant corner treatments;

e) development interfaces to the surrounding neighbourhood, adjoining sites and to other buildings or uses within the site to mitigate and manage amenity impacts;

f) air or noise impacts on the site and how these will be addressed through use, site planning or building design; and

g) the existing reduced levels and proposed finished levels for all elements.

Step 4: Document the Structure plan
The structure plan design, including land use allocation, movement network design, and open space and park network provision, is to actively promote achievement of the applicable zone and the intent of any relevant local plan or Structure plan.

The structure plan design is to also enable the development to comply with the requirements of all other relevant codes unless specified otherwise by a local plan or Structure plan.

The structure plan is to contain the degree of detail appropriate to the particular development and its circumstance and at a minimum map and report on the following:

a) the approximate lot or dwelling yield for each part of the site (density);

b) the location of each proposed land use, including where applicable, the extent of facilities proposed such as community facilities, centres, employment and education facilities;

c) how and where broad physical infrastructure is to be provided such as water, sewerage and stormwater;

d) the general location and size of parks including corridor linkages and networks and identify the park zone precinct and type that aligns with the intended future function of the site;

e) the existing and proposed pedestrian and cyclist paths;

f) the existing and proposed road network, including level in the hierarchy;

g) the existing and proposed public transport routes and stops; and

h) the proposed staging of development.

When in map form, the information is to be provided at a maximum scale of 1:2,000 and includes a bar scale and north point.

Step 5: Level of consultation required for a structure plan
The preparation of a structure plan will entail the level of consultation required by the *Planning Act 2016* for impact assessable development. On smaller sites, the consultation required by the *Planning Act 2016* would generally suffice.

However, where the site or the proposal entails complex issues, or involves a large site with multiple precincts and land uses, and/or the structure plan is inadequately detailed to

facilitate informed public submissions, Council may require additional material and community consultation as part of a formal Information Request.

~~SC6.7.6 Traffic impact assessment report~~

SC6.7.6 Traffic impact assessment report

SC6.7.6.1 Purpose of a Structure plan

(1) A Traffic impact assessment report is required to:

(a) quantify the effects a development may have on traffic movement and safety on the site and adjacent transport network (streets and intersections) within the sphere of impact of the development; and

(b) ensure appropriate methods are implemented to appropriately mitigate or avoid any negative impacts that may be result from the development.

SC6.7.6.2 Preparation of a Traffic impact assessment report

(1) A Traffic impact assessment report includes at a minimum the following information for the site and the adjacent transport network (streets and intersections) within the sphere of impact of the development:

(a) an assessment of present traffic operations and safety without the development;

(b) an assessment of traffic operations and safety for the following scenarios:
- (i) at completion of the development, and if the development is staged, also at each significant stage prior, including a comparison between current traffic arrangements and proposed traffic arrangements and an outline of the works proposed to offset anticipated traffic impacts;
- (ii) without the development on a 10 year planning horizon from completion of the development; and
- (iii) with the proposed and any additional upgrading works proposed in conjunction with the development on a 10 year planning horizon from completion of the project;

Note—Council should be consulted regarding the expected traffic growth rates for assessing the future scenarios.

(c) a statement describing how the development will provide for safe and convenient movement to, from and within the site;

(d) a statement describing how the development will facilitate walking, cycling and greater use of public transport in preference to using private motor vehicles for trips to and from the development;

(e) a statement describing how public transport services and infrastructure will be improved as a result of the development, particularly where relating to indented bus bays and bus shelters;

(f) a statement describing the measures used to ensure maximum accessibility from the site to public transport, including where future public transport services are envisaged;

(g) a statement describing the measures used to ensure that through traffic is not introduced into local street systems;

(h) an assessment of existing parking supply and demand in the vicinity of the development for both on- and off-street parking, and an assessment of the impact of the development on this parking supply and demand;

(i) a statement describing the appropriate provision for parking in the development based on land use and the potential for trip-making by public transport, or by walking and cycling;

(j) a statement describing the appropriate provision for on-site bicycle parking facilities;

(k) a statement describing whether the proposed means of ingress to or egress from the development are adequate and located appropriately according to the road hierarchy;

(l) an assessment of the provisions made for the loading, unloading, manoeuvring and parking of service vehicles within the development and on the subject site;

(m) an assessment of refuse storage area/s and demonstration of safe vehicle access for the removal of refuse;

(n) an assessment of the proposed routes within the development used by service vehicles associated with the development, and the impacts of heavy vehicle movements on these routes;

(o) an assessment of the potential for integration of access with adjacent development through sharing of common ingress and egress arrangements;

(p) an assessment of the impacts on public transport, traffic operations and parking as a result of any temporary works required during construction;

(q) a record of any comments made by the Department of Transport and Main Roads or any other State planning authority that comply with the rights and powers of these agencies;

(r) an assessment of the existing and likely future amenity of the surrounding area, and of the potential impacts of the development on that amenity;

(s) a statement describing all of the assumptions made in the preparation of the report and the design parameters adopted in the technical analysis;

(t) a statement describing how traffic generation and parking proposed rates (based on gross floor area) are supported by reference to publicly available documents or attaching actual traffic survey data for a similar activity;

~~(t)~~(u) where development incorporates a mix of residential and non-residential uses the assessment may consider the potential cross-utilisation of car parking. A relaxation of up to 30% of the number of non-residential vehicle parking spaces may be appropriate where the assessment demonstrates a genuine cross utilisation exists between proposed uses on a site;

~~(u)~~(v) a statement describing how the layout of the development provides for the safe movement of pedestrians and cyclists within the development and to/from the core of the development and the frontage streets, taking into account the location of public transport and pedestrian facilities;

~~(v)~~(w) an assessment of the operation of any security boom gate or card reader and its impact on vehicle queuing on the frontage roads; and

(x) an assessment of traffic signals operation based on existing signal phasing, including impact on adjacent intersections.~~.~~

~~(w)~~

SC6.8 ~~Whitsunday Regional Council d~~WRC Development manual planning scheme policy

SC6.8.1 Introduction

SC6.8.1.1 Relationship to the Planning Scheme

(1) The planning scheme policy applies to development requiring submission of approval applications, including design details and construction procedures.

(2) It is the intention of the WRC Development manual to set out procedures and requirements that are consistent with the *Planning Act* 2016 and its supporting legislation, and represent 'best practice' in accordance with accepted current state and national standards for design and construction.

(3) The WRC Development manual sets out procedures involved in applying for an Operational Works Permit for Works that will ultimately be in the ownership and maintenance responsibility of Council or other services authorities or works which are subject to approval by Council.

SC6.8.1.2 Purpose

(1) This planning scheme policy provides:

(a) a comprehensive, practical and authoritative guide through the development approval process from inception to completion for Developer's, Consultants, Contractors and Council Officers; and

(b) a consistent set of Engineering standards for implementation across the Whitsunday Region.

SC6.8.2 Whitsunday Regional Council (WRC) development manual

(1) For further detail regarding procedure or specifications, refer to the WRC development manual document.

SC6.9 Waste management policy

SC6.9.1 Introduction

SC6.9.1.3 Relationship to the Planning Scheme

(1) This Planning Scheme policy provides:

(a) information the Council may request for a development application; and

(b) guidance or advice about satisfying assessment benchmarks which identifies this Planning Scheme policy as providing that guidance or advice.

SC6.9.1.4 Purpose

(1) The purpose of this Planning Scheme policy is to provide information guidance and advice for satisfying the assessment benchmarks for the preparation of a site-specific Waste management plan for residential and mixed-use developments.

(2) This guideline provides guidance to Developers, Architects, Waste Consultants and Town Planners when designing subdivisions, multi-unit and mixed-use developments.

SC6.9.1.5 Preparation of a Waste management plan

(1) Waste management must be considered at the design stage of a development. This will ensure sufficient waste capacity to store waste and recycling prior to collections. Sufficient clearance and access for waste collection has been considered and potential health, safety and environment risks are minimised.

(2) A Waste management plan includes at a minimum the following design principles:

Residential subdivisions

It is essential that residential subdivisions be designed to be serviced by Council's standard waste service upon occupancy. Providing functional subdivision layouts is essential for safe and adequate service of these developments. The following will be considered in the assessment of development applications for residential subdivisions:

(a) site planning, lot layout and road design responsive to Council's servicing requirements and provision of safe and adequate bin presentation areas; and

(b) site planning of the development ensures residential and other user's amenity and safety at all stages of the waste management process.

The standard waste service for residential dwelling unit is a weekly service for waste and fortnightly for recycling, collected from the verge. The design of subdivisions with over four (4) lots may need to incorporate on-site collection where adequate verge space is not available to accommodate bin presentation or where bulk bin services are provided as an alternative to 240L mobile garbage bins.

Multi-unit developments

It is essential that the design of all residential multi-unit developments provides a waste management system that is responsive to the development's needs and is able to be integrated with Council's standard waste management service.

To ensure that multi-unit development can access the Council's waste service in an efficient and effective manner, the following will be considered in the assessment of Development Applications:

(a) Site planning of the development accommodates on-site waste collection and allows the waste collection vehicle to enter and exit in a forward direction, manoeuvre within the site and access the nominated collection point;

(b) Waste management system selection ensures safe and convenient use for residents; and

(c) Adequate waste storage area(s) are provided within the development site to store the required number of waste, recycling, or bulk bin services.

The standard waste service for multi-unit development is an on-site collection service where a nominated bin collection point and loading area is provided. The design of the proposed multi-unit development will need to consider how the waste management systems will be integrated with Council's existing waste collection service.

Mixed use developments

It is essential that the design of all mixed-use development provides a waste management system for the residential component of the development that can be integrated with Council's standard waste management service. Separation of commercial and residential waste storage areas must be maintained.

SC6.9.1.6 Waste management plan

(1) A Waste management plan which meets the requirements of these guidelines is to be submitted for the following types of developments:

(a) residential subdivisions with 4 or more lots;

(b) multi-unit (including multiple dwellings, short term accommodation, rooming accommodation, relocatable home park) residential properties; and

(c) developments with multiple uses onsite.

(2) The Waste management plan requires details on the following items:

(a) Summary of development

The summary of the development must contain the following information:

i. location of the development;

ii. number of storeys;

iii. number of dwellings units by size (one, two or three bedrooms);

iv. size of each commercial unit; and

v. details of the intended use of the development.

(b) Anticipated waste generation

Details of the anticipated waste generation for refuse, recycling and other wastes must be calculated using the figures in **Section (r) – Waste generation rates**.

(c) Receptacle size and quantity

Details of the size and quantity of the receptacles to be used must be provided. **Section (q)** – **Receptacle dimensions** contains details of the common size receptacles. Other size receptacles may be used, subject to approval by Council's Waste Services Department. Details of these receptacles must be provided with the Waste management plan.

(d) Bin storage area

Design details of the bin storage area must be included in the Waste management plan covering the requirements outlined in **Section (p) – Bin store size**. This includes:

i. how waste is transported from the source to the bin storage area;

ii. bin storage area size;

iii. bin storage area layout;

iv. wash-down area;

v. ventilation;

vi. vermin prevention;

vii. noise reduction; and

viii. stormwater ingress prevention.

(e) Waste system

Details of any waste systems must be provided including chutes, compactors, and any other waste management equipment or devices to be used.

(f) Collection method

The Waste management plan must provide details on proposed collection method to be used in servicing the development. This will include information about the following subjects:

i. movement of collection vehicle;

ii. collection location; and

iii. transfer of waste to the collection vehicle.

Upon the completion and occupation of the development the Waste management plan will provide the framework for the management and collection of waste and recycling.

(g) Waste collection - Council services

Council provides the following services to all rateable (residential) properties.

i. Mobile Garbage Bin (MGB) services consisting of:

(A) 1x 240L MGB for waste and 1x 240L MGB for recycling (kerbside); and

(B) 1100L and 660L MGBs for waste and recycling (for on-site collection in multi-unit dwellings by arrangement).

ii. Council's collection services operate Monday to Friday for residential properties; and

iii. Council's collection contractor operates the following collection vehicles:

(A) Side loaders (29m^3 compactor) – waste collections;

(B) Side loaders (29m^3 compactor) – recycling collections; and

(C) Rear loaders (28m^3 compactor) – waste and recycling collections.

Note - Council does not provide commercial waste collection services.

(h) Collection frequency

Council's standard residential service comprises a weekly collection of waste and fortnightly collection of recycling. Multiple weekly services may be provided for multi-unit residential developments by negotiation with Council's Waste Services Department.

Note – Multiple weekly services are subject to agreement with Council and may not always be possible. Where not possible, Council may encourage premises to enter into a commercial agreement with a local service provider. A minimum service charge will still apply in accordance with Council's revenue statement.

(i) Collection at the verge

For collection of MGBs at the verge the following conditions shall be met:

i. a flat area is required of sufficient size to accommodate all the MGBs to be serviced on that day;

ii. the MGBs are to be placed in single file with no less than 100mm between each MGB. The flat area can either be paved or grass;

iii. the MGBs placed at the verge shall not obstruct pedestrian traffic or vehicles using the adjacent street and be clear of street signs, trees, seats, litter bins or other permanent fixtures on the verge;

iv. consideration shall be given to ensure there is no impediment to sight distances to nearby cross-overs and intersections;

v. the bin collection area shall not be adjacent to street parking bays;

vi. the MGB shall be placed on the verge no more than 1.5m from the kerb with the lid opening to the road. All bins for collection shall be placed on the verge prior to 6:00 am on the collection day; and

vii. the movement of MGBs from the complex to the collection point shall not occur on the vehicular access ways.

Note - Overfull bins with lids not closed, 240L MGBs that weigh in excess of 70kg and waste placed outside the MGBs will not be collected.

(j) Collection within the premises

MGBs at multi-unit and mixed-use developments may be serviced by Council's contractor from within the bin store or from a location within the premises. If within the premises, a signed indemnity will need to be provided to permit Council's contractor to enter private property.

Where receptacles are presented for service outside of the bin store:

Bin manoeuvrability

i. the surfaces which are traversed must be designed to allow easy transportation of the MGBs and be finished in a way which reduces the noise caused by the MGBs as they are manoeuvred;

ii. the distance between the bin store and the presentation area is no greater than 10m;

iii. gradients on the path used to transfer the MGBs from the bin store to the collection point must not exceed 1 in 14 for two wheeled MGBs and 1 in 20 for four wheeled MGBs; and

iv. the area between the bin store and the collection point shall be a flat smooth surface with no kerbs or steps.

Bin access

i. the minimum pavement width for access to bin stores shall be 4m and the gradient of the access ramp shall be no more than 1 in 8; and

ii. where bin rooms are secured, a compatible key system is necessary to enable access by collection truck drivers. Details of the proposed locking system are to be included in the Waste management plan for approval by Council's Waste Services Department. All costs associated with the locking system are the responsibility of the developer, property owner/s and/or the strata managers.

Bin collection

i. where on-site collections occur, roadways and infrastructure traversed by the collection vehicle must be constructed to accommodate a heavy truck of 25 tonne gross vehicle mass;

ii. sufficient overhead clearance is required for access to bin stores that are located in basements or under crofts. This includes clearance to

all structural beams, suspended pipe work, suspended services and the like;

iii. the basement area shall be free of columns, kerbs and other permanent structures that would inhibit the manoeuvrability of the collection truck;

iv. sweep paths for the proposed collection vehicles shall be clearly shown on the plans of the proposed development and included in the Waste management plan; and

v. where private collections are employed the collections must comply with all local, state and federal laws and regulations.

The waste collection vehicle must be able to enter and exit the development in a forward direction, with limited reversing (maximum 3-point turn), parking in a designated location within the property boundaries. This could be facilitated by the inclusion of a turntable.

Please see vehicle dimensions for required adequate vehicle clearance. Where alternative access is proposed, the design is to take into consideration the safety of pedestrian traffic, other vehicles using the area and traffic density on the servicing street.

(k) Waste chutes

In high rise developments waste chutes are often proposed to convey waste and recycling from the lobby areas to the bin store. With regard to the lobby area the designer shall consider space restraints, chute design, mechanisms for the separation of waste from recycling and the management of bulky items such as cardboard in the lobby area.

At bin store level consideration shall be given to the safety aspects of the chute operation, rotation of the MGBs beneath the chute, ventilation and mechanical breakdown of the chute system.

Sufficient space shall be provided in the bin store for the manoeuvring of MGBs from beneath the waste and recycling chutes.

(l) Compaction

Compaction of garbage can be used where there are constraints on space. Typically the garbage is compacted directly in the MGB using downward force. Garbage compaction shall be restricted to no more than 50% (2:1) of the original garbage volume. Compaction shall not be used for recycling.

(m) Bin store

All multi-use developments, which include multiple dwellings, are to provide a dedicated area for the storage of MGBs. The bin store must be of sufficient size to house all the requisite MGBs, include room for manoeuvring the MGBs and include a bin washing area.

(n) Design requirements

The bin store will have the following as a minimum:

i. 75mm thick concrete slab floor with fall to a floor waste trap connected to a sewer;

ii. a tap with hose to facilitate bin washout and bin store cleaning;

iii. walls will be constructed of brick, concrete or similar with the inside walls sealed and painted in a light colour to facilitate washout;

iv. fully enclosed with a wall of 1.8m minimum height;

v. doors to be solid in nature and lockable with a minimum clear width of 1,200mm, fitted with an efficient self-closing device and a method of holding the doors open when required;

vi. adequate ventilation to be provided;

vii. artificial internal and external lighting with movement sensor or mechanical switch controlled;

viii. all applicable signage;

ix. MGBs must not be visible from the property boundary except when presented for collection;

x. the bin storage area shall be undercover to prevent stormwater from entering the sewer;

xi. where located within a building, the bin store shall be ventilated in accordance with Australian Standard 1668.2: The Use of Ventilation and Air Conditioning in Buildings (as amended);

xii. where mechanical ventilation is used, the outlet for vented air must be in a location which will not adversely impact residents;

xiii. sufficient space must be provided to allow the easy passage of MGBs in and out of the bin storage area; and

xiv. separate bin storage areas are required for residential and commercial waste storage.

(o) Bin store signage

An information sheet shall be affixed at the entry to the bin store containing the following information to facilitate safe and efficient waste management at the proposed development. The information sheet will include:

i. caretaker contact details for any waste related issues;

ii. bin collection days and times;

iii. waste types appropriate for each bin type;

iv. the information sheet will be regularly updated by the caretaker;

v. any changes or amendments to the waste services shall be passed on to the residents and tenants;

vi. where waste chutes are used the same sign shall be affixed to the wall in each lobby adjacent to the waste chutes; and

vii. a sign stating “NO STANDING” fixed to the door of the bin store.

(p) Bin store size

The size of the bin store shall be determined using the following criteria:

i. double the footprint of each MGB shall be used per MGB for MGB storage; and

ii. three times the footprint of the largest MGB for the wash bay.

The area to be allowed per MGB is shown in **Table SC 6.9.1.1**.

Table SC 6.9.1.1: Allocation of area per MGB

MGB Type	Width	Depth	Area of MGB	Allowance per MGB	Allowance for Wash Bay
240 L	0.585 m	0.73 m	0.43 m^2	1.0 m^2	2.0 m^2
660 L	1.26 m	0.78 m	0.98 m^2	2.0 m^2	3.0 m^2
1100 L	1.24 m	1.07 m	1.33 m^2	3.0 m^2	4.0 m^2

(q) Receptacle dimensions

i. 240L MGB - Typical 240L MGB's used by Council are shown in **Figure 1**.

Figure 1: Details of 240L MGB

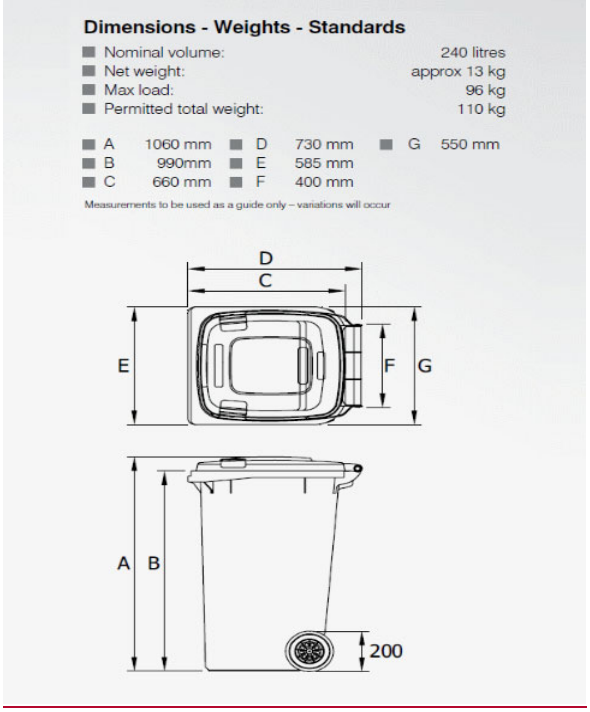


Figure 2: 240L MGB colours

ii. 660L MGB - Typical 660L MGB used by Council are shown in **Figure 3.**

Figure 3: 660L MGB dimensions

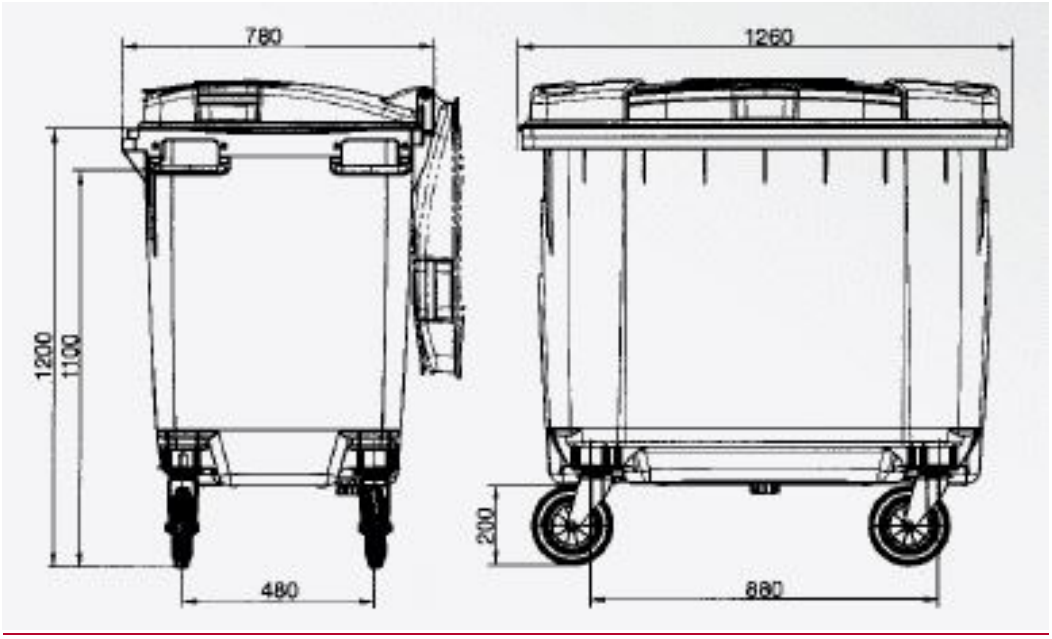
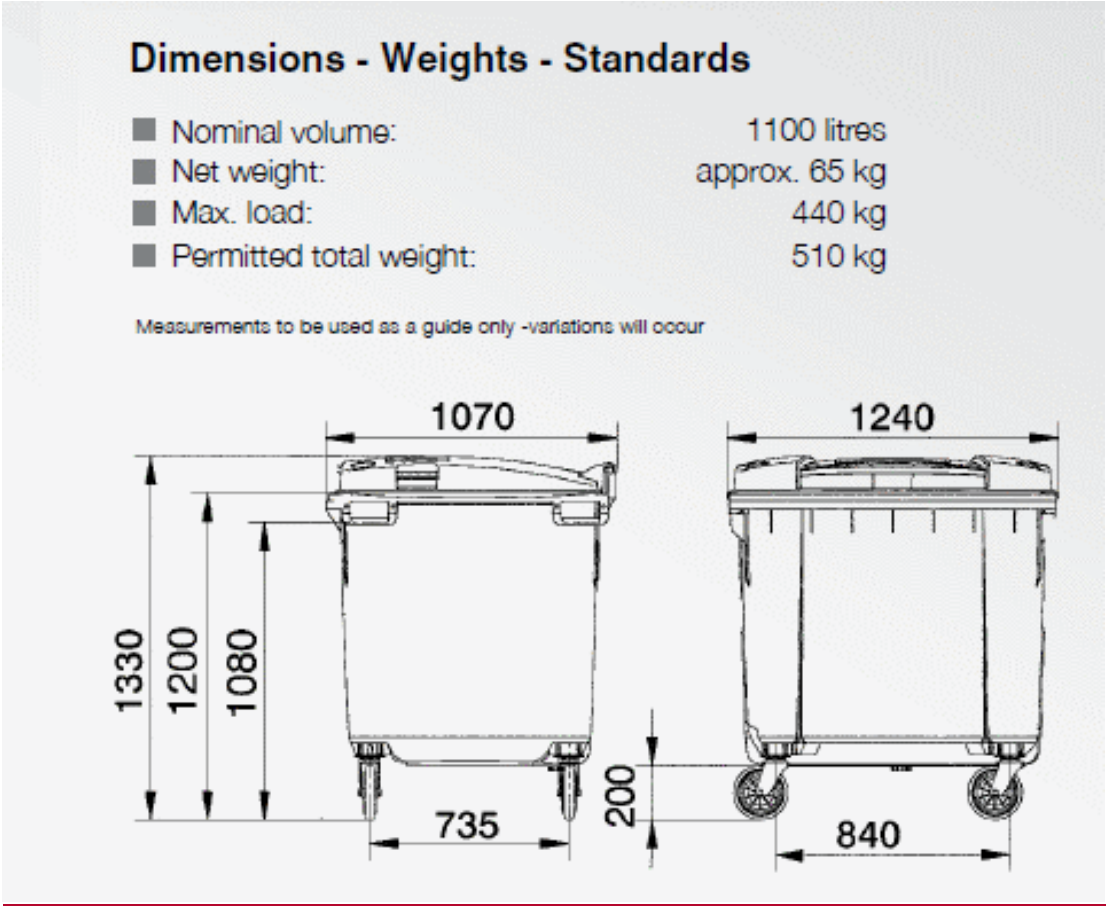


Figure 4: 660L and 1100L MGB Colours

iii. 1100L MGB - Typical 1100L MGB used by Council are shown in **Figure 5**.

Figure 5: 1100L MGB dimensions



(r) Waste generation rates

i. developments are to be designed to incorporate waste and recycling storage in accordance with the waste and recycling predicted weekly generation rates shown in **Table SC 6.9.1.2** and **Table SC6.9.1.3**.

Table SC 6.9.1.23: Residential waste and recycling generation rates

Type of Premises	Waste (Litres per week)	Recycling (Litres per week)
Serviced apartment	35	35
1 bedroom apartment	80	40
2 bedroom apartment	100	60
3 bedroom apartment	120	60
Individual dwelling	240	120

Table SC 6.9.1.3: Commercial waste and recycling generation rates

Type of Premises	Waste	Recycling
	Litres/100m² floor area/day	
Take Away Food Outlet / Corner Store / Convenience Store / Lunch Bar	150	150
Café	300	130
Restaurant	660	130
Shops with less than 100 m² floor space	50	25
Shops with more than 100 m² floor space	50	50
Showrooms	40	10
Taverns and Bars	50	50
Hotel and motel restaurants (dining area)	660	130
Offices	10	10
Hotel and motel accommodation	5 L/bed/day	1 L/bed/day

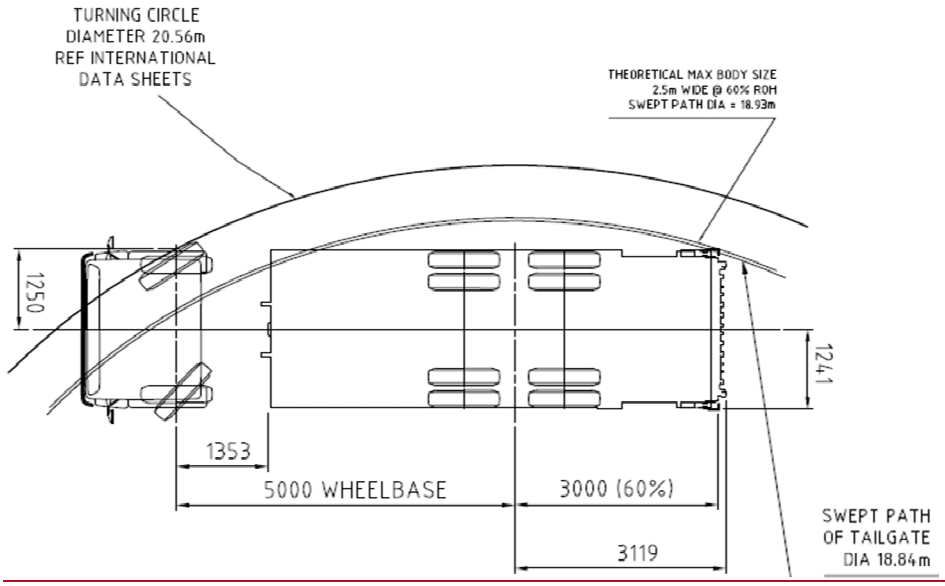
ii. where the waste or recycling requirements outlined in **Table SC6.9.1.2** or **Table SC6.9.1.3** above result in a partial bin requirement, this is to be rounded up to the next bin number; and

iii. where waste chutes are used an additional MGB per chute shall be provided to ensure that there will be MGBs under the chutes in the bin store during times of waste and recycling collection.

(s) Sweep Paths

i. Figure 6 shows the sweep radius of a typical 25 tonne rear load waste collection truck.

Figure 6: Sweep radius of a 25 tonne rear load truck



(t) Assignment of Duties

The Waste management plan shall clearly convey the responsibilities and duties of Council, strata manager, caretaker, residents and commercial tenants, being:

i. strata manager:

(A) the strata manager shall be required to ensure that the management of waste and recycling at the facility complies with the requirements of the *Environmental Protection Act 1994* and *Public Health Act 2005,* and an appropriately qualified and experienced caretaker is appointed to manage the waste and recycling activities at the complex. the engagement of a caretaker will form part of the strata management agreement for the property, endorsed by all building owners. provision for the payment of the caretaker will be included in the annual strata fees;

ii. caretaker - the caretaker shall:

(A) inspect the waste chutes on each floor of the complex (if used) on a daily basis to ensure that there is no accumulation of waste in the lobby areas, that signage is visible, lobby areas are clean and that the waste chutes are functioning correctly;

(B) ensure that the doors on the waste chutes (if used) at the bin store are functioning correctly and that there is no blockages in the waste chutes;

(C) change the MGBs at the base of the waste chutes (if used) in the bin store as the MGBs become full;

(D) compact waste in the MGBs (if compaction is used) to increase bin capacity;

(E) clean and maintain the MGBs and bin store;

(F) washing and deodorising MGBs as required; and

(G) keep up to date with waste collection issues, such as public holiday collection schedules, local service disruptions or changes in collection days;

iii. commercial tenants - the commercial tenants will be responsible to undertake the following:

(A) practice correct waste separation of waste and recycling;

(B) deposit recyclables loose in their respective recycling MGB; and

(C) coordinate with the caretaker in regards to waste management practices and report any issues; and

iv. residents - the residents will be responsible to undertake the following:

(A) practice correct waste separation of waste and recycling;

(B) deposit recyclables loose in the recycling chute (not bagged); and

(C) deposit recyclables loose in their respective recycling MGB.

Tables of Appendix 1

Table AP 1.1 Abbreviations and acronyms

Appendix 1 Index and glossary of abbreviations and acronyms

Table AP 1.1 Abbreviations and acronyms

Abbreviation/ acronym	Description
ABH	Average building height
ABLP	Airlie Beach Local Plan
AEP	Annual exceedance probability
AHD	Australian height datum
ARI	Average recurrence interval
ASS	Acid sulfate soils
AS	Australian Standard
AO	Acceptable outcomes
AV	Articulated vehicle
BCA	Building Code of Australia
BLP	Bowen Local Plan
CO	Compliance outcomes
CPTED	Crime prevention through environmental design
DEHP	Department of environment and heritage protection
DFE	Defined flood event
DFL	Defined flood level
DNRM	Department of natural resources and mines
DSDIP	Department of state development, infrastructure and planning
DSTE	Defined storm tide event
DTMR	Department of transport and main roads
EP Act	*Environmental Protection Act* 1994
EPBC Act	*Environmental Protection and Biodiversity Conservation Act* 1999
ESCP	Erosion and sediment control plan
GFA	Gross floor area
GLA	Gross leasable area
GIS	Geographic information systems
GPS	Global positioning system
HAT	Highest astronomical tide
HILP	Hamilton Island Local Plan
HRV	Heavy ridged vehicle
ICOMOS	International council on monuments and sites
km	Kilometre
LGIP	Local government infrastructure plan
LP Gas	Liquid petroleum gas

Abbreviation/ acronym	Description
m	Metere
MCU	Material change of use
MLES	Matters of local environmental significance
MSES	Matters of state environmental significance
MNES	Matters of national environmental significance
MRV	Medium rigid vehicle
MSES	Matters of state environmental significance
MU	Mixed use
PIA	Priority infrastructure area
PMF	Probable maximum flood
PMVA	Property map of assessable vegetation
PO	Performance outcomes
PSP	Planning scheme policy
QDC	Queensland Development Code
ROL	Reconfiguring of a lot
RPEQ	Registered professional engineer Queensland
SC	Schedule
SPA	*Sustainable Planning Act* 2009 (repealed)
SPP	State planning policy
SQMP	Stormwater quality management plan
SRV	Small rigid vehicle
the Act	*Planning Act 2016*
the Regulation	*Planning Regulation 2017*
TUA	Total use area
WQO	Water quality objectives
WRC	Whitsunday Regional Council
WWMP	Wastewater management plan

Tables of Appendix 2

Table AP 2.1 Table of amendments

Appendix 2 Table of amendments

Table AP 2.1 Table of amendments

Commencement date	Planning scheme version	Amendment type	Amendment description
30/06/2017	V3.4	Making a Local Government Planning Instrument	Whitsunday Planning Scheme 2017 was adopted.
03/07/2017	V3.5	Alignment amendment	Alignment with the Planning Act 2016.
29/06/2018	V1.6	Amendment to include a Local Government Infrastructure Plan (LGIP)	• Inclusion of Part 4 of the Planning Scheme; • Inclusion of Schedule 3 of the Planning Scheme; and • Amendment to Schedule 1 definitions to include LGIP terminology.
21/12/2018	V3.6	Administrative amendment and amendment to a Planning Scheme Policy (Schedule 6.8)	• Clarification of various outcomes, formatting and grammatical amendments; and • Amendments to Development Manual.
30/11/2020	V3.7	Interim LGIP Amendment	• Amendment to Part 4 and Schedule 3 to remove Water reservoir (W8) located in Bowen South; • Update Schedule of Works Model to reflect removal of Water reservoir (W8); • Align LGIP Version 1.6 with the Planning Scheme, such that both become Version 3.7.
##	V4.0	Major Amendment to the Whitsunday Planning Scheme	•

Whitsunday Regional Council Development Manual

Version No. 4.0~~3.6~~

Issued ##/##/2021~~21/12/2018~~

This document is the property of Whitsunday Regional Council and is issued to developers, consultants, contractors and Council officers responsible for the development process from inception to completion.

No unauthorised changes are to be made to this manual. Suggested changes are to be forwarded to the Manager Strategic Planning for consideration.

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Definitions and Acronyms

AASHTO	American Association of State Highway & Transportation Officials
AC	Asphaltic Concrete
ADWF	Average Dry Weather Flows
AHD	Australian Height Datum
AMCORD	Australian Model Code for Residential Development
ARI	Average Recurrence Interval
AEP	Annual Exceedance probability
ASD	Approach Sight Distances
ASS	Acid Sulphate Soils
AV	As Values
BBQ	Barbecue
CBR	California Bearing Ratio
Consulting Engineer	An RPEQ certified engineer
CPESC	Certified Professional in Erosion and Sediment Control
CPTED	Crime Prevention through Environmental Design
Days	Business days
Defects Liability	Means the obligation upon the developer/applicant to repair any defects (latent or patent) in the development.
Defects Liability Period	Means the period commencing on the date stated in Council's Defects Liability Letter and ending on the date stated in that letter. For the avoidance of doubt, Council may impose a different period for defects liability and 'on maintenance' periods.
DICL	Ductile Iron Cement Lined
DTMR	Department of Transport and Main Roads
EP	Equivalent Persons
ESA	Equivalent Standard Axles
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Plan
ESCS	Erosion and Sediment Control Strategy

ESD	Entering Site Distance
FRC	Fibre Reinforced Pipe
HDPE	High Density Polyethylene
IDF	Intensity Frequency Duration
IEAust	Institute of Engineering Australia
IPWEA	Institute of Public Works Engineering Australia
ITP	Inspection and Test Plan
K	Potassium
LATM	Local Area Traffic Management
MUTCD	Manual of Uniform Traffic Control Devices
N	Nitrogen
NATA	National Association of Testing Authorities
Off Maintenance	Means that the ownership and the maintenance obligations have transferred to Council upon completion of the “Off Maintenance” inspection occurring at the end of the “On Maintenance” period.
On Maintenance	Means that ownership of the asset has passed to Council but the maintenance responsibility and obligation remains with the developer/applicant for the On Maintenance Period. Maintenance includes but is not limited to mowing, whippersnipping, watering, cleaning and general upkeep, as well as the rectification of any defects and shall be at the sole cost of the developer (unless caused by Council activities).
On Maintenance Period	Means the period of time commencing on the date of issue of the “On Maintenance “letter from Council and ending on the date stated in that letter.
P	Phosphorus
PASS	Possible Acid Sulphate Soils
PE	Polyethylene
PVC-M	PVC modified
QLD	Queensland
QUDM	Queensland Urban Drainage Manual
RM	Rising Main
RPEQ	Registered Professional Engineer Queensland

RPZD	Reduced Pressure Zone Device
SCADA	Supervisory Control and Data Acquisition
SISD	Safe Intersection Site Distance
SQID	Stormwater Quality Improvement Devices
Surveyor	Registered Surveyor with the Surveyor's Board of Queensland
SV	Scour Valves
U PVC	Unplasticised PVC
Vpd	Vehicles per day
Wet Sediment Basin	A wet sediment basin has the capacity to contain all run-off expected from the y percentile, X – day rainfall depth where, depending on the sensitivity of the receiving waters and/or the duration that the structure is in use: x varies between 2 and 20 days and y varies between 75th and 90th percentile. Refer to IECA best practice erosion and sediment control.

A1 – APPLICATION PROCEDURES

General

AP 1.01 Introduction

1.01.1 This manual sets out procedures involved in applying for an Operational Works permit for works that will ultimately be in the ownership and maintenance responsibility of Council or other service authorities or works which are subject to approval by Council;

1.01.2 It should be read in conjunction with the relevant approvals and/or what development permit conditions;

1.01.3 Conditions of a development permit (including reconfiguration) may require the Applicant to construct, bond and/or submit, various works or documentation before survey plans can be approved and sealed by Local Authority or before a development may be occupied or a land-use commenced;

1.01.4 Preliminary approvals/development permits requiring the construction of operational works generally involve the applicant and/or a designer applying for an operational works permit and request in Council approval of designs and specifications;

1.01.5 Plans for roadworks, drainage works, water supply, sewerage works, bridges, retaining walls, miscellaneous structures, buildings, pumping stations and flood control structures are to be prepared under the direction of and certified by an RPEQ;

1.01.6 plans for landscape works by a person of professional standing and competence in the field of landscape architecture or landscape design, and a standard acceptable to the Council. Where irrigation plans are required for public parks, traffic islands or roundabouts, they are to be prepared by an irrigation designer with a proven track record of successful irrigation design;

1.01.7 designs, calculations, drawings and specifications are to be submitted as supporting information to an application for a Development Permit for Operational Works;

1.01.8 Operational Works permits will not be issued until evidence of payment of the Portable Long Service Leave and Occupational Health & Safety fees is provided.

Design Approval

AP 1.02 Pre-lodgement discussions

1.02.1 Prior to lodgement of an Operational Works application for approval of detailed designs, the designer is encouraged to meet with Council officers to discuss the

following matters in the event that the following issues have not been addressed at reconfiguration of a lot approval:

1.02.1.1 Legal points of stormwater discharge;
1.02.1.2 Identify environmentally significant areas and heritage features;
1.02.1.3 Internal and external stormwater catchment boundaries;
1.02.1.4 Tail water conditions including water quality requirements and determination of tail water level;
1.02.1.5 Connection points for water supply and available pressure and discharge capacities;
1.02.1.6 Discharge points for sewerage;
1.02.1.7 setback distances from watercourses for on-site wastewater treatment and disposal;
1.02.1.8 future planning for the provision of services, e.g., water supply, sewerage, drainage and road networks, stream management and stormwater quality management, structures, power, communications and gas. In special circumstances, the Council may require the installation of large water mains to serve areas beyond the development;
1.02.1.9 Site Conditions;
1.02.1.10 Development Permit Conditions for the for the particular development;
1.02.1.11 layout design, speed restriction; and
1.02.1.12 landscaping works for on street works and public open space.

1.02.2 Approval of designs can be expedited where the above issues have been resolved in advance;

1.02.3 The designer may obtain as constructed information in relation to existing roads, stormwater drainage, water and sewer reticulation if available from Council, on application and payment of a prescribed fee (where applicable);

1.02.4 in addition to the above, it is advisable that the designer discuss and obtain Council's agreement to the following issues (where required) prior to submission of designs:

1.02.4.1 Possible variation to Council's manual and standards;
1.02.4.2 Variations to design due to inability to obtain drainage discharge approvals; and
1.02.4.3 Request for Council to contribute towards some aspects of the work.

1.02.5 Resolution of these issues, particularly those requiring a decision of Council (i.e. amendments to conditions of approval, or request for Council contributions) is essential to avoid protracted approval periods and wasted design effort.

AP 1.03 Design Requirements

1.03.1 The design of operational works must comply with the relevant development permit conditions, Council's local laws, policies, planning scheme and the provisions of

this manual. The developer shall meet all costs associated with the compliance with these minimum requirements.

1.03.2 Design is to demonstrate a non-worsening affect to surrounding infrastructure, where upgrades are required the developer must bear the all costs associated with the required upgrade.

1.03.3 It is Council's requirement that the design of all operational works must be prepared under the direction of, and certified by, an RPEQ. The RPEQ must bear full responsibility for all aspects of the design of the operational works, which they certify.

1.03.4 Road safety audit to be undertaken by a suitably experienced RPEQ as per the requirements and Austroad's Guide to Road Safety to verify designs and signage prior to submission to Council.

AP 1.04 Consent of Adjoining Landowners

1.04.1 Written approval is required from adjoining property owners authorising any operational works on their property (if under an easement authorisation must come from the easement owners).

1.04.2 Approvals to discharge and/or easements over downstream drainage paths from the respective property owners are required from the development site to the approved point of discharge.

AP1.05 Documentation

1.05.1 Associated with the lodgement of the "Application for Operational Works Development Permit", engineering plans and specifications for the works are to be submitted to Council for approval (the specific requirements for the submission).

1.05.2 Submissions with a full complement of supporting documentation will ensure minimal delays in Council's approval timeframes.

1.05.3 Following the issue of an operational works permit, any plans that are required to be amended must be resubmitted with an accompanying letter outlining the amendments and including any necessary calculations or documentation as supporting information.

1.05.4 One complete description must be issued to Council incorporating any required amendments following the issue of an operational works permit.

AP 1.06 Local Authority Approval

1.06.1 The "Statement of Compliance – Operational Works Design" (refer Form 1) has been introduced to expedite the approval process.

1.06.2 Any non-compliant aspects are to be re-designed by the certifying RPEQ and relodged to Council for approval.

1.06.3 If the Council review reveals the Statement of Compliance to be inaccurate or incomplete, the submission may be returned to the applicant for resubmission.

1.06.4 It is the RPEQ's responsibility to ensure the design as submitted considers all site conditions and complies with Council's approval conditions, local laws, policies, the provisions of this Development Manual and other relevant authorities.

1.06.5 Council's review and stamp approval process does not warrant that an approved design complies with the above in every respect, and Council reserves its right to order the rectification of non-complying or unsafe works at the cost of the developer, despite its prior approval.

1.06.6 Within five (5) days of Council's approval, the designer shall submit an electronic copy of the requirements of 1.08 below.

1.06.7 Three (3) street names for each new street (in line with any Council naming policy) must be lodged for consideration and approved by Council before construction is complete.

AP 1.07 Approval of Other Authorities and Referral Agencies

1.07.1 The applicant is responsible for gaining the approvals of any other authorities having jurisdiction over any part of the works.

1.07.2 All works on state-controlled roads will be subject to DTMR approval and is to be carried out in accordance with the Department's policies, standards and guides.

1.07.3 All referral agency conditions are to be included in design documents and must be approved by each agency (if required), prior to submission to Council.

AP 1.08 Supporting Information

General

1.08.1 Supporting information for operational works shall include the following:

- 1.08.1.1 Design Plans (in DWG and PDF Format)
- 1.08.1.2 Job specification (one copy)
- 1.08.1.3 Design report (one copy)
- 1.08.1.4 Design checklist
- 1.08.1.5 DA form 1 and/or relevant application forms from the *Planning Act 2016*
- 1.08.1.6 Evidence that the prescribed application fee as stated in Council's fees and charges schedule, has been paid.
- 1.08.1.7 Evidence of payment of the Portable Long Service Leave Levy and Occupational Health & Safety fee.
- 1.08.1.8 'Permit to Enter & Construct' letters and easement documents relevant to the application.

Design Plans

1.08.2 Design plans shall be definitive and clearly set out to present the design concepts in such a way that the project can be understood, specified for construction and satisfactorily built, generally in accordance with AS1100.101.

1.08.3 All design plans should be clearly numbered with separate sheets numbered as part of a set.

1.08.4 Sheets of drawings should not be overcrowded with information and should not rely on colour printing or colour wash to impart information. Drawing should be true to scale A1 size sheets and be suitable for black and white copying and photo reduction.

1.08.5 Design plans must be certified by an RPEQ (refer 1.03.2).

Job Specification

1.08.6 A job specification must be prepared by the designer specifying site-specific requirements not covered in standard specifications.

1.08.7 All work shall be in accordance with Council standard specifications where available. Where Council standard specifications exist for a particular type of work, the designer may use the Department of Transport and Main Road specification or their own standard specification. Both options will be subject to approval by Council.

Design Report

1.08.8 The engineering design and materials used must be selected to minimise the whole of life Cost to Council. The designer must demonstrate how the design complies with this requirement.

1.08.9 The design report is to contain the following:

- 1.08.9.1 a completed 'Statement of Compliance – Operational Works Design' endorsed by the designers.
- 1.08.9.2 A copy of the development approval conditions on which the design is based including a summary of the design submission referencing each of the development approval conditions.
- 1.08.9.3 Records of pre-submission discussions with Council including confirming correspondence.
- 1.08.9.4 Copies of letters of approval from adjoining property owners for any works or discharge on the properties.
- 1.08.9.5 Evidence that negotiations have been entered into regarding provision of supply with service authorities (including approved reticulation/service plans, if available).
- 1.08.9.6 Stormwater drainage calculations in spreadsheet format in accordance with QUDM requirements including detail of pit types and capture charts used and tell water levels adopted.
- 1.08.9.7 Design details of alternatives proposed which depart from the development manual/development conditions with supporting arguments for how the alternative meets Council's objectives.
- 1.08.9.8 Design calculations for detention basins, dissipated as, open channel, catch strain, adopted tail water levels etc.

1.08.9.9 design criteria and parameters operating regimes and calculations for permanent water quality works such as stormwater quality improvement devices (SQIDs), sediment basins, trash racks, etc and demonstrated consistency with catchment Stormwater Quality Management Plan and water quality report which accompanies the development application.

1.08.9.10 An Erosion and Sediment Control Strategy (ESCS) addressing erosion and sediment management during construction.

1.08.9.11 Traffic Management Plan in accordance with the MUTCD.

1.08.9.12 Water and sewerage reticulation networks in a format compatible with Council's network system.

1.08.9.13 If the water supply is from a newly developed source, provide information on quality, quantity, disinfection and infrastructure proposed.

1.08.9.14 Pavement design including records of geotechnical tests indicating subgrade CBR's, adopted traffic load, requirements for subsoil drainage and subsoil drainage design by geotechnical engineer.

1.08.9.15 Geotechnical reports, where relevant, relating to slope and batter stability, in situ materials etc.

1.08.9.16 Structural and geotechnical certification of design of miscellaneous structures including retaining walls, non-standard headwalls, drainage structures, reservoirs etc.

1.08.9.17 design parameters and operating regimes for water supply and sewerage pump stations.

1.08.9.18 Full design drawings and pre-commissioning plan for water and sewerage pump stations.

1.08.9.19 Landscaping design drawings for subdivision works showing details of Park/reserve planting, Street treeplanting, buffer zone planting, and any hill slope development works if applicable.

1.08.9.20 Four stage development, master plans showing the overall design concept for:

1.08.9.20.1 Water including pump stations.
1.08.9.20.2 Sewer including pump stations.
1.08.9.20.3 Stormwater.
1.08.9.20.4 Road works.
1.08.9.20.5 Earthworks.
1.08.9.20.6 Road hierarchy.
1.08.9.20.7 Pathways.
1.08.9.20.8 Public transport.
1.08.9.20.9 Lighting and other services.
1.08.9.20.10 Easements, freehold lots and land to be deeded to Council for accommodating the works.
1.08.9.20.11 Open space areas.
1.08.9.20.12 Erosion and sediment control strategy and location of permanent survey marks.

1.08.9.21 With stage I development and with updated copies to be provided with each subsequent stage. Subsequent development plans will show the "as constructed" information of all the earlier stages.

1.08.9.22 Selection of materials and components to be transferred to Council ownership must comply with service standards specified by Council (e.g. minimised whole of life Costa, reliability etc).

1.08.9.23 A fully priced estimate of construction costs in the form of a priced schedule of quantities.

AP 1.09 General Requirements

Plan Presentation

1.09.1 These presentation minimum standards will apply to engineering and landscape plans submitted for approval for operational works associated with approved developments.

1.09.2 Standardisation of the presentation of operational Works plans submitted for approval is necessary for consistency in Council's records and desirable for expedient review and approval.

1.09.3 Scaled engineering drawings in accordance with this manual are required for plan review.

AP 1.10 Title Block

1.10.1 Each sheet of the design drawings shall have a title block containing the following information:

- 1.10.1.1 Development/estate name (if any)
- 1.10.1.2 Locality/approved street name.
- 1.10.1.3 Developers name.
- 1.10.1.4 Bar scales as a minimum (alternatively numerical scale with original sheets I stated).
- 1.10.1.5 Plan number and sheet number.
- 1.10.1.6 Schedule and date of amendments.
- 1.10.1.7 Certification by RPEQ (for engineering drawings).

AP 1.11 Sheet Sizes

1.11.1 Preferred sheet sizes (overall dimensions) are A1 (841mm x 593mm) and A3 (420mm x 297mm).

AP 1.12 Scales

1.12.1 scales used for plan should preferably be those recommended by the standards Association. Generally, the following scale should be used 1:1, 1:2, 1:5 in multiples of 10 of these. All scales should be bar scales.

1.12.2 The following scales are also acceptable:

Description	Urban	Rural
Plans	1:500*	1:1000
Longitudinal Section:		
Horizontal	1:500	1:1000
Vertical	1:50	1:100
Intersection Details	1:100, 1:200	1:500
Cross Sections	1:100	1:100
Engineering Details	1:1, 1:2, 1:5 and multiples of 10 of these scales.	

*Sewerage Reticulation should be 1:500.

AP 1.13 Dimensions

Dimensioning on Plans

1.12.1 Linear dimensions on all roadworks plans will be in metres, with the exception of some detailed plans of small structures (e.g. manholes) and some standard plans (e.g. kerb and channel) which may be in millimetres.

1.12.2 Details of methods of dimensioning shall be in accordance with AS1155 – Metric Units in Construction.

Standard Cross-Section Intervals

1.12.3 Urban and rural cross sections should be provided to roads at 20 m intervals and tangent points, with further reduction to 10 m or 5 m intervals when necessary due to horizontal or vertical curvature.

Chainage and Offset Dimensions

1.12.4 Chainage and offset dimensions on plans shall be expressed to 0.01 m (0.005 may be used as the order of accuracy requires).

AP 1.14 Levels

1.14.1 All levels must be reduced to Australian Height Datum, unless otherwise approved by Council.

1.14.2 Reduced levels of benchmarks and reference pegs including Permanent Survey Marks shall be expressed to 3 decimal places i.e. 0.001m. the location of the origin of the survey must be on the plan.

1.14.3 Reduced levels of roadworks and stormwater drainage must be expressed to 3 decimal places i.e. 0.001m.

1.14.4 Reduced levels of sewerage reticulation shall be expressed to 3 decimal places i.e. 0.001m.

AP 1.15 Grades

1.15.1 Road grade must be shown as a percentage to 2 decimal places.
1.15.2 Pipe grade must be shown either as a percentage to 2 decimal places or as a gradient to one decimal place

AP 1.16 Drawings Required

Design Drawings

1.16.1 Operational Works drawings will generally consist of the following:
- 1.16.1.1 locality plan.
- 1.16.1.2 Subdivision layout/staging plan (if applicable).
- 1.16.1.3 Earthworks plan.
- 1.16.1.4 Roadworks and drainage plan.
- 1.16.1.5 Longitudinal section of each road.
- 1.16.1.6 Type cross sections for each Road.
- 1.16.1.7 Cross sections of each Road.
- 1.16.1.8 Detailed plan of each intersection and cul-de-sac.
- 1.16.1.9 Longitudinal section of each stormwater drainage line.
- 1.16.1.10 Sewerage reticulation plan, long section and pump station details.
- 1.16.1.11 Water reticulation plan and pump station plans and details.
- 1.16.1.12 Landscape plan.
- 1.16.1.13 Erosion and sediment control strategy.
- 1.16.1.14 Service provider's conduit plan, including street lighting.
- 1.16.1.15 Stormwater catchment plans/drainage calculation table.
- 1.16.1.16 Miscellaneous details.

1.16.2 The minimum requirements for each drawing a detailed in the following sections.

AP 1.17 Locality Plan

1.17.1 Locate the subdivision/development in relation to adjacent towns, major roads, major streets, etc.
1.17.2 Northpoint.
1.17.3 May be included on layout/staging plan for large jobs or roadworks and drainage plan for smaller jobs.

AP 1.18 Subdivision Layout/Staging Plan

1.18.1 For stage subdivisions, the layout plan should show the relationship of all new roads and infrastructure to each other, and to existing roads and infrastructure

adjoining the subdivision. All adjacent structures and services are to be shown also.

1.18.2 Where development is to be carried out by stages, the boundaries of proposed stages should be shown on this plan, and the stages identified by numbering.

AP 1.19 Earthworks Plan

1.19.1 The earthworks plan may be included with the roadworks and drainage plan for smaller subdivisions and shall include:

1.19.1.1 Legend.
1.19.1.2 Existing site contours and finished surface contours (spot levels should be used to complement contours)
1.19.1.3 limits and levels of all major allotment cut and fill – distinguished by hatching.
1.19.1.4 Locations of cut and fill batter relative to allotment boundaries.
1.19.1.5 Location and levels of retaining walls (if required).
1.19.1.6 Batter slopes and treatment.
1.19.1.7 Appropriate flood levels in accordance with Council's policies.
1.19.1.8 Northpoint.
1.19.1.9 Locations and levels of permanent survey Marks, reference stations etc used as datum for the works.
1.19.1.10 Vegetation including trees proposed to be removed in days to be retained.
1.19.1.11 The smaller subdivisions, the earthworks details may be included on the roadworks and drainage plan.

AP 1.20 Roadworks and Drainage Plan

1.20.1 The plan of each Road shall include:

1.20.1.1 Legend.
1.20.1.2 Road reserve boundaries.
1.20.1.3 Allotment numbers and boundaries, both existing and proposed (including existing and proposed easements).
1.20.1.4 Chainages, on centreline or construction line.
1.20.1.5 Bearings of the centreline or construction line.
1.20.1.6 Tangent point chainages of each curve.
1.20.1.7 Radius and arc, tangent length of each curve.
1.20.1.8 Chainage and the intersection point of Road centrelines or construction lines.
1.20.1.9 Kerb lines, kerb radii, and chainage of all tangent points of the kerb line.
1.20.1.10 Footpaths/bikeways and pram ramp locations.
1.20.1.11 Fencing.
1.20.1.12 Access where required to be constructed.
1.20.1.13 Edge of pavement, we know curb is to be constructed.

1.20.1.14 Dimensioned road reserve, footpath and pavement widths, where these differ from the standard cross-section.
1.20.1.15 Existing and finished surface contours, highlighting cut and fill areas.
1.20.1.16 Drain line locations, diameters (including extent of easements where required).
1.20.1.17 Drainage structures and structure number.
1.20.1.18 Subsoil drain locations.
1.20.1.19 Location of existing utilities and other existing works within the site.
1.20.1.20 Location of all service clashes including levels of services and clearance distance.
1.20.1.21 Location and levels of benchmarks and reference pegs.
1.20.1.22 Northpoint.
1.20.1.23 Line marking and signing*.
1.20.1.24 Guideposts, guardrails and other traffic control devices*.
1.20.1.25 Creek protection works and the like.
1.20.1.26 Street name signs*.
1.20.1.27 Overland drainage paths.

*may be shown on separate plan(s).

AP 1.21 Longitudinal Sections of Roads.

1.21.1 The longitudinal section of each road shall include:
1.21.1.1 Chainages.
1.21.1.2 Existing surface levels – design Road centreline levels.
1.21.1.3 Cut and fill depths.
1.21.1.4 Design grades.
1.21.1.5 Chainages and levels of grade intersection points.
1.21.1.6 Chainages and levels of tangent points of vertical curves.
1.21.1.7 Chainages and levels of crest and sag locations.
1.21.1.8 Lengths and radii of vertical curves.
1.21.1.9 Sections on control lines on superelevated curves (i.e. pavement edges, kerb or lane edges), curve widening and superelevation details.
1.21.1.10 Location of services where they cross the centre of the road.

AP 1.22 Type Cross-Sections

1.22.1 A type cross-section shall be shown for each Road, including:
1.22.1.1 Road reserve with.
1.22.1.2 Pavement widths including medians (as applicable).
1.22.1.3 Footpath widths.
1.22.1.4 Cross falls of pavement and footpath.
1.22.1.5 Pavement depth – nominal or design.

1.22.1.6 Type of kerb and channel.
1.22.1.7 Type of pavement surfacing.
1.22.1.8 Sub – soil drainage.
1.22.1.9 Table drain details for rural roads.
1.22.1.10 Batter slopes.

1.22.2 The standard cross-section may be included in the detailed cross-section is provided for each Road.

AP 1.23 Cross-Sections of Roads

1.23.1 A cross-section shall be shown at the intervals defined in this manual for each Road and shall show:
1.23.1.1 Road reserve boundaries.
1.23.1.2 Pavement centreline and/or other construction line.
1.23.1.3 Natural surface profile.
1.23.1.4 Design cross-section.
1.23.1.5 Cross full of pavement and footpath, pavement and footpath widths and pavement depths wherever these differ from the standard cross-section.
1.23.1.6 Chainage of cross-section.
1.23.1.7 Datum reduced level.

AP 1.24 Detail Plans of Intersections and Cul-De-Sacs

1.24.1 Intersection detailed plans shall include all the relevant information required for roadworks and drainage plans, as listed above together with additional details such as kerb levels on kerb returns, pavement contours, channelisation works, line marking, signing and pram ramps.

AP 1.25 Longitudinal Sections of Stormwater Drainage Lines

1.25.1 A longitudinal section of each drain line shall be shown, including:
1.25.1.1 Chainages.
1.25.1.2 Existing surface levels.
1.25.1.3 Design finished surface and invert levels.
1.25.1.4 Drainage structure chainage is and offsets and inlet and outlet invert levels.
1.25.1.5 Distances between drainage structures.
1.25.1.6 Grade of each pipe.
1.25.1.7 Material and diameter of each pipe length.
1.25.1.8 Hydraulic grade line.

1.25.1.9 Drainage structure type and sizes and/or reference to separate detailed drawing.
1.25.1.10 Crossings with any other services (location and invert level of pipe crossing).

AP 1.26 Sewer Concept Plan

1.26.1 Where development incorporates multiple stages, sewer concept plan must be prepared by the consultant.
1.26.2 This concept plan must be submitted prior to proceeding with detailed design and should include the following:
1.26.2.1 location, size, approximate depth, and alignment of gravity sewers.
1.26.2.2 Location, size and alignment of rising mains.
1.26.2.3 Location of pump stations and lift stations including justification for the use.
1.26.2.4 Contour information at 1 m intervals maximum or to suit the topography of the land for both natural surface and finished surface contours.
1.26.2.5 Contributing catchments (internal and external) showing the equivalent persons (EP).
1.26.2.6 Justification for redirecting flows between sewerage districts were proposed.
1.26.2.7 Details of the influence on downstream catchments and systems.
1.26.2.8 The flow contributing to each section of main including the estimated design capacity, e.g.:

EP300

PWWF	14.3 L/s
Pipe Size	225 diameter
Max Pipe Cap	26.2L/s

1.26.3 Access for maintenance of the system should be considered when locating manholes etc (refer section D7.07).
1.26.4 During the preparation of the concept plan consideration must be given to the integration of other infrastructure design, overall site earthworks and the impacts on existing upstream and downstream developments and potential developments.
1.26.5 As part of the preparation of the concept plan, the requirements of section 2 – concept designs in WSA 04 – 2005 Sewerage Pumping Code of Australia should also be included.

AP 1.27 Sewerage Reticulation Plan Longitudinal Section

1.27.1 The sewerage reticulation plan shall include:

1.27.1.1 Legend.
1.27.1.2 All allotments and allotment numbers.
1.27.1.3 Boundary of the subdivision.
1.27.1.4 North Point.
1.27.1.5 Location and size of existing sewers.
1.27.1.6 Invert levels of existing lines.
1.27.1.7 Location of other services which cross sewer lines.
1.27.1.8 Location of manholes with manhole numbers (including dimensions where not shown on alignment).
1.27.1.9 Identification of allotments, which are currently sewered.
1.27.1.10 Finished surface contours sufficient to enable verification of property connection design.
1.27.1.11 Details of permanent survey marks including AHD from which levels are to be transferred.
1.27.1.12 Grading information for new sewer lines including distance between manholes, pipe grades, pipe diameter, pipe material and class of each pipe length.
1.27.1.13 Manhole cover type and class.
1.27.1.14 Manhole inlet types.
1.27.1.15 Locations and level of sewer property connections and type.
1.27.1.16 Details of pumping stations including location, inlet/outlet levels, overflow, cut-off levels, electrical switchboard layout and water supply, size of pumping plant.
1.27.1.17 Diameter, material class and route of pressure main(s); indicating air valve and scour valve locations.
1.27.1.18 Clear identification of any alterations/connections to existing sewers to be completed by Council at developer's cost.
1.27.1.19 Finished surface contours with spot levels to compliment contours.
1.27.1.20 Ultimate sewer design flows including catchment plan for staged development if applicable.
1.27.1.21 Gravity sewer pipe capacities.
1.27.1.22 Structural design of pipes for pipes with more than 3m of cover.
1.27.1.23 Thrust block calculation where required.
1.27.1.24 Diagram showing all allotment controls.
1.27.1.25 Flow velocities under different flow conditions.
1.27.1.26 Rising main hydraulic grade line.
1.27.1.27 System resistance and pump curves showing static and friction head and duty points.
1.27.1.28 Demonstration of pipeline capacity to resist cyclical pressure effects over a 100-year lifespan of the systems.
1.27.1.29 Estimation of pump start, stop, alarm, overflow and other control levels.
1.27.1.30 Calculations supporting the provision of wet well storage.

1.27.1.31 Calculations showing that floatation forces are counteracted for all buried or all partially buried structures.
1.27.1.32 Estimation of electrical loads – Mains Supply proposed; and Radio Frequency interference screening measures.
1.27.1.33 Structural calculations where necessary for the pump well and associated works.
1.27.1.34 Calculations supporting the hydraulic design of emergency relief structures.

1.27.2 The longitudinal section of each sewerage line should include:
1.27.2.1 Existing surface levels.
1.27.2.2 Design finished surface.
1.27.2.3 Manhole number.
1.27.2.4 Distance between manholes.
1.27.2.5 Grade of each pipe length.
1.27.2.6 Diameter, material and class of each pipe length.
1.27.2.7 Manhole diameter and cover type.
1.27.2.8 Manhole inlet types review.
1.27.2.9 Invert levels of existing lines.
1.27.2.10 Crossings with any other services (including location, size, invert levels and clearance of pipe crossing).

AP 1.28 Water Reticulation Concept Plan

1.28.1 Where development incorporates a large number of lots with multiple stages, the consultant shall submit a water reticulation concept plan of the water reticulation showing proposed mains sizes, connections to existing mains and valve positions. The concept plan is to be supported by computer network analysis.

1.28.2 This concept plan shall be submitted prior to detailed design and should include the following:
1.28.2.1 layout of mains, together with the development layout.
1.28.2.2 Key to network analysis i.e. node points, elevation, demand.
1.28.2.3 Size and type of mains, indicated graphically and distinguished by colour and/or line type.
1.28.2.4 Design parameters – number of lots, number of EP's design flows.
1.28.2.5 Legend of land uses (i.e. residential, industrial precincts etc).
1.28.2.6 Supply points and pressure or hydraulic grade lines (HGL) as supplied by Council.
1.28.2.7 Location of pumps, pressure reducing valves and reservoir top water level (TWL) and volume where applicable.
1.28.2.8 Limit of water district serviced by the reticulation mains.
1.28.2.9 Contours for the entire development, at minimum 1 m intervals.
1.28.2.10 Consideration for connection to adjoining and/or future developments as directed.

AP 1.29 Water Reticulation Plan

1.29.1 The water reticulation plan shall include:

- 1.29.1.1 Legend.
- 1.29.1.2 The services for the development.
- 1.29.1.3 All allotments and allotment numbers.
- 1.29.1.4 Boundary of subdivision.
- 1.29.1.5 North point.
- 1.29.1.6 Location and size of existing mains.
- 1.29.1.7 Location, size, material and class of new mains.
- 1.29.1.8 Location of other services which cross the mains.
- 1.29.1.9 Details of connection to existing mains.
- 1.29.1.10 Location of each bend.
- 1.29.1.11 Location of valves, hydrants, scours and caps, T's, reducers etc.
- 1.29.1.12 Road crossing conduit locations, size and class.
- 1.29.1.13 Water service connection details.
- 1.29.1.14 Pump stations and reservoirs (if required).
- 1.29.1.15 Network analysis (if required).
- 1.29.1.16 Type and class of pipes for the pressure and cyclical loading regime.
- 1.29.1.17 Thrust block calculation where required.
- 1.29.1.18 Operating conditions for pressure reducing valves.
- 1.29.1.19 Structural calculations were necessary for valve pits and associated work.

AP 1.30 Landscape Plan

1.30.1 The landscape plan shall contain the following details:

Site and Layout

- 1.30.1.1 Proposed and existing contours at 5 m intervals.
- 1.30.1.2 Extent of existing vegetation including type and location.
- 1.30.1.3 Significant tree showing level at base and proposed levels, indicating which trees/vegetation is to be removed.
- 1.30.1.4 Proposed layout of roadways including:
  - 1.30.1.4.1 kerb and channel.
  - 1.30.1.4.2 Stormwater drainage pits and manholes.
  - 1.30.1.4.3 Street lighting.
  - 1.30.1.4.4 Property boundaries.
  - 1.30.1.4.5 Traffic islands, roundabouts, traffic calming devices etc.
  - 1.30.1.4.6 Existing and proposed water supply, sewerage services and easements.
  - 1.30.1.4.7 Proposed freehold lots covering water supply and sewerage infrastructure.
- 1.30.1.5 Layout and numbering of individual lots, including street names.

1.30.1.6 Existing parks, reserves etc.
1.30.1.7 adjoining land uses, access corridors.
1.30.1.8 Existing watercourses, watersheds, gullies, with a buffer zone to either side of creeks, where required.
1.30.1.9 Revegetation areas including extent, type, technique and erosion prevention proposals.

On-Street Works

1.30.1.10 Alignment and location of proposed concrete foot paths and bike paths.
1.30.1.11 Grass establishment areas.

Traffic Islands and Roundabouts

1.30.1.12 Alignment of kerb and channel and concrete backing to roadside kerb.
1.30.1.13 Soil mixed type and depth.
1.30.1.14 Proposed planting layout and plant schedule, including species, number, size, set out and staking.
1.30.1.15 Mulch types and depth.
1.30.1.16 Irrigation proposals.

Public Open Space

1.30.1.17 Dimensions and landscape treatment to buffer zones.
1.30.1.18 Location and dimension of all off-road bikeways and pedestrian pathways, with trees at 15 m intervals, showing size and species.
1.30.1.19 Location of boundaries to parkland, reserves and easements, including fencing proposals and details of removable vehicle barriers.
1.30.1.20 Location and type of play equipment, if applicable, including type, extent and edge treatment to satisfy surfacing.
1.30.1.21 Proposed lighting.
1.30.1.22 Mounding, showing base, Crown, levels and gradients.
1.30.1.23 Proposed furniture including benches, bins, BBQ's, shade structures, signage.
1.30.1.24 Tabs, drinking fountains, irrigation couplings.
1.30.1.25 Proposed planting and mulched garden beds.
1.30.1.26 Irrigation plan at 1:200 scale.

1.30.2 Detailed specifications will be required to cover all proposed works including the following:
1.30.2.1 play equipment and safety surfacing.
1.30.2.2 The plant schedule.
1.30.2.3 Revegetation requirements.
1.30.2.4 Grass establishment.
1.30.2.5 Mulch.
1.30.2.6 Hard landscaping.
1.30.2.7 Furniture and lighting.
1.30.2.8 Irrigation, if applicable.

AP 1.31 Erosion and Sediment Control Strategy

1.31.1 The Erosion and Sediment Control Strategy shall include:

- 1.31.1.1 A plan of development showing the road and allotment boundaries.
- 1.31.1.2 Existing surface and finished surface contours at an interval close enough to define terrain.
- 1.31.1.3 Contours shall extend beyond the limits of the development site to fully define the limits of external catchments.
- 1.31.1.4 Existing drainage paths and drainage infrastructure.
- 1.31.1.5 Extent of clearing and trees to be removed.
- 1.31.1.6 Line diagram of drain lines and drainage structures.
- 1.31.1.7 The identification and location of all Erosion and Sediment control measures (i.e. catch drains, diversion drains, sediment traps, sediment basins etc.) that are proposed for the period when the site is disturbed.
- 1.31.1.8 Location of sensitive and restricted access areas.
- 1.31.1.9 Existing significant vegetation to be retained.
- 1.31.1.10 Revegetation works.
- 1.31.1.11 Calculations are to be submitted in accordance with QUDM and based on soil type(s) of the site.
- 1.31.1.12 Measures to be employed for each facet of the construction process. As a minimum this is to include stripping/earthworks, trenching/services installation and when stormwater and roadways are completed.
- 1.31.1.13 Consideration for construction during the wet season (typically Nov – Mar) with regard given to increased storm intensity and minimising disturbed areas and for construction during the dry season with regard given to dust suppression.

AP 1.32 Service Providers/Conduit Plan including Street Lighting.

1.32.1 This plan shall include:

- 1.32.1.1 Legend.
- 1.32.1.2 Road Reserve Boundaries.
- 1.32.1.3 Allotment Numbers and Boundaries.
- 1.32.1.4 North Point.
- 1.32.1.5 Kerb and channel or edge of pavement where no kerb is to be constructed;
- 1.32.1.6 Road Crossings Conduits Type and size.
- 1.32.1.7 Location of Pad Mount Transformers.
- 1.32.1.8 Location of Telecommunications Authority's Roadside Cabinets & Shelters and Cables;
- 1.32.1.9 Location of Street Lighting including designation of hierarchy of all roads.
- 1.32.1.10 Location of Electricity Authority's Cables and Facilities paying particular attention to connection to existing power supply.
- 1.32.1.11 Electrical reticulation plans.
- 1.32.1.12 Gas pipes, valve, syphon points and storage facilities.

AP 1.33 Stormwater Catchment Plan/Drainage Calculations Tabulation.

1.33.1 A catchment plan shall be submitted, for Council submission purposes only and shall not form part of construction documentation. The catchment plan shall include the following:

- 1.33.1.1 North point.
- 1.33.1.2 A plan of the development showing the road and allotment boundaries.
- 1.33.1.3 Existing and finished surface contours (in different line types) and an interval close enough to define the terrain And Allow Definition of the Sub- Catchment.
- 1.33.1.4 Contours Shall Extend beyond the Limits of the Development Site to fully define the limits of external catchments.
- 1.33.1.5 Sub- catchment boundaries, labels and areas.
- 1.33.1.6 Line diagram of drain line, manhole, gully and outlet locations.
- 1.33.1.7 Labelling of stormwater structures.
- 1.33.1.8 Adjacent to each stormwater pit tabulation is to be provided illustrating the roadway approach flow, the width of approach flow, and the bypass flow.
- 1.33.1.9 Overland flow paths.
- 1.33.1.10 Proposed easements.
- 1.33.1.11 Stormwater calculation shall be in a spreadsheet format in accordance with the QUDM. This tabulation should include a bypass flow width valve at all kerb return pits.

AP 1.34 Pest Plant Management

1.34.1 In accordance with the *Land Protection (Pest and Stock Route Management) Act* 2002 the applicant must not remove soil or any matter containing reproductive pest plant material and transport such matter to another location. Appropriate measures must be put in place to ensure that soil and other organic materials are not inadvertently (or otherwise) transported to other locations.

1.34.2 Prior to the issue of a development permit for operational works, the applicant must:

- 1.34.2.1 Clearly state if there is an excess amount of soil on the development site.
- 1.34.2.2 Provide appropriate documentation to show where any excess soil is to be used or placed on the site.
- 1.34.2.3 Provide a plan which indicates where a shakedown or wash down area will be placed to ensure that all vehicles entering and exiting the development site are subject to a cleansing procedure to remove soil and any other organic materials.

1.34.2.4 Construct a shakedown or wash down area during the first stage of development. This is not to be in the vicinity of a creek, or a waterway or drain which leads to a creek or other water body.
1.34.2.5 Permanently contain material within the site inclusive of shakedown area.
1.34.2.6 Maintain the site to a point of sale so that declared weeds are eradicated or controlled.

1.34.3 Soil or other matter contaminated with weed seed or organic material should not be used in landscaping e.g. buffer mounds.
1.34.4 Reference should be made to Council pest management unit to obtain advice.
1.34.5 These conditions relate to all class 1, 2 and 3 plants identified in the *Land Protection (Pest and Stock Route Management) Act* 2002.

AP 1.35 Miscellaneous Details

1.35.1 Detailed are required for the following either on separate drawings or appropriate service plan:
1.35.1.1 stormwater inlet and outlet structures, other than standard headwinds.
1.35.1.2 Manhole details where pipe alignments are critical for clearances or flow considerations.
1.35.1.3 Water quality permanent works structures (SQIDs, sediment basins, trash racks etc).
1.35.1.4 Details of erosion control and stormwater management structures.
1.35.1.5 Surcharge structures.
1.35.1.6 Overland drainage paths
1.35.1.7 sewer and water pump stations showing all relevant levels and dimensions for pumps etc (where not provided elsewhere).
1.35.1.8 Footbridges.
1.35.1.9 Reservoirs.
1.35.1.10 Water source treatment/disinfection works.
1.35.1.11 Entry structures.
1.35.1.12 Retaining walls.
1.35.1.13 Buildings.
1.35.1.14 And any details or variations from standard drawings.

AP 1.36 Design Records

1.36.1 The designer shall provide Council with appropriate design records in a format such that design staff with no prior knowledge of the particular design can understand them readily.
1.36.2 A design file shall be maintained by the developer or the developers designer containing records of calculations, approvals and decisions, geotechnical data and

other design data which could be relevant in reviewing aspects of the design or planning future maintenance responsibilities.

1.36.3 The developer is to provide a detailed submission for all structures being built as part of the development, for separate building approval and inspection. Submission is to include detailed design plans and a structural certificate from RPEQ.

CP1 – Construction Procedures

General

CP 1.01 Introduction

1.01.1 This section of this Development Manual details the minimum requirements acceptable to the Council associated with developments involving operational works defined as any works to be constructed that are subject to Council approval. Typically, this involves the construction of water supply, sewerage, stormwater, roadworks and public open space associated with development, reconfiguration or other approvals.

1.01.2 This manual does not apply to works of services under the control of other authorities (i.e. works within state-controlled road corridors). Separate approvals may be required from the other relevant authorities.

1.01.3 This section has been divided into four subsections as follows:

1.01.3.1 Requirements prior to construction.

1.01.3.2 Requirements during construction.

1.01.3.3 Acceptance of works.

1.01.3.4 Final acceptance of works.

Requirements Prior to Construction

CP 1.02 General Requirements

1.02.1 Prior to the construction of any works associated with the development approval which requires operational works approval by Council, the designer responsible for the design of the works must first obtain an approval of the design, construction drawings and specifications from Council. The procedures to be undertaken in order to achieve approvals are outlined in detail in section AP1 of this manual.

CP 1.03 Construction Inspections

1.03.1 Prior to construction of the works the consulting engineer who is an RPEQ is to be engaged to be responsible for the provision of inspection services in accordance with a Council approved Inspection and Test Plan (ITP) and to exercise reasonable skill and diligence in order to ensure that the operational works requiring approval are executed in accordance with:

1.03.1.1 Council's development permit conditions;
1.03.1.2 Council's relevant policies and local laws;
1.03.1.3 This manual, Council approved drawings, specifications and relevant Australian Standards;
1.03.1.4 Good engineering practice; and
1.03.1.5 Records compatible with Council's asset management information recording system are provided.

1.03.2 Inspections may be carried out by the consulting engineer or a delegate who shall be suitably qualified/experienced person approved by the consulting engineer.

1.03.3 The consulting engineers required to certify that all works have been carried out in accordance with the development approval and to WRC minimum standards prior to works acceptance.

CP 1.04 Inspection and Test Plan

1.04.1 The Contractor is to prepare an ITP (endorsed by the RPEQ) identifying the following items:

1.04.1.1 Element of work;
1.04.1.2 tests and checks required;
1.04.1.3 standard required to meet;
1.04.1.4 frequency of testing;
1.04.1.5 contractor's responsibility;
1.04.1.6 consulting engineer's responsibility;
1.04.1.7 Council's responsibility; and
1.04.1.8 asset data recording requirements.

Refer to CP 1.16 and Form 2 – Security Lodgement Form

This sheet must be completed prior to the acceptance of any bond by Council.

Development Name:	
Stage:	
File No.:	
Applicant:	

Consultant:	
Purpose of Bond:	

Uncompleted Works Bond Assessment:

Estimated time to complete bond works (not greater than 90 days)	___ days
Current contract completion date	
Anticipated completion date	
Consulting engineers estimated value of uncompleted works	
Bond value (apply factor 1.50)	

Construction/defects liability bond assessment :

Consulting engineer's estimated value of completed works	
Construction/maintenance bond value (apply factor 0.05) (min $500)	

Council shall retain any interest accrued on cash monies paid to Council and held in trust by Council.

Consulting Engineer: _____

Signature: _____

RPEQ No. _____

Date: _____

Form 3 – Inspection Certificate for Witness/Hold Point

This certificate registers evidence that the works as noted herein have been inspected by the Council officer noted below and were found to be satisfactory.

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Contractor:	

Works being inspected/Tested/Witnessed:

Defaults/Corrective Action Required:

Defaults Corrected? Y N N/A

Council Inspector Signature:

Name of Inspector:

Date of Inspection:

Form 4 – Works Acceptance Inspection Checklist

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Contractor:	

Item	Verification (Yes/No/N/A)	Comment
ALLOTMENT DRAINAGE The works have been finally inspected and:		
1. Concrete catch drains constructed in approved location and to a satisfactory standard;		
2. Field inlets constructed in approved location and to a satisfactory standard;		
3. Overland flow path constructed to correct profile;		
4. Pipework has been visually inspected and is satisfactory in terms of: a. alignment and grade; b. free of debris and siltation; c. no visual sign of trench subsidence; and d. outlets are satisfactory.		
5. Lots not provided with allotment drainage can be drained to the kerb and channel.		
STORMWATER DRAINAGE SYSTEM The works have been finally inspected and:		
6. Pipe layout is as per plan or approved amendments with respect to pipe size, levels and location.		

7. Pipework has been visually inspected and is satisfactory in terms of: a. alignment and grade; b. free of debris and siltation; c. lifting plug holes sealed; d. no visible sign of trench subsidence; and e. no damaged pipes.		
8. Gully pits and manholes have been constructed to the correct standards i.e.: a. Correct type of grate or cover; b. Lintels; c. side entry slots; d. benching (no water ponding) e. grates are satisfactorily sealed in frames; f. we poles provided to bedding material; g. no damaged structures; h. converter slabs/sections mortar bedded; i. correct drops through gullies/manholes; and j. all lids/grates finished to match surface level.		
9. All density tests to backfill are available and satisfactory.		
10. Material gradings are available for bedding material and are satisfactory;		
11. Outlets/inlet structures are satisfactorily constructed and are free from scour or siltation.		
12. All manhole and gully pit pipe connections are mortared flush with the walls and no pipe reinforcement is exposed.		
13. Open cut channels have been finally inspected and a satisfactory i.e.: a. Cut to design profiles; and b. lining of channel is to the required thickness and		

reinforcement, with appropriate weep holes.		
14. Overland flow, the works have been finally inspected an appropriate flow paths are provided and clear of obstruction.		
15. Outlets and outfalls have been constructed to control discharge flow in accordance with the plans.		
16. Subsoil drainage discharges to gullies or other approved point of discharge.		
17. All grousing requirements to channels, swales, outlets, inlets etc have been completed.		
18. CCTV inspection of stormwater pipes completed.		
WATER QUALITY The Works have been finally inspected and:		
19. Water quality structures have been constructed in accordance with approved engineering drawings;		
20. Structures are free of debris and sediment.		
EROSION AND SEDIMENT CONTROL The works have been finally inspected and:		
21. Control structures required until the site is stabilised in accordance with the contractor's ESCP are in place.		
22. Structures are free of debris and sediment.		
EARTHWORKS The Works have been finally inspected and:		

23. Toe of batters not on Council Road reserve except as approved.		
24. Retaining walls clear of Road reserve except as approved.		
25. Retaining walls constructed in accordance with drawings.		
26. Batter slopes constructed in accordance with drawings.		
27. Batter slopes stabilised against erosion.		
28. Interim drainage constructed in accordance with drawings.		
29. All areas disturbed by the works have been rehabilitated.		
30. Allotment levels are as per the design plans.		
31. Verge levels are as per the design plans.		
SEWER RETICULATION The Works have been finally inspected and:		
32. Pipe layout is as per the plan or approved amendments with respect to pipe size, levels, and location.		
33. Pipework has been visually inspected and is considered satisfactory, i.e.: a. Pipework flush with internal walls of manhole; b. alignment and grade; c. flexible joints; d. line flushed and cleaned; e. no visible sign of trench subsidence; f. a density test of backfill is available and satisfactory; g. CCTV survey results submitted and satisfactory.		
34. Manholes and maintenance shafts have been constructed to the correct standards, i.e.:		

a. Cast in situ; b. Benching; c. curvature satisfactory; d. no ponding; e. profile satisfactory; f. no weeps (free of infiltration); g. concrete work; h. no honey combing; i. covers; j. covers checked to be gas tight; k. correct type; l. imprint in accordance with standards; m. depth of cover surround; n. depth of top slab; o. location; p. relative to allotment boundaries; and q. 50 to 75 mm proud of finished surface level.		
35. Material gradings for bedding material are available and satisfactory.		
36. Pressure test results are available and satisfactory.		
37. Manhole hydrostatic test all satisfactory.		
38. Sewerage connection Private Works fees paid.		
39. On-site sewer report provided (if applicable).		
40. PUMP STATION - refer separate PS checklist.		
WATER RETICULATION The works have been finally inspected and:		
41. Pipe layout and services fixtures (valves and hydrants) are as per the plan or approved amendments with respect to pipe size and location.		
42. Pipework has been pressure tested in accordance with Council's		

requirements and test results are available and satisfactory.		
43. Pipework has been chlorinated in accordance with Council's requirements.		
44. There are no visible signs of trench subsidence for leaks.		
45. Valves and hydrants have been inspected and a satisfactory, i.e.; a. Location; b. setts and surrounds correctly installed to prevent ingress of soil, etc; c. mortar packing to boxes correctly completed; d. depth to top of hydrant or valve stem within limits; e. dust caps to hydrants; f. colour of marker plate correct; g. direction of flow indicated; h. marking plates correctly installed; and i. size of plate correct.		
46. Material gradings for bedding material are available and satisfactory.		
47. Water supply connection Private Works fees paid.		
48. PUMP STATION - refer separate checklist.		
ROAD PAVEMENTS The works have been finally inspected and:		
49. Plan layout and geometry of Road system is in accordance with the drawings.		
50. Finish levels at Crown and channel are at design levels.		
51. Cross falls are to the approved plan.		
52. AC is satisfactory with regards to finish and thickness.		

53. Joints in the seal (especially where various development stages apply) are flush.		
54. The sealed surface is free of blemishes.		
55. All compaction test, material quality (CBR), material grading, AC core tests are satisfactory and available.		
56. Ponding of stormwater does not occur.		
SEGMENTAL PAVERS (Where Constructed) The Works have been finally inspected and:		
57. All pavers have been correctly laid to pattern, within allowable tolerance, compacted, and the joints filled;		
58. Bedding sand for pavers drains to subsoil drainage.		
59. Pavers adjacent to concrete kerb and channel, edge restraints etc have been cut and laid in accordance with all relevant requirements.		

Form 5 – Registered Engineer's Certification of "As Constructed" Works

This certificate registers evidence that the locations, surface and invert levels of all works and infrastructure presented on the drawings noted below and in the digital ADAC data have been surveyed and meet the accuracy standards as defined within the WRC Development Manual.

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Contractor:	
Surveyor Name:	
Surveyor Firm:	

Drawings & Documents pertaining to the above:

Signed:

Date:

Form 6 – Registered Surveyor's Certification of "As Constructed" Works

This certificate registers evidence that the "As Constructed" drawings submitted herewith have been prepare, checked and amended in accordance with the requirements of the WRC Development Manual and that the completed works comply with the requirements therein.

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Consulting Firm:	
Surveyor Name:	
Surveyor Firm:	

Certification by Registered Surveyor (Consulting) attached: Yes / No

(Note: Certification is to be in accordance with the Development Manual).

Compliance with the manual Design Intent and Function not compromised by the "As Constructed" Works	**Compliance Yes/No**	**Non-Compliance refer to attached redesign of works to ensure satisfactory performance**
Earthworks		
Roadworks		
Stormwater Drainage		
• Flow System and Structures		
• Major Flow System and Structures		
Water Reticulation		
Sewerage Reticulation		
"As Constructed" Documentation		

Signed:

RPEQ No.

Date: ~~Form 2 – Security Lodgement Form~~

~~This sheet must be completed prior to the acceptance of any bond by Council.~~

~~Development Name:~~	
~~Stage:~~	
~~File No.:~~	
~~Applicant:~~	
~~Consultant:~~	
~~Purpose of Bond:~~	

~~Uncompleted Works Bond Assessment:~~

~~Estimated time to complete bond works (not greater than 90 days)~~	~~days~~
~~Current contract completion date~~	
~~Anticipated completion date~~	
~~Consulting engineers estimated value of uncompleted works~~	
~~Bond value (apply factor 1.50)~~	

~~Construction/defects liability bond assessment :~~

~~Consulting engineer's estimated value of completed works~~	
~~Construction/maintenance bond value (apply factor 0.05) (min $500)~~	

~~Council shall retain any interest accrued on cash monies paid to Council and held in trust by Council.~~

~~Consulting Engineer:~~

~~Signature:~~

~~RPEQ No.~~

~~Date:~~

~~*Form 3 – Inspection Certificate for Witness/Hold Point*~~

~~This certificate registers evidence that the works as noted herein have been inspected by the Council officer noted below and were found to be satisfactory.~~

~~Development Name:~~	
~~Development Location:~~	
~~File No.:~~	
~~Consulting Engineer:~~	
~~Contractor:~~	

~~Works being inspected/Tested/Witnessed:~~

~~Defaults/Corrective Action Required:~~

~~Defaults Corrected? Y N N/A~~

~~Council Inspector Signature:~~

~~Name of Inspector:~~

~~Date of Inspection:~~

Form 4 – Works Acceptance Inspection Checklist

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Contractor:	

Item	Verification (Yes/No/N/A)	Comment
ALLOTMENT DRAINAGE The works have been finally inspected and:		
1. Concrete catch drains constructed in approved location and to a satisfactory standard;		
2. Field inlets constructed in approved location and to a satisfactory standard;		
3. Overland flow path constructed to correct profile;		
4. Pipework has been visually inspected and is satisfactory in terms of: a. alignment and grade; b. free of debris and siltation; c. no visual sign of trench subsidence; and d. outlets are satisfactory.		
5. Lots not provided with allotment drainage can be drained to the kerb and channel.		
STORMWATER DRAINAGE SYSTEM The works have been finally inspected and:		
6. Pipe layout is as per plan or approved amendments with respect to pipe size, levels and location.		

7. Pipework has been visually inspected and is satisfactory in terms of: a. alignment and grade; b. free of debris and siltation; c. lifting plug holes sealed; d. no visible sign of trench subsidence; and e. no damaged pipes.		
8. Gully pits and manholes have been constructed to the correct standards i.e.: a. Correct type of grate or cover; b. Lintels; c. side entry slots; d. benching (no water ponding) e. grates are satisfactorily sealed in frames; f. we poles provided to bedding material; g. no damaged structures; h. converter slabs/sections mortar bedded; i. correct drops through gullies/manholes; and j. all lids/grates finished to match surface level.		
9. All density tests to backfill are available and satisfactory.		
10. Material gradings are available for bedding material and are satisfactory;		
11. Outlets/inlet structures are satisfactorily constructed and are free from scour or siltation.		
12. All manhole and gully pit pipe connections are mortared flush with the walls and no pipe reinforcement is exposed.		
13. Open cut channels have been finally inspected and a satisfactory i.e.: a. Cut to design profiles; and b. lining of channel is to the required thickness and		

~~reinforcement, with appropriate weep holes.~~		
~~14. Overland flow, the works have been finally inspected an appropriate flow paths are provided and clear of obstruction.~~		
~~15. Outlets and outfalls have been constructed to control discharge flow in accordance with the plans.~~		
~~16. Subsoil drainage discharges to gullies or other approved point of discharge.~~		
~~17. All grousing requirements to channels, swales, outlets, inlets etc have been completed.~~		
~~18. CCTV inspection of stormwater pipes completed.~~		
~~**WATER QUALITY**~~ ~~The Works have been finally inspected and:~~		
~~19. Water quality structures have been constructed in accordance with approved engineering drawings;~~		
~~20. Structures are free of debris and sediment.~~		
~~**EROSION AND SEDIMENT CONTROL**~~ ~~The works have been finally inspected and:~~		
~~21. Control structures required until the site is stabilised in accordance with the contractor's ESCP are in place.~~		
~~22. Structures are free of debris and sediment.~~		
~~**EARTHWORKS**~~ ~~The Works have been finally inspected and:~~		

23. Toe of batters not on Council Road reserve except as approved.		
24. Retaining walls clear of Road reserve except as approved.		
25. Retaining walls constructed in accordance with drawings.		
26. Batter slopes constructed in accordance with drawings.		
27. Batter slopes stabilised against erosion.		
28. Interim drainage constructed in accordance with drawings.		
29. All areas disturbed by the works have been rehabilitated.		
30. Allotment levels are as per the design plans.		
31. Verge levels are as per the design plans.		
SEWER RETICULATION The Works have been finally inspected and:		
32. Pipe layout is as per the plan or approved amendments with respect to pipe size, levels, and location.		
33. Pipework has been visually inspected and is considered satisfactory, i.e.: a. Pipework flush with internal walls of manhole; b. alignment and grade; c. flexible joints; d. line flushed and cleaned; e. no visible sign of trench subsidence; f. a density test of backfill is available and satisfactory; g. CCTV survey results submitted and satisfactory.		
34. Manholes and maintenance shafts have been constructed to the correct standards, i.e.:		

a. Cast in situ; b. Benching; c. curvature satisfactory; d. no ponding; e. profile satisfactory; f. no weeps (free of infiltration); g. concrete work; h. no honey combing; i. covers; j. covers checked to be gas tight; k. correct type; l. imprint in accordance with standards; m. depth of cover surround; n. depth of top slab; o. location; p. relative to allotment boundaries; and q. 50 to 75 mm proud of finished surface level.		
35. Material gradings for bedding material are available and satisfactory.		
36. Pressure test results are available and satisfactory.		
37. Manhole hydrostatic test all satisfactory.		
38. Sewerage connection Private Works fees paid.		
39. On-site sewer report provided (if applicable).		
40. PUMP STATION - refer separate PS checklist.		
WATER RETICULATION The works have been finally inspected and:		
41. Pipe layout and services fixtures (valves and hydrants) are as per the plan or approved amendments with respect to pipe size and location.		
42. Pipework has been pressure tested in accordance with Council's		

requirements and test results are available and satisfactory.		
43. Pipework has been chlorinated in accordance with Council's requirements.		
44. There are no visible signs of trench subsidence for leaks.		
45. Valves and hydrants have been inspected and a satisfactory, i.e.; a. Location; b. setts and surrounds correctly installed to prevent ingress of soil, etc; c. mortar packing to boxes correctly completed; d. depth to top of hydrant or valve stem within limits; e. dust caps to hydrants; f. colour of marker plate correct; g. direction of flow indicated; h. marking plates correctly installed; and i. size of plate correct.		
46. Material gradings for bedding material are available and satisfactory.		
47. Water supply connection Private Works fees paid.		
48. PUMP STATION - refer separate checklist.		
ROAD PAVEMENTS The works have been finally inspected and:		
49. Plan layout and geometry of Road system is in accordance with the drawings.		
50. Finish levels at Crown and channel are at design levels.		
51. Cross falls are to the approved plan.		
52. AC is satisfactory with regards to finish and thickness.		

53. Joints in the seal (especially where various development stages apply) are flush.		
54. The sealed surface is free of blemishes.		
55. All compaction test, material quality (CBR), material grading, AC core tests are satisfactory and available.		
56. Ponding of stormwater does not occur.		
SEGMENTAL PAVERS (Where Constructed) The Works have been finally inspected and:		
57. All pavers have been correctly laid to pattern, within allowable tolerance, compacted, and the joints filled;		
58. Bedding sand for pavers drains to subsoil drainage.		
59. Pavers adjacent to concrete kerb and channel, edge restraints etc have been cut and laid in accordance with all relevant requirements.		

~~*Form 5 – Registered Engineer's Certification of "As Constructed" Works*~~

~~This certificate registers evidence that the locations, surface and invert levels of all works and infrastructure presented on the drawings noted below and in the digital ADAC data have been surveyed and meet the accuracy standards as defined within the WRC Development Manual.~~

~~Development Name:~~	
~~Development Location:~~	
~~File No.:~~	
~~Consulting Engineer:~~	
~~Contractor:~~	
~~Surveyor Name:~~	
~~Surveyor Firm:~~	

~~Drawings & Documents pertaining to the above:~~

~~Signed:~~

~~Date:~~

~~*Form 6 – Registered Surveyor's Certification of "As Constructed" Works*~~

~~This certificate registers evidence that the "As Constructed" drawings submitted herewith have been prepare, checked and amended in accordance with the requirements of the WRC Development Manual and that the completed works comply with the requirements therein.~~

~~Development Name:~~	
~~Development Location:~~	
~~File No.:~~	
~~Consulting Engineer:~~	
~~Consulting Firm:~~	
~~Surveyor Name:~~	
~~Surveyor Firm:~~	

~~Certification by Registered Surveyor (Consulting) attached: Yes / No~~

~~(Note: Certification is to be in accordance with the Development Manual).~~

~~Compliance with the manual Design Intent and Function not compromised by the "As Constructed" Works~~	~~Compliance Yes/No~~	~~Non-Compliance refer to attached redesign of works to ensure satisfactory performance~~
~~Earthworks~~		
~~Roadworks~~		
~~Stormwater Drainage~~		
~~• Flow System and Structures~~		
~~• Major Flow System and Structures~~		
~~Water Reticulation~~		
~~Sewerage Reticulation~~		
~~"As Constructed" Documentation~~		

~~Signed:~~

~~RPEQ No.~~

1.04.2 ~~Date:~~ The consulting engineer in undertaking construction inspections shall:

1.04.2.1 allocate competent and experienced after site inspection and testing;
1.04.2.2 provide sufficient site presence, dependent on the contractor's progress and workmanship, and in accordance with the ITP, to be reasonably satisfied that the works meet the design, specification and performance requirements; and inspect and confirm acceptability of works is complying with the design intent and in accordance with the Council's requirements trying to request a Council inspection.

CP 1.05 Contractor's Erosion & Sediment Control Plan

1.05.1 Prior to construction commencing the contractor shall prepare an Erosion and Sediment Control Plan (ESCP) to manage the site during construction and the defects liability period.
1.05.2 The plan shall be consistent with the approved Erosion and Sediment Control Strategy (ESCS) and shall take into consideration the contractor's proposed construction methodology and program.
1.05.3 The contractor may propose an alternative construction methodology that differs from the approved ESCS. In this instance the contractor shall discuss and obtain approval from the consulting engineer for the alternative strategy prior to submitting to Council.
1.05.4 The contractor's ESCP must be prepared by a suitably qualified person meeting the following criteria:
1.05.4.1 Six years or more field experience in civil engineering construction practices;
1.05.4.2 educated in erosion and sediment control practice through regular industry sponsored seminars, publications, etc;
1.05.4.3 an understanding of rainfall hydrology and an ability to calculate rainfall run-off; and
1.05.4.4 an understanding and ability to calculate open channel flows and velocities.
1.05.5 A copy of the contractor's current approved ESCP is to be retained on site by the contractor's representative.
1.05.6 The contractors ESCP shall be submitted to the consulting engineer for review and approval prior to the pre-start meeting.
1.05.7 The consulting engineer is to review the ESCP for compliance with the approved ESC S. Any amendments required to ensure ESCS compliance are to be incorporated by the contractor prior to approval. The consulting engineer will issue a copy of the approved ESCP to the Council prior to the pre-start meeting.
1.05.8 It is the contractor's responsibility to ensure that the ESCP is updated and amended to reflect any changes in the construction methodology and program.
1.05.9 All amendments to the contractors ESCP shall be approved by the consulting engineer and a copy of the revised approved ESC P issued to Council.
1.05.10 The contractors ESC P shall consist of the following:

1.05.10.1 A layout plan detailing the measures to be employed during construction. On larger sites were works are to be progressively constructed a plan shall be provided for each stage of works;
1.05.10.2 A layout plan detailing the measure(s) to remain in place from the commencement of the defects liability period;
1.05.10.3 a written description of the sequencing of works or construction program;
1.05.10.4 an inspection and test plan for monitoring erosion and sediment control measures during the construction and the defects liability period.
1.05.10.5 Details of all erosion and sediment control measures to be used. The contractor may adopt standard details developed by others e.g. the IECA Best Practice Erosion and Sediment Control manual.
1.05.10.6 The name of the person within the contractor's organisation who has the authority and responsibility for implementing, monitoring, updating or amending the plan.

1.05.11 The contractors ESCP shall address the following issues:

1.05.11.1 Minimising Disturbance:
1.05.11.1.1 limiting the exposure time and size of disturbed areas to a minimum;
1.05.11.1.2 allow for the use of existing vegetation has buffer zones.

1.05.11.2 Control of Runoff:
1.05.11.2.1 sizing of structures, channels, catch strain and diversion drains for appropriate storm events in accordance with the following table:

	Design Life	ARI
Non-erosive design capacity	0-6 months	1 year
	6-12 months	2 year
Structural stability	0-6 months	5 years
	6-12 months	10 years

1.05.11.2.2 Diverting clean water run-off around disturbed areas;
1.05.11.2.3 dividing the site into smaller more manageable drainage areas;
1.05.11.2.4 early installation of temporary drainage works;
1.05.11.2.5 early installation of permanent drainage system and protection works.

1.05.11.3 Erosion Control:
1.05.11.3.1 protecting service changes and hard engineering structures (eg. driveways, curbs, etc) from erosion caused by run-off;
1.05.11.3.2 prompt revegetation of disturbed areas;
1.05.11.3.3 installing structures and drainage channels to flow velocity and encourage settlement of soil particles;

1.05.11.3.4 protection of disturbed areas from wind erosion (dust suppression).

1.05.11.4 Sediment Control:

1.05.11.4.1 locating stockpiles clear of drainage paths and protecting stockpiles from traffic, run-off and wind erosion;

1.05.11.4.2 minimising number of site access points;

1.05.11.4.3 stabilising site access points to prevent vehicles transporting materials off-site;

1.05.11.4.4 intercepting drainage from disturbed areas and installing sediment barriers to slow the velocity of flow and allow fine particles to settle;

1.05.11.4.5 diverting larger contaminated flows to sediment traps to allow soil particles to settle or to be treated prior to release into receiving waters; and

1.05.11.4.6 protecting partially constructed drainage structures from sediment infiltration.

1.05.11.5 Revegetation:

1.05.11.5.1 Progressive stabilisation and rehabilitation of completed works; and

1.05.11.5.2 providing protection to revegetation works on steep batters during establishment period.

1.05.11.6 Inspection, cleanout and maintenance:

1.05.11.6.1 the inspection, cleanout and maintenance regime are to take into account the duration that the site will be disturbed and the timing of construction. If the site is disturbed (i.e. rehabilitation works are not complete) during the period December to May (wet season) a more rigorous inspection, cleanout and maintenance regime will be required then for a site which is disturbed during the period June to November.

1.05.11.6.2 The following references/guidance it may assist in preparing the ESCP:

- Best Practice Erosion and Sediment Control, International Erosion Control Association (Australiasia) 2008;
- Queensland Urban Drainage Manual;
- Guidelines for the Preparation of Erosion and Sediment Control Plans for Building Sites, Cairns City Council, July 2003;
- Erosion and Sediment Control Standard Version 9, Brisbane City Council, 2000

CP 1.06 Construction Security Bond.

1.06.1 Prior to construction of the works commencing the developer is required to lodge a security bond in cash or unconditional bank guarantee to the value of 5% of the

estimated cost of the construction of the works prepared and certified by the consulting engineer.

1.06.2 A bank guarantee should:
- 1.06.2.1 Be a binding contractual relationship between Council and the guaranteeing bank;
- 1.06.2.2 Include specific requirements for renunciation of the guarantee;
- 1.06.2.3 require adequate notice of renunciation;
- 1.06.2.4 not have an expiry date.

1.06.3 The bond is to be accompanied by Council's Security Lodgement Form (Form 2) clearly identifying the purpose of the bond together with the consulting engineer's certification of the value of the works.

1.06.4 The bond is required to provide security to Council in the event that costs are incurred as a result the following:
- 1.06.4.1 protection of on street works from damage by contractors, subcontractors and suppliers;
- 1.06.4.2 repairs to on street works resulting from damage caused by contractors, subcontractors and suppliers;
- 1.06.4.3 protection and repair of existing Council services (i.e. sewerage connections, water connections et cetera);
- 1.06.4.4 non-compliance with the approved Erosion and Sediment Control Plan during construction;
- 1.06.4.5 failure to provide adequately for traffic; and
- 1.06.4.6 urgent action required by Council to resolve unsafe construction or emergency repairs required to protect persons and/or property from consequential damages.

1.06.5 Any costs incurred by Council in responding to the above circumstances will be recovered from the security bond.

1.06.6 At the completion of the works and the commencement of the defects liability period, the construction security bond shall be returned to the developer or may be substituted for the defects liability bond.

CP 1.07 Notice of Commencement of Work

1.07.1 A notice of intention to commence works is to be issued to Council in writing seven days prior to the intended date for commencement of the works. No works will be permitted to commence until the following information is provided:
- 1.07.1.1 name, address and telephone number (including after-hours contact) of the consulting engineer for the works;
- 1.07.1.2 name, address and telephone number (including after-hours contact) of the contractor and major subcontractors for the work;
- 1.07.1.3 name and telephone number of the person to be contacted in regard to any matter arising from the construction of the works;
- 1.07.1.4 intended date of commencement of works, and contract period;
- 1.07.1.5 an invitation to the relevant Council representative to attend the pre-start meeting and confirmed by phone or email and minimum of 24 hours prior;

1.07.1.6 a request to Council to confirm that environmentally significant areas and/or trees which are to be preserved in accordance with any tree preservation declaration, have been identified and adequately protected;
1.07.1.7 location of project sign (if required);
1.07.1.8 and inspection and test plan (refer CP 1.16).

1.07.2 This submission will form notification of the date of the "pre-start" meeting.

CP 1.08 Documentation to Be Provided Prior to Pre-Start Meeting.

1.08.1 The following documents (to a standard acceptable to Council) are required to be submitted and accepted by Council prior to the pre-start meetings:
1.08.1.1 evidence of public liability insurance.
1.08.1.2 Proof of payment of Portable Long Service Leave Levy (PLSL);
1.08.1.3 contractor's erosion and sediment control plan;
1.08.1.4 traffic management plan;
1.08.1.5 construction security bond;
1.08.1.6 safety plan;
1.08.1.7 evidence that all fees and charges have been paid; and
1.08.1.8 cultural heritage management plan (if applicable).

1.08.2 The site safety induction is to be undertaken for each Council representative at initial attendance on site (prior to initial inspection);

1.08.3 evidence of Concurrence Agency, Service Authority or adjoining land owner consents/approvals is to be provided to Council prior to commencing any elements of work affecting/involving those parties;

1.08.4 the project specific Inspection and Test plan endorsed by the RPEQ.

CP 1.09 Pre-Start Meeting

1.09.1 A pre-start meeting is to be held prior to the commencement of works. The meeting is to be attended by consulting engineer, the contractor's representative, any relevant specialist consultants and Council's representative.

1.09.2 Items to be considered at this meeting will include but not be limited to the following:
1.09.2.1 review of relevant conditions of development approval and discussion of any issues including conditions of the development permit and operational works approvals that are considered important and relevant to the attending parties;
1.09.2.2 review of Council's construction requirements;
1.09.2.3 discuss the Contractor's ESCP approved by the consulting engineer;
1.09.2.4 a review of the processes for monitoring, compliance assessment and auditing of the ESCP;
1.09.2.5 inspection and identification of parks and environmentally significant areas and/or trees for preservation;
1.09.2.6 site access conditions;

1.09.2.7 identification of areas to be left undisturbed;
1.09.2.8 evidence of compliance with the Workplace Health and Safety Act, including site safety inductions, site safety plans, notifications;
1.09.2.9 review of ITP including a notice of nominated hold/witness point;
1.09.2.10 relevant provisions of any other Acts;
1.09.2.11 Traffic Management Plan;
1.09.2.12 location of project sign (if required);
1.09.2.13 sewerage and water pump station commissioning plan (if applicable to the project); and issue plans for construction are the latest approved plans.

1.09.3 The pre-start meeting is a Hold Point and works may not proceed until the meeting is held and any further requirements identified during the conduct of the meeting are satisfied.

1.09.4 Council may require that subdivisions in difficult terrain or environmentally sensitive areas to have all road centre lines pegged prior to the pre-start meeting. This is to occur at least two weeks prior to any construction activity taking place so Council can visit the site with Engineers and Contractors representatives to view first had ramifications of such construction activities as stormwater drainage points, proposed earthworks areas, clearing etc. Council reserves the right to amend the design in consultation with engineers should any problems arise as a result of the inspection. This preliminary site visit should be arranged prior to or in conjunction with the pre-start meeting.

Requirements During Construction

CP 1.10 General Requirements

1.10.1 The general requirements during construction of the project are as follows:
1.10.1.1 work may only proceed subsequent Council being issued with all the relevant documentation set out in CP 1.09;
1.10.1.2 no work shall commence on any existing open Road to the public unless specifically approved by Council;
1.10.1.3 no work may be carried out nor machinery driven above or near existing water and sewerage pipes without a work method statement being submitted by the contractor and approved by Council;
1.10.1.4 any damage to existing services under the control of Council or another authority must be notified immediately and made good by the relevant authority at the contractor/developer's expense prior to acceptance of the works;
1.10.1.5 use of Council services (e.g. water from existing mains) is subject to approval by Council and payment of appropriate fees;
1.10.1.6 work involving the use of machinery of any description shall only be carried out on the site 6:30 AM to 6:30 PM Monday to Saturday, with no work to be carried out on Sundays or public holidays. (In certain

circumstances Council may approve works outside these hours. All applications for changes to working hours must be in writing). For emergent or complaint response issues, dust suppression and sedimentation control may occur outside these hours. Council is to be notified as soon as possible in this instance; and

1.10.1.7 pumping stations, electrical switchboards, access covers, compounds and associated equipment installed during construction shall be padlocked when left unattended.

1.10.2 The developer, contractor and consulting engineer shall take all necessary steps, in accordance with the provisions of the workplace health and safety act, to ensure safety of the public in regard to construction activities. In particular, work on roadways shall be signed in accordance with the MUTCD. Council will require submission of plans indicating traffic control proposals and a program of work for sites involving the travelling public.

1.10.3 No public road may be closed, traffic diverted from public roads, or traffic diverted elsewhere without the prior approval of Council, Police and public advertising of the proposed diversion must be carried out. Proposals to divert traffic shall include full details of the alternative route and proposed signage.

1.10.4 Works shall not be undertaken on any adjoining private properties without the prior written consent of the relevant registered proprietor. A written acceptance (by the registered proprietor) of the completed work shall be submitted to Council upon finalisation of the work.

1.10.5 If connections or alterations to Council mains are required, the Council engineer shall be given a minimum of 10 working days' notice of the contractor's requirements (Council's notification requirements are to be noted on the project drawings/specifications).

CP 1.11 Public Notices/Project Signage

1.11.1 Where is a condition of approval, Council requires a project sign(s) to be erected on the sites frontages to constructed roads and any other location as required, the sign shall contain the following information:

1.11.1.1 An overall concept plan of the development showing the stage or works about to commence construction;

1.11.1.2 name of the developer;

1.11.1.3 name of the project;

1.11.1.4 Street address of the site;

1.11.1.5 project manager's name and contact number;

1.11.1.6 consulting engineer's name and contact number;

1.11.1.7 contractor's name and contractors number; and

1.11.1.8 other specialist consultants (geotechnical, landscaping, architects, hydraulics et cetera) names and contact numbers.

1.11.2 Material and size of the sign shall be as follows:

1.11.2.1 Made of weatherproof material; and

1.11.2.2 Not less than 1200mm x 900mm.

1.11.3 Position of the sign on the land:
- 1.11.3.1 the sign must be placed on, or within 1.5 m of, the road frontage of the land;
- 1.11.3.2 the sign must be mounted to at least 300 mm above ground level; and
- 1.11.3.3 the sign must be positioned so that it is visible from the road.

1.11.4 The lettering on the sign:
- 1.11.4.1 each item listed above must start on a new line; and
- 1.11.4.2 the minimum lettering height shall be 50 mm in height.

CP 1.12 Document Control

1.12.1 A copy of the approved project drawings, specification and operational works approval shall be kept on the job site at all times during construction.

1.12.2 Should amendments be required to engineering plans and/or specifications during construction, the consulting engineer shall ensure that Council and any other person or organisation who has previously been issued a set of plans that may be affected by this amendment (e.g. registered surveyor, public service authority) is in receipt of a copy of all amended drawings and/or specifications. When approved, Council shall stamp these plans for approval as Operational Works plans. Any amended drawings and/or specifications shall be submitted with an accompanying letter outlining the amendments together with any supporting information.

1.12.3 Submissions with a full complement of supporting documentation will expedite Council's approval timeframes.

1.12.4 All amendments shall be issued to Council for approval prior to the works being undertaken.

CP 1.13 Erosion & Sediment Control

1.13.1 The consulting engineer shall ensure that the construction contract contains provisions requiring the contractor to implement the approved ESCS and to prepare and implement an ESCP complying with the approved strategy.

1.13.2 The contractor shall ensure that all reasonable measures are taken to protect nearby properties from dust pollution, erosion, siltation or sediment transport.

1.13.3 Council reserves the right to order whatever action deem necessary and appropriate at the time to prevent environmental harm, including ordering temporary cessation of work in extreme cases.

1.13.4 As erosion and sediment control is also an issue of public amenity and safety, the developer shall be responsible for any costs arising from dust or water pollution generated by its development.

CP 1.14 Noise

1.14.1 The requirements of the *Environmental Protection Act* 1994 regarding nuisance noise (if applicable) shall apply to the development works.

CP 1.15 Parks & Environmentally Significant Areas

1.15.1 In cases where the subject land or the adjacent land is an existing or proposed park, bushland reserve or area otherwise declared by Council as environmentally significant, the following general precautions shall be mandatory:

1.15.1.1 the areas should be clearly pegged, flagged, (and fenced if ordered by Council) inspected and approved by Council officers;

1.15.1.2 the approved design, or certificate of approval for tree clearing issued pursuant to tree preservation bylaws (if applicable) shall have identified any unavoidable intrusion into such areas and nominated work practices such as maximum widths of disturbances, nominated access routes, methods and timing of rehabilitation, which shall be strictly adhered to.

1.15.2 Council should be notified immediately when the consulting engineer is aware of any damage or disturbance beyond the approved limits. Rehabilitation of this damage or disturbance shall be to the satisfaction of Council.

CP 1.16 Inspection & Testing

1.16.1 During the construction phase, the consulting engineer shall be responsible for undertaking the minimum number of required inspections and tests in accordance with the approved Inspection and Test Plan (ITP).

1.16.2 There are a number of major inspections that are mandatory hold points (H) for the consulting engineer and Hold Points or Witness Points for Council. These will be included in the ITP and can be found in Appendix A which contains inspection and test plan templates. The contractor's ITP is to be based on these templates and updated with project specific testing requirements.

1.16.3 Any proposed changes to the ITP must be notified to and accepted by Council prior to the affected works commencing.

1.16.4 The submitted ITP is to be implemented by the consulting engineer. The test results and effort certification that the plan has followed are to be submitted with the "as constructed" documentation.

1.16.5 Council will, on a random basis, call upon the consulting engineer to provide evidence of conformance with the approved ITP in the form of diary records, site visit reports etc.

1.16.6 During construction, Council reserves the right to conduct audit inspections of any or all of the works without prior notification. These inspections do not release the consulting engineer from his responsibility to check the contractor's work.

1.16.7 For the RPEQ's test inspections and Hold/Witness Points, a "Certificate of Inspection" will record the inspections. If requested, copy is to be provided to Council for each Hold Point/Witness Point inspection.

1.16.8 For Council Hold/Witness points, the RPEQ's information will include as a minimum the details contained within Form 3.

CP 1.17 Application for Council to Complete Private Works

1.17.1 unless otherwise approved, Council requires any connections and alterations to Council's live sewer and water mains associated with developments to be completed by the developer at the developer's expense subject to Council's approval and supervision.

1.17.2 Sewer and water mains are considered to be live once the defects liability period has commenced. All work on live sewers and water mains must be carried out by the contractor with Council approval and subsequent supervision.

1.17.3 Alterations and connections to existing Council sewer and water mains, resulting from the development (including cutting in of new sewer property connections) are to be completed prior to commencement of the defects liability period. In these cases, separate applications should be made for the alterations and the connections.

1.17.4 Contractors are not permitted to operate Council's infrastructure unless written approval has been obtained from Council. The placement and removal of plugs within live sewers must be done under direct supervision of Council's inspector.

1.17.5 Council reserves the right, on the advice of its inspector, to stop, or take over a connection being undertaken by a contractor, if in the inspector's opinion the contractor is incapable of completing the connection work in a reasonable time without causing damage to Council's infrastructure or undue inconvenience to the public. Any work carried out by Council will be at the contractor's cost.

CP 1.18 Application for Approval to draw water from Council Mains

1.18.1 The drawing of construction water from Council's mains must be approved and the relevant fees paid in advance.

1.18.2 Permission to draw water shall be subject to the following conditions:

- 1.18.2.1 backflow prevention;
- 1.18.2.2 water mainly be taken between the hours of 8 AM and 4:30 PM;
- 1.18.2.3 the approval shall be limited to the days and dates nominated in Council's notice of approval;
- 1.18.2.4 water money be taken from the approved hydrant point;
- 1.18.2.5 a copy of this approval is to be held by the driver of any vehicle taking water covered by this approval;
- 1.18.2.6 Council may withdraw this approval at any time, such notice shall be in writing and will become effective immediately; and
- 1.18.2.7 the applicant is responsible for the cost of reinstatement of damage to Council's property caused by the taking of water covered by this permit.

Acceptance of Works

CP 1.19 Introduction

1.19.1 Full works requiring Council approval a “Defects Liability” period is a period of 12 months minimum (or other period as Council so shall require in its absolute discretion) after the works have been accepted as complete by Council. During the defects liability period, it is the responsibility of the developer to rectify any works found to be defective due to design faults or found to exhibit faults attributed to the performance of the construction activities in terms of quality and conformance with the design and specifications.

1.19.2 The following are required to be completed prior to Council acceptance of works:

- 1.19.2.1 completed “as constructed” submission lodged with Council a minimum five days prior to the “Works Acceptance” inspection or early plan sealing inspection for bonding or uncompleted works and being to Council satisfaction;
- 1.19.2.2 satisfactory “Works Acceptance” inspection;
- 1.19.2.3 all documentation outlined in CP 1.25(2) submitted to and accepted by Council;
- 1.19.2.4 all appropriate documentation to be completed by the consulting engineer and retained for records purposes. This consists of the “Works Acceptance Inspection Checklist” (Form 4), the certified ITP and all test results and records for the works.
- 1.19.2.5 Approval has been given by Council or private certifier for construction of any buildings forming part of the operational works approval; and
- 1.19.2.6 satisfactory commissioning and acceptance of any water pump station, reservoir or sewerage pump station.

1.19.3 Following the satisfactory completion of all of the above matters, the consulting engineer shall make a written request for acceptance of the works and commencement of the “Defects Liability” period and lodgement of any uncompleted Works Bonds.

1.19.4 The date of the works acceptance shall be the date of issue of the Works Acceptance certificate an shall be taken as the date all documentation outlined in CP 1.25 has been approved and conditions of the operational works and development approval have been met. Works acceptance will not be backdated to the date of the works acceptance inspection. The assets will become Council’s at the date on the work acceptance certificate.

1.19.5 Prior to making application for works acceptance the consulting engineer must confirm that all non-compliant work is rectified by the contractor. Any non-compliance is found by Council must be rectified prior to Council’s issue of a Works Acceptance certificate. It is the responsibility of the consultant to monitor the contractor’s work to the extent necessary such that any deviations from the design are approved prior to making application for works acceptance, alternatively the consultant must instruct the contractor to rectify the work.

CP 1.20 Defects Liability Bond

1.20.1 Council requires a bond equivalent to a minimum of 5% of the value of the works (or such other amount as Council deems appropriate in its sole discretion), which is kept for the Defects Liability period, or until the works are finally accepted.

1.20.2 The bond is to be submitted with Council's Security lodgement form (Form 2) clearly identifying the purpose of the bond together with the consulting engineers certification of the value of the works.

1.20.3 The construction security bond lodged prior to construction may be used for the purposes of the defects liability bond subject to Council's approval.

CP 1.21 "As Constructed" Submission

1.21.1 "As Constructed" documentation serves two distinct functions:

1.21.1.1 Evidence that "As Constructed" works have been checked against the approved design, to support certification by the consulting engineer responsible for the design that design philosophies and criteria have been achieved; and

1.21.1.2 to provide an accurate record of the "As Constructed" services.

1.21.2 Information required for the checking function must be presented in ADAC format in accordance with Council's "Guidelines for Creation and Submission of ADAC XML Files".

1.21.3 The submission of digital "As Constructed" files in accordance with Council's ADAC guideline is mandatory in order to achieve acceptance of development works and commencement of the "Defects Liability" period and is required to be forwarded to Council a minimum of five working days prior to the "Works Acceptance" inspection or early plan sealing inspection for bonding of uncompleted works.

1.21.4 The following items must be submitted as part of the "As Constructed" submission:

1.21.4.1 electronic copies of the updated management plans, operational and maintenance manuals, and environmental management plans where these have been amended or not previously provided to Council (where applicable);

1.21.4.2 asset valuation report (detailed bill of quantities) in a format acceptable to Council and certified by an RPEQ;

1.21.4.3 an electronic copy of the Council approved final engineering drawings in both DWG and ADAC format together with electronic PDF copies;

1.21.4.4 where applicable, pump station RTU number and pump station identifier to be obtained from Council;

1.21.4.5 electronic copy of the Council approved landscaping and parks embellishment drawings;

1.21.4.6 electronic copy of Park/landscaping irrigation system drawings;

1.21.4.7 electronic copy of design plans for building/structure and copy of structural certificate;

1.21.4.8 "As Constructed" digital data and drawings of services and infrastructure including works completed by Council for the contractor under a Private Works agreement;
1.21.4.9 digital ground model data to the requirements of Council in an approved format (e.g. DWG or as nominated by Council).
1.21.4.10 Any necessary information required for Council's asset management records;
1.21.4.11 certificate of installed playground equipment to relevant Australian standards; and
1.21.4.12 details of works carried out on mains, whether or not they are part of the original project design or for a future stage.

CP 1.22 Compliance Certifications

1.22.1 All "As Constructed" works including the sewerage property connection branches, must be surveyed by a registered surveyor in order to obtain the detail required by Council's ADAC guideline. The registered surveyor's certification must accompany the "As Constructed" submission to Council. See Form 5 for an example of an acceptable Registered Surveyor's (Consulting) Certification.

1.22.2 All "As Constructed" works must also be certified by the consulting engineer responsible for the works. The certification must note that the design intent and function of the proposed works have not been compromised by the constructed works. To this extent, the consulting engineer will be responsible for determining whether the "As Constructed" details that exceed the tolerances for construction do not compromise the design intent and/or operational effectiveness of the infrastructure.

1.22.3 It is recognised that in some circumstances, the tolerances for construction are exceeded. In these instances, the consulting engineer will be responsible for performing confirmation design calculations to ensure that the original design intent and function are not compromised.

1.22.4 Further, should the "as constructed" details indicate a change to the design intent or function of the works, revised design calculations shall be provided by the consulting engineer to indicate the acceptability of the proposed change relative to Council's requirements. Council's approval of the change is required prior to the formal acceptance of the works.

1.22.5 The consulting engineer shall be responsible for the completion of Form 6 "Statement of Compliance - As Constructed Works".

CP 1.23 Management Plans, Operation and Maintenance Manuals

1.23.1 Where works comprise pump stations, reservoirs, treatment plants etc, operation and maintenance manuals for all components shall be provided. Operating and maintenance manuals shall include spare parts lists, electrical documentation and any other relevant information. Maintenance manuals and procedures are also required for drainage structures which incorporate Gross pollutant traps, interceptor devices etc. The maintenance procedures should indicate recommended frequencies for maintenance/planning functions in wet and dry seasons.

1.23.2 Management plans are necessary for where there is any future maintenance required to ensure sustainability of that feature, i.e. waterways, bio retention basins etc.

CP 1.24 Project Documentation

1.24.1 Development works will not be accepted until construction records have been certified as being completed by the consulting engineer and accepted by Council.

1.24.2 A complete copy of the following documents shall be provided to Council for acceptance prior to the "Works Acceptance" inspection:

- 1.24.2.1 ITP certified by the consulting engineer;
- 1.24.2.2 "Works Acceptance" inspection checklist;
- 1.24.2.3 "As Constructed" submission (including ADAC files) in accordance with CP1.21;
- 1.24.2.4 management plans, operation and maintenance manuals in accordance with CP 1.23;
- 1.24.2.5 water and sewerage inspection certificates including pump station and reservoir commissioning certificate; and
- 1.24.2.6 digital copy of CCTV survey for sewer and stormwater with engineering report and certification.

1.24.3 Copies of all test results required to confirm compliance with Council standard specifications shall be assembled and retained as part of the project documentation within the consulting engineers record storage facilities. Whilst not a complete listing, the following details some major records to be included:

- 1.24.3.1 fill compaction test results;
- 1.24.3.2 subgrade CBR's;
- 1.24.3.3 subgrade replacement material quality, thickness and locations;
- 1.24.3.4 subgrade replacement material compaction test results;
- 1.24.3.5 subsoil drain filter media quality statements (or grading is where required);
- 1.24.3.6 subbase course and base course material quality statements and thicknesses;
- 1.24.3.7 subbase course and base course compaction test results;
- 1.24.3.8 prime or primer spray seal and application rates;

1.24.3.9 AC core test results;
1.24.3.10 sewer pressure test records;
1.24.3.11 grading to sewer bedding quality statements;
1.24.3.12 grading to water main bedding quality statements;
1.24.3.13 water main pressure test records;
1.24.3.14 pump station commissioning and test certification by Council (sewer and water) including wet–well, pumps and switchboard;
1.24.3.15 any concrete testing required by the technical specifications;
1.24.3.16 pipework material quality statements for all pipework material (water, sewer, stormwater et cetera);
1.24.3.17 Geo fabric material quality statements;
1.24.3.18 digital copy of CCTV survey for sewer and stormwater with engineering report and certification;
1.24.3.19 any other testing results or statements required to conform with this manual;
1.24.3.20 any other job specific testing carried out ordered by the consulting engineer, if used.

1.24.4 The consultant should prepare a letter to Council requesting acceptance of a pump station for the purpose of achieving "Works Acceptance" for the subdivision. The letter should include/enclose:

1.24.4.1 the pump station allotment number, as it appears on the survey plan;
1.24.4.2 the name of the pump station and RTU number;
1.24.4.3 copy of approved design drawings;
1.24.4.4 copy of as – constructed drawings (can be preliminary);
1.24.4.5 copy of completed pre-commissioning checklist;
1.24.4.6 details of any nonconformances and uncompleted works;
1.24.4.7 rectification plan if required;
1.24.4.8 copy of ITP;
1.24.4.9 certification by the consultant for structural design, buoyancy and compliance with design drawings and this manual;
1.24.4.10 request that Council make application to Ergon for connection of power accompanied with a locality plan with street names showing the pump station location to attach to the application; and
1.24.4.11 evidence that an application for commissioning a sewerage pump station has been lodged.

1.24.5 The information to be provided to Council shall include as a minimum the requirements of the pump station commissioning checklist (Appendix H). The following pump station information shall also be provided to Council:

1.24.5.1 pump manufacturer, model, type, and impeller diameter (as a cut sheet);
1.24.5.2 rating of the motor;
1.24.5.3 weight of the pump and motor;
1.24.5.4 Manufacturers performance curve (as a cut sheet);
1.24.5.5 curves with at least four points plotted of the actual performance established in the field, or similar supervised work certificate plotted with the manufacturers pump curve;
1.24.5.6 KWH/1000 L pumped;
1.24.5.7 complete wiring diagrams and details (if not Council standard);

1.24.5.8 mechanical details and parts list of pump and motor;
1.24.5.9 maintenance catalogue showing also daily, weekly, monthly and annual maintenance requirements; and
1.24.5.10 a complete set of the manufacturers recommended spares delivered to Council.

1.24.6 Should any of the above test results fail to meet specification the consulting engineer shall include in the record, details of retesting/rectification carried out.

1.24.7 The construction record should be retained analogically assembled and bound document including a table of contents confirming completeness and presented to Council on completion of the works.

1.24.8 Site-specific as constructed drawings for pump stations and reservoirs. The drawings must be prepared in accordance with the requirements set out in Council's ADAC and Survey guidelines.

CP 1.25 "Works Acceptance" Inspection

1.25.1 The "Works Acceptance" inspection requires attendance by:
1.25.1.1 The consulting engineer for the project;
1.25.1.2 The contractor; and
1.25.1.3 Council's nominees.

1.25.2 It is the responsibility of the contractor and the consulting engineer to ensure any necessary requirements of the works are to an acceptable standard (as defined in approved design and construction documentation) prior to the conduct of a "Works Acceptance" inspection.

1.25.3 The general requirements to be met prior to Council's "Works Acceptance" inspection of the works are as follows:
1.25.3.1 the site is clean, tidy, free of rubbish, rocks, sticks, unauthorised stockpiles, etc.
1.25.3.2 allotment earthworks and site grading to be free draining and in accordance with the approved design;
1.25.3.3 integrity of environmentally significant areas is maintained;
1.25.3.4 all sewers flushed and gravity sewers inspected by CCTV; and
1.25.3.5 valve boxes and manhole tops visually located and not covered.

1.25.4 Prior to requesting a "Works Acceptance" inspection, the consulting engineer is responsible for confirming:
1.25.4.1 that the approved works have been completed;
1.25.4.2 any non-compliant issues or defects noted during the construction process, have been rectified to Council satisfaction;
1.25.4.3 the above listed items are in accordance with the approved drawings, Council's technical specifications and accepted engineering and landscaping practice; and
1.25.4.4 project documentation listed in CP 1.25 have been submitted. Failure to do so may result in cancellation of the inspection and/or the incurring of a reinspection fee.

1.25.5 Further to the above, and prior to the "Works Acceptance" inspection, the consulting engineer shall be responsible for the completion of the "Works acceptance" Inspection Checklist (Form 4) as appropriate to the works being constructed.

1.25.6 The completed checklist shall be presented to the relevant Council officer prior to the "Works Acceptance" inspection. Council officers will not undertake a detailed check of all items raised in the checklist but will examine some aspects of the works on an audit basis. The original of the completed checklist shall be retained with the records for the project upon completion of the works.

CP 1.26 Bonding of Uncompleted Works

1.26.1 For subdivision works council may, at its discretion, approve the bonding of uncompleted works to enable early sealing of survey plans. If Council does consent to the early sealing of survey plans, the developer must disclose to prospective purchasers that all services may not be available until the outstanding works are completed. Council will only consider early plan sealing for the full stage of the development is defined in the Operational Works approval. Parts of a stage will not be considered for early plan sealing.

1.26.2 Prior to the submission of any bond or plans for sealing, the following matters must be completed to the satisfaction of Council:

- 1.26.2.1 engineering plans have been approved; and
- 1.26.2.2 all survey pegs placed;
- 1.26.2.3 all allotment preparation work and earthworks on allotments have been completed in accordance with the requirements of this manual, with finished surface levels, the degree of compaction achieved and geotechnical assessments required on any of the allotment submitted and approved by Council.
- 1.26.2.4 Roads have been constructed to subbase level;
- 1.26.2.5 all stormwater systems including kerb and channel constructed;
- 1.26.2.6 sewer systems to be installed, tested, operational and "as constructed" plans lodged and accepted;
- 1.26.2.7 water supply system to be installed, tested, commissioned and "as constructed" plans lodged an accepted;
- 1.26.2.8 satisfactory evidence is to be provided to Council of a negotiated agreement with service providers for telecommunications, cabling, reticulation of electricity and the provision of street lighting and gas service providers for provision of gas (if applicable);
- 1.26.2.9 all outstanding rates are paid;
- 1.26.2.10 all works within allotments are fully completed and no further disturbance required on the allotments;
- 1.26.2.11 appropriate erosion and sediment control measures are in place for all disturbed areas;
- 1.26.2.12 all other bonded works (or works under agreement) are included in a bona fide contract between the developer and the contractor to be completed within 90 days;

1.26.2.13 all contributions required by the conditions of approval shall be paid prior to sealing of survey plans (infrastructure charges, contributions to service providers, Department of Main roads contributions, etc).

1.26.2.14 "As constructed" information provided for all completed works and accepted by Council;

1.26.2.15 submission of CCTV survey of completed sewers and stormwater drainage systems; and

1.26.2.16 building approval for all buildings/structures.

1.26.3 When the above matters have been completed, the applicant or consulting engineer shall submit the following to Council:

1.26.3.1 Security lodgement Form (Form 2) to be completed clearly indicating that the purpose of the bond is for uncompleted works;

1.26.3.2 fully priced schedule of outstanding works including the cost of preparation of the "as constructed" submission;

1.26.3.3 cash bond or unconditional bank guarantee to the value of 1.5 times the estimated value of the uncompleted works as certified by the consulting engineer. A bank guarantee should include:

1.26.3.3.1 a binding contractual relationship between counsel and the guaranteeing bank;

1.26.3.3.2 specific requirements for renunciation of the guarantee; and

1.26.3.3.3 require adequate notice of renunciation and must not have an expiry date.

1.26.3.4 certification from the consulting engineer that the works on each allotment have reached a stage acceptable to Council and that the outstanding works are programmed for completion within 90 days. The outstanding construction works program must be Council approved;

1.26.3.5 all bonds submitted shall be clearly identified as to the particulars of the site and the purpose of the bond.

1.26.3.6 Council may, at its discretion, require an Uncompleted Works inspection to ensure that the on allotment works and all associated documentation has been completed to Council's satisfaction. Should an inspection be deemed necessary, Council will require five (5) days' notice and payment of the required inspection fee in advance of any inspection.

CP 1.27 Sealing of Plan of Survey

1.27.1 Where operational works are associated with the reconfiguration of land or creation of new titles the Applicant is required to submit plan of survey which accords with the proposal plan approved by Council, suitable for deposit in the office of the Registrar of Titles and duly certified by a Registered Surveyor (Consulting Cadastral), together with 4 copies of the plan, and a completed application form for sealing of survey plans, building units, or group titles plan within 2 years from the date of approval of engineering drawings and specifications for subdivisions involving works.

1.27.2 Where the survey plans differ from the approved proposed plan, details of any changes are to be provided with the application.

1.27.3 The application form and plans, certificate(s) of compliance for any water, sewer reticulation and stormwater drainage system (including CCTV survey), together with the relevant fee are to be lodged with Council.

1.27.4 Upon being satisfied that the Plan of Survey conforms with the approval granted, and all required works have been carried out, or adequate security in accordance with Council's policy for bonding of uncompleted works is provided and all outstanding rates, contributions and charges have been paid, Council will note its approval under seal on the plan of survey and return the plan of survey to the Applicant for lodgement in the Titles Office.

1.27.5 The Applicant is required to submit the plan of survey to the Titles Office within 6 months of Council sealing the plan. Failure to do so will require the plan of survey to be resubmitted to Council for resealing.

Final Acceptance of Works

CP 1.28 “Final Acceptance” Inspection General Requirements

1.28.1 The “Final Acceptance” inspection will generally confirm the matters raised in the “Final Acceptance” inspection checklist (Form 4) and any other matters outstanding relevant to the works. The checklist is to be completed by the consulting engineer prior to the conduct of the “Final Acceptance” inspection. Failure to do so may result in cancellation of the inspection and/or the incurring of a reinspection fee.

1.28.2 During the defects liability period, it is the responsibility of the developer to rectify any works found to be defective or found to exhibit faults attributed to the design of the works and/or the performance of the construction activities in terms of quality and conformance with the design and specifications.

1.28.3 Once a period of 12 months minimum (or other such period as determined by Council) has elapsed from Council’s acceptance of the works “Works Acceptance”, a “Final Acceptance” inspection is to be arranged with Council. Payment of an appropriate inspection fee may be required.

1.28.4 The “Final Acceptance” inspection is to be attended by:

- 1.28.4.1 Council’s nominees;
- 1.28.4.2 the consulting engineer for the project; and
- 1.28.4.3 the contractor.

1.28.5 The consulting engineer for the work shall be responsible for ensuring that Council’s requirements for acceptance of the works are satisfied prior to requesting a final acceptance inspection.

1.28.6 Council’s requirements for final acceptance of the works are:

- 1.28.6.1 No outstanding payments are due to Council or other Authorities from the development;
- 1.28.6.2 completion of the “Final Acceptance” inspection checklist;
- 1.28.6.3 satisfactory “Final Acceptance” inspection;

1.28.6.4 All conditions of the approvals for as constructed drawings, works acceptance and plan sealing have been completed to the satisfaction of Council.

1.28.7 Following a satisfactory Final Acceptance inspection, the consulting engineer shall submit a written request to Council for Final Acceptance of the works and release of the defects liability bond. Council will, upon confirmation that no outstanding payments arising from the development are due to Council, confirm acceptance of the works, and arrange for the release of the defects liability bond.

DP 1 – DEVELOPMENT PRINCIPLES

General

DP 1.01 Introduction

1.01.1 This section of the Development Manual has been prepared to provide guidance on the design principles and issues to be considered by the designer in the preparation of layout plans for new urban developments. It is to be read in conjunction with the relevant planning scheme, and any local laws and policies.

DP 1.02 Urban Development Objectives

1.02.1 In addition to the requirements of the relevant planning scheme, local laws and policies, urban development layouts should:
- 1.02.1.1 Protect and enhance environmentally significant areas;
- 1.02.1.2 Be sympathetic to the existing topography and landform;
- 1.02.1.3 Minimise the impacts on the surrounding environment;
- 1.02.1.4 Facilitate the provision of urban services; and
- 1.02.1.5 Provide a safe urban living environment.

DP 1.03 Identification of Site Constraints and Values

1.03.1 In preparing an urban development layout, it is important to identify the natural constraints and values of the site and any engineering constraints on the provision of urban services and amenities.

1.03.2 Factors that may impose constraints on the development layout include but are not limited to:
- 1.03.2.1 Existing significant vegetation;
- 1.03.2.2 road and service connections to adjoining properties;
- 1.03.2.3 public transport networks;
- 1.03.2.4 railway and cane tram way lines;
- 1.03.2.5 external stormwater drainage catchments;
- 1.03.2.6 downstream stormwater drainage and receiving waters;
- 1.03.2.7 low-lying areas subject to flooding and ponding;
- 1.03.2.8 constraints and impact on adjoining properties;
- 1.03.2.9 constraints and limitation of existing utility services and planned augmentation works;
- 1.03.2.10 Main roads resumption requirements;

1.03.2.11 existing topographical features;
1.03.2.12 water quality issues; and
1.03.2.13 geotechnical considerations.

1.03.3 Designers are encouraged to consult with Council and other relevant authorities prior to or during the preparation of the site layout and design concept. Designers should in addition to the requirements of this manual ascertain any specific requirements of these authorities as they relate to the designs in hand.

DP 1.04 Vegetation Protection and Environmentally Significant Areas

1.04.1 Prior to preparing a development layout, all areas that have significant environmental value should be identified and incorporated into the layout design to enable them to be preserved and protected. Any disturbances within these areas shall be minimised to the satisfaction of Council and other relevant authorities, as may be appropriate.

1.04.2 All existing natural streams, watercourse and riparian vegetation shall be preserved. To minimise the impacts on stream bank vegetation, all streams and watercourses shall be protected by a drainage reserve. The extent of the drainage reserve shall be determined by the following criteria:

1.04.2.1 Not less than 3m clear of tree trunks of adjacent trees;
1.04.2.2 Not less that 10m clear of the high bank of the adjacent drainage path;
1.04.2.3 Not less than 20m clear of the high bank of a perennial stream;
1.04.2.4 Clear of the ARI 100 year storm event influence from the adjacent drainage path; and
1.04.2.5 Clear of the vertical projection of the tree canopy of the adjacent trees.

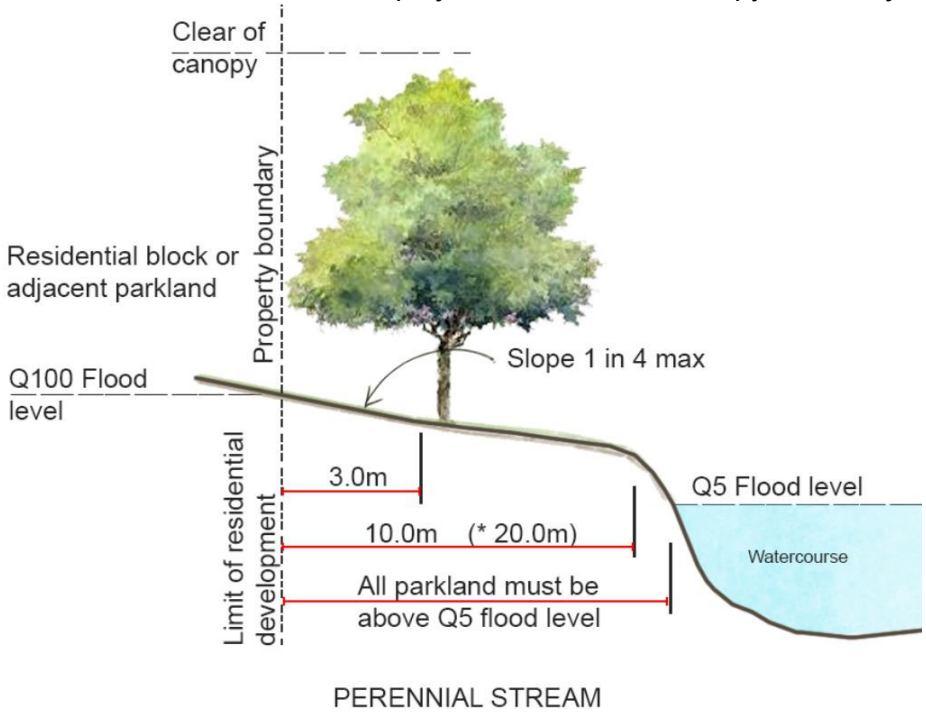


Figure DP1.1 Limits of development adjacent to natural stream banks

1.04.3 In order to retain any established landscape character, all trees located within existing road reserves shall be protected and retained unless approved otherwise by Council.

1.04.4 Reference should be made to the Vegetation Management Act and any Local Laws and Policies to ascertain any requirements in relation to tree clearing.

DP 1.05 Crime Prevention Through Environmental Design

1.05.1 It is important when designing development layouts that the principles of crime prevention through environmental design are considered, in particular:

1.05.1.1 Natural surveillance of public open spaces is optimised; and

1.05.1.2 Long pathway or obscured park areas that remain unlit should be avoided.

Engineering Issues

DP 1.06 General

1.06.1 The optimum site and road layout needs to be developed through consideration of social, environmental, town planning, traffic and engineering issues.

1.06.2 Although the engineering design of roads is the province of the engineer, it is essential that the surveyor and planner preparing the site layout the fully aware of the engineering issues to ensure that the road layouts proposed are satisfactory in this regard. Major alterations to the development layout may otherwise be necessary to accommodate engineering requirements.

1.06.3 The factors to be taken into consideration when designing new development layouts include the following:

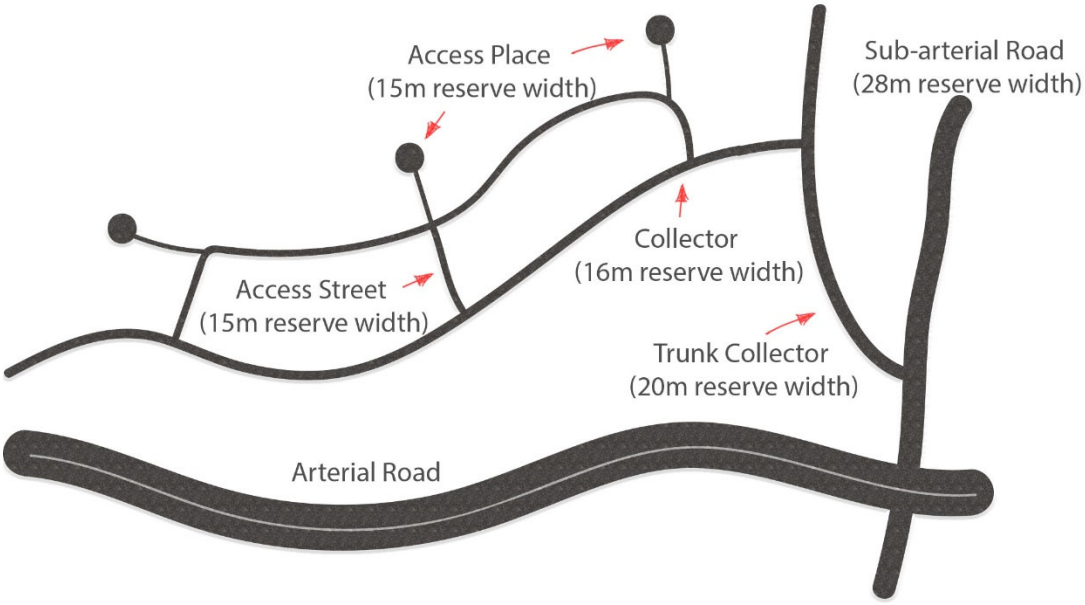
1.06.3.1 Proposed land use;
1.06.3.2 Road hierarchy, interim and ultimate;
1.06.3.3 Public transport network;
1.06.3.4 Local planning policies, bikeways/paths and open space;
1.06.3.5 Council's drainage management plans;
1.06.3.6 Council's traffic management plans;
1.06.3.7 Railway and cane tram way lines;
1.06.3.8 access requirements for service vehicles and emergency vehicles;
1.06.3.9 topography of the area;
1.06.3.10 adequate road frontage to parks and drainage reserves;
1.06.3.11 existing utility services constraints and proposed augmentation works;
1.06.3.12 crime prevention through environmental design;
1.06.3.13 impacts on adjoining properties;
1.06.3.14 existing stormwater drainage;
1.06.3.15 flooding and ponding;
1.06.3.16 preservation of natural watercourses;

1.06.3.17 significant existing vegetation;
1.06.3.18 bushfire protection measures;
1.06.3.19 impact of earthworks;
1.06.3.20 water quality improvement structures and features;
1.06.3.21 existing soil conditions; and
1.06.3.22 geotechnical considerations.

DP 1.07 Road Network

1.07.1 The provision of a Road network within a subdivision development is to be designed to achieve the following aims:
1.07.1.1 convenient and safe access to all allotments for pedestrians, vehicles and cyclists;
1.07.1.2 safe, logical and hierarchical transport linkages with existing Street system;
1.07.1.3 appropriate access for buses, emergency and service vehicles;
1.07.1.4 convenient service corridors for public utilities;
1.07.1.5 opportunity for street landscaping; and
1.07.1.6 convenient parking for visitors.

1.07.2 A hierarchical Road network is essential to maximise Road safety, residential amenity and legibility. Each class of Road in the network serves a distinct set of functions and is designed accordingly. Atypical hierarchy is shown below.



1.07.3 The maximum number of turning movements at intersections or junctions that a visitor should be required to undertake to reach a particular address within the development should be minimised.

1.07.4 The road network should be designed to ensure that roads connect to next order of road in the hierarchy. Under no circumstances should a road connect to another road, which is more than two, levels higher or lower in the hierarchy.

1.07.5 Where an Access Place forms part of a pedestrian or cycle network, suitable connectivity with adjoining Access Places or open space systems should be provided to ensure such pedestrian and cycle network are functionally efficient.

1.07.6 Developments layouts should be designed with a road layout to achieve the desired speed environment. The use of traffic control devices in lieu of a suitable road layout is not preferred.

1.07.7 It is important that the road hierarchy adequately caters for buses. The main criteria in determining the location of bus routes is that no more than 10 per cent of residents should have to walk in excess of 500 metres to catch a bus. Normally roads above the Access Street in the hierarchy are designed as bus routes.

DP 1.08 Site Regrading Concept

1.08.1 Excessive site regrading should be avoided, wherever possible site layouts should be developed to position roads and drainage networks to take advantage of natural surface grades. Site layouts that minimise the disturbance of the land will require less erosion and sediment control measures during construction phase and reduce the risk of environmental harm.

1.08.2 Where earthworks are proposed on any development site identified in the Whitsunday Regional Council Planning Scheme Landslide Overlay as having a gradient of 15% or greater input should be sought from a qualified geotechnical engineer to ascertain slope stability and potential construction issues.

DP 1.09 Stormwater Drainage

1.09.1 The design of the drainage system, and earthworks for the proposed development shall be such that the upstream drainage is not adversely affected and that the downstream drainage system is capable of adequately catering for the discharge of the additional flow produced as a result of the development.

1.09.2 If the downstream system is not capable of carrying the modified discharge, the designer shall indicate the measures proposed to ensure the downstream system is capable of carrying the modified discharge. This will involve negotiation with adjoining landowners for minor creek systems to produce easements over downstream drainage paths. Written approval from the respective property owners is required for the easement and any engineering works on their property from the development site to the legal point of discharge.

1.09.3 The development layout shall be designed to accommodate both existing and future developed flows from upstream catchments based on development in accordance with the relevant Planning Scheme.

1.09.4 In preparing a development layout, consideration should be given of the overall site drainage philosophy, and overland flow paths, to ensure that the road network has sufficient drainage capacity to safely convey stormwater runoff to its receiving waters with minimal nuisance or damage to the community.

1.09.5 Consideration should be given in the preparation of the layout to ensure that in the event of drainage system failure, adequate emergency relief paths are provided. In particular, downhill sloping cul-de-sac heads should be avoided where a sufficient width pathway or open space cannot be provided to convey the overland flow.

DP 1.10 Stormwater Quality Management

1.10.1 In recognition of the impacts that development may have on the quality of water within the waterways, the over-riding objective for water quality management is to minimize the potential for development activity to cause harm to the environment / receiving waters.

1.10.2 All developments are required to include appropriate SQID's that ensure removal of suspended matter (litter) and treatment of contaminated stormwater prior to crossing the boundary of the development or discharge into downstream roadside gutters, stormwater drainage systems or waterways.

1.10.3 The location of the interception devices within the drainage system is to be planned to ensure that the first flush waters from all parts of the site are treated and they can be easily accessed for cleaning and maintenance.

DP 1.11 Sewerage Reticulation

1.11.1 In preparing a development layout, consideration should be given to the provision of sewerage reticulation connections to adjoining properties based on their future development in accordance with Council's Strategic Plan.

1.11.2 Where an existing sewerage reticulation line pass through a development site, the development layout should where possible incorporate the sewer with the development layout. Where this is not practical the layout should be prepared to minimise the extent of the sewerage relocation work necessary.

DP 1.12 Electricity Supply and Telecommunication Services

1.12.1 In preparing a development layout, the relevant Service Authorities should be consulted to confirm that the provision of services to the proposed development would be provided and if the provision of land for the purpose of siting infrastructure would be necessary.

DP 1.13 Tramlines through Urban Areas

1.13.1 Where cane tramlines run through urban areas a tramway reserve shall be created over tramline and transferred to Council.

1.13.2 The width of the tramway reserve for a single line shall be a minimum of twelve (12) metres. The reserve should be centrally located around the tramline except where exceptional circumstances prevent this. (e.g. adjoining tramway easement or reserve is placed off centre).

1.13.3 Under certain embankment / cutting conditions it may be necessary to widen the easement to provide a 3.0m wide access to at least one side of the track.

1.13.4 Where multiple tracks exist, the tramway reserve shall include all tracks plus a distance of six (6) metres from the centreline of the outermost tracks on each side.

1.13.5 This widened section shall be continued past the point of convergence of the tracks (i.e. the point of the switch of the first turnout of single line) a minimum of twenty (20) metres before becoming a standard twelve (12) metre easement again.

1.13.6 Residential areas should be sited away from siding locations if at all possible because of major dust and noise pollution problems. For cases where development will adjoin siding locations (closer than one hundred (100) metres from any part of the planned subdivision to the cane unloading point) then each such location would need to be the subject of a special study between the developer, the appointed consultants, representatives of the Mill and Council, in order to identify the unique problems of the location.

1.13.7 The number of road crossings should be kept to a minimum. Factors affecting the positioning of road crossings include: sight distances, track grades, proximity of the nearest crossing and the noise problem associated with the use of the train whistle at close successive crossings. Of particular importance is the adjacent grading of the track. The locating of road crossings on or near the base of falling grades should be avoided. Any road crossing proposal must be submitted to the Mill for the assessment of its likely implications on its own operations and on road users and residents.

DG1 - DESIGN GUIDELINES – ROAD GEOMETRY

Scope & Aims

DG 1.01 Road Geometry

1.01.1 This section sets out the minimum standards developed specifically for the design of roadworks using principles of Street design to enable safety and improved amenity and to reduce pedestrian/vehicular conflicts.

1.01.2 The geometry of a road is to be designed to achieve the following aims:

1.01.2.1 provide convenient and safe access to all allotments for pedestrians, vehicles and cyclists;
1.01.2.2 provide appropriate access for buses, emergency and service vehicles;
1.01.2.3 provide a convenient verge for public utilities;
1.01.2.4 provide an opportunity for street landscaping; and
1.01.2.5 provide convenient parking for visitors.

DG 1.02 Reference Documents

1.02.1 Australian Standards:
1.02.1.1 AS1158 Lighting for Roads and Public Spaces;
1.02.1.2 AS1348.1 Road and Traffic Engineering – Glossary of Terms, Road Design and Construction;
1.02.1.3 AS1428 Design for Access & Mobility;
1.02.1.4 AS2890.1 Parking Facilities: Off-street parking;
1.02.1.5 AS2890.2 Parking Facilities: Off-street Commercial Vehicle Facilities;
1.02.1.6 AS2890.5 Parking Facilities: On-street Car Parking;
1.02.1.7 AS/NZS 3845 Road Safety Barrier Systems;
1.02.1.8 AS 4678 Earth retaining structures
1.02.1.9 AS4282 Obtrusive Effects of Outdoor Lighting.
1.02.1.10 Disability Standards for Accessible Public Transport – IPWEAQ
1.02.2 Department of Transport & Main Roads:
1.02.2.1 Road Planning & Design Manual;
1.02.2.2 MUTCD;
1.02.2.3 Transport Operations (Road Use Management) Act.
1.02.3 Austroads:
1.02.3.1 Guide to Road Design;
1.02.3.2 Guide to Traffic Management
1.02.3.3 Guide to Road Safety;
1.02.3.4 Cycling Guidelines;
1.02.4 Other:
1.02.4.1 IPWEAQ Complete Streets;
1.02.4.2 Australian Model Code for Residential Development.

DG 1.03 Consultation

1.03.1 Designers are encouraged to consult with the Council and other relevant authorities prior to or during the preparation of the design. Designers should in addition to requirements of this manual ascertained specific requirements of these authorities as they relate to the designs in hand.

Road Design Criteria

DG 1.04 Design Speed

1.04.1 For geometric design of roads, design speeds shall be as nominated in Table D1.1 unless specified otherwise by Council. Developments should be designed with a road layout to achieve the desired speed environment. The use of Traffic Control Devices in lieu of a suitable road layout is not preferred.

1.04.2 Adoption of a low design speed discourages speeding, attention should be given to ensuring that potentially hazardous features are visible to the driver and adopting traffic engineering measures which will help a driver avoid errors of judgement.

1.04.3 Design speeds shall be calculated on largest radius track between kerb and centreline unless a physical constraint is incorporated in the design to maintain vehicle tracking in traffic lane.

DG 1.05 Longitudinal Gradient

1.05.1 A general minimum gradient of 0.5% should be adopted for all roads, which will ultimately include kerb and channel. In very flat conditions where approved by Council it may be reduced to 0.3%.

1.05.2 A desirable minimum gradient of 1.0% should be adopted for all roads, which will have earth table drains, except where approved otherwise by Council, in exceptional cases.

1.05.3 Roads constructed, without kerb and channel, completely in embankment may have zero grade.

1.05.4 Maximum grades shall be as nominated in Table D1.1.

1.05.5 Longitudinal grade 3 intersections should not exceed 4%, the actual gradients being dependent on the type of terrain. Design of the road alignment and the grades used are interrelated. A steep grade on a side street is undesirable if vehicles must stand waiting for traffic on the priority road.

1.05.6 Turning circles and cul-de-sacs on steep grades should have grades less than 5%.

1.05.7 Where minimum radius crest vertical curves are used local widening is to be provided to facilitate safe ingress/egress from properties.

DG 1.06 Horizontal Alignment

1.06.1 Horizontal alignment shall generally comply with the requirements of Austroads, Complete Streets, or Department of Transport and Main Roads manuals, as applicable.

1.06.2 Designers should ensure that, for a given design speed, the minimum radius of curvature utilised is such that drivers can safely negotiate the curve. Curves that progressively tighten produce an uncomfortable sense of disorientation and alarm. Sudden reverse curves that drivers cannot anticipate also have a potential to cause similar conditions.

1.06.3 The horizontal alignment shall ensure adequate sight distances taking into account construction of solid fencing on property boundaries.

DG 1.07 Vertical Curves

1.07.1 Vertical curves should be used on all changes of grade where the algebraic change of grade exceeds:

1.07.1.1 Access Place, Access Street, Collector Street – 1%

1.07.1.2 Trunk Collector Streets – 0.6%

1.07.2 The length of the crest vertical curve for stopping site distance should conform to Austroads;

1.07.3 for adequate riding comfort, lengths of stag vertical curves should conform to Austroads;

1.07.4 Every effort should be made to provide vertical curves as long as possible, for improved appearance.

1.07.5 Drainage poses a practical limit to the length of stag curves and a maximum length (in metres) 15 times the algebraic some of the intersection vertical grades should be adopted. This is to avoid water ponding in excessively flat sections of curb and channel. A minimum grade of 0.5% should be maintained in the curb and channel.

1.07.6 In general, a minimum 10 m length vertical curve shall be provided with a side road joins the through road at three-way intersections.

1.07.7 A tangent point of a vertical curve in the side road shall be located at, or outside of, the kerb line of the through road. Council may approve the use of concrete invert in lieu of a vertical curve with a side road is at Access Place and the algebraic change of grade is less than 6%.

1.07.8 The three-dimensional coordination of the horizontal and vertical alignment of a road should be aimed at improving traffic safety and aesthetics. The following principles should be applied:

1.07.8.1 The design speed of the road in both horizontal and vertical planes should be of the same order;

1.07.8.2 Combined horizontal and vertical stopping sight distance and minimum sight distance should be considered three dimensionally;

1.07.8.3 Sharp horizontal curves shall not be introduced at or near the crest of a vertical curve;

1.07.8.4 Horizontal curves should leave the vertical curve and be longer than the vertical curve; and

1.07.8.5 A short vertical curve on a long horizontal curve or a short tangent in the grade line between sag curves may adversely affect the road's symmetry and appearance.

DG 1.08 Crossfalls

1.08.1 Carriageway crossfalls for streets shall conform to the requirements of Austroads and/or Complete Streets.

1.08.2 Generally, pavement crossfalls on straight roads shall be:

- 1.08.2.1 Bituminous seal coat - 3%
- 1.08.2.2 Asphaltic concrete pavement – 3%
- 1.08.2.3 Cement concrete pavement – 3%
- 1.08.2.4 Paved Surfaces – 3%
- 1.08.2.5 Gravel – 5%.

1.08.3 Median crossfalls - the maximum crossfall on grassed medians on divided roads shall be desirably 1 in 6 with an absolute maximum of 1 in 4. Refer also Department of Transport and Main Roads Design Manuals. However, at median openings, the pavement crossfall should not exceed 5 per cent.

1.08.4 For roundabouts detailed consideration of the crossfall is required taking into account diameter, heavy vehicle turning, etc.

Table D1.1 WRC Street and Road Hierarchy – Deemed to Comply Requirements

Roadway Classification	No. of Dwellings	Traffic Generation (vehicles per day)	Reserve Width[1] (Minimum)	Carriageway Width [3,6] (Minimum)	Shoulder Width (Minimum)	Verge Width (each side) (Minimum)	Max Grade (Desirable) %	Design speed (km/h)
Access Place	0-10	0-99	14	6.0m		4.0m	(12) 16 [4]	40
Access Street	10-25	100-499	15	6.0m		4.5m	(12) 16 [4]	50
Collector Street	25-299	500-2,999	20	7.5m		5.0m	(8) 10	60
Trunk Collector Street	300-599	3,000-5,999	24	10.0m	1.5m (min)	5.0m	(8) 10	60
Sub Arterial Road	600-2,000	6,000-20,000	26	2 x 5.5m carriageway 5.0m median		5.0m	(6) 8	60
Rural	Refer table D1.4 for details of Rural Road Elements							
Arterial and Major Arterial	The requirements for these categories shall be provided by the Council or relevant authority (DTMR). Traffic volumes shall be identified in a traffic management report.							
Industrial Access	-	-	20	12m		4m	(6) 10	60
Industrial Collector	<30ha	-	22	14m		4m	(6) 8	50

1. Carriageway (and reserve) widening shall be provided on bends in accordance with Austroads.
2. Widening of carriageway to 10m shall be required on all bus routes, and a minimum road reserve of 18m provided.
3. Carriageway widths are measured from the invert of the kerb and channel on one side of the carriageway to the invert of the kerb and channel on the opposite site of the carriageway.
4. The absolute maximum grade shall be 20% for a maximum length of 60m. The maximum length of grades less than 20%, but not less than 16%, shall be 60m plus 25m for each 1% the grade is less than 20%. The maximum length of any grade greater than 16% shall be 160m.
5. Road reserve widths may require widening to accommodate table drains, provision for services, on-street car parking provision and bus bays.
6. Minimum reserve must be provided, irrespective of minimum verge and carriageway widths specified.
7. Where the road is nominated as part of the bikeway network, allowance for bike lanes shall be added to this width (minimum bikeway width is 1.5m or 2.0m where the design speed is >60km/h).
8. Refer to Council's standard drawings.

DG 1.09 Carriageway Width

1.09.1 Minimum carriageway widths for all streets shall be as nominated in Table D1 .1.

1.09.2 The carriageway widths must allow vehicles to proceed safely at the operating speed intended for that level of road in the network and with only minor delays in the peak period. This must take into consideration the restrictions caused by parked vehicles where it is intended or likely that this will occur on the carriageway. Vehicles include tracks, emergency vehicles and, on some roads, buses.

1.09.3 The safety of pedestrians and cyclists where it is intended that they use the carriageway must also be assured by providing sufficient width and visibility.

1.09.4 The carriageway which should also provide for unobstructed access to individual allotments. Motorists should be able to comfortably enter or reverse from an allotment in a single movement, taking into consideration the possibility of a vehicle being parked in the carriageway opposite the driveway.

1.09.5 The design of the carriageway should discourage motorists from travelling above the intended speed by reflecting the functions of the road in the network. In particular, the width and horizontal and vertical alignment should not be conducive to excessive speeds.

1.09.6 Appropriate road reserve width should be provided to enable the safe location, construction and maintenance of required paths and public utility services (above or below ground) and to accommodate the desired level of streetscape.

1.09.7 Where a “split-level” road is proposed, a stable form of retaining structures such as reinforced concrete, crib block, gabion or masonry walling (or other approved alternative) is required between upper and lower road levels.

1.09.8 Traffic islands shall be designed in accordance with the current DTMR or AUSTROADS design manuals.

1.09.9 Where upgrades are required the applicant may undertake a traffic count to confirm the number of vehicle movement per day on the subject road.

DG 1.10 Verges

1.10.1 Minimum verge width for all streets shall be as nominated in Table D1 .1.

1.10.2 A suitable design of the verge will depend on utility services, access to allotments, pedestrian usage, tree preservation and storm water drainage.

1.10.3 All verges shall fall from the frontage property boundary to the adjacent kerb and channel with acceptable Cross falls of between 3% to 5%. In the case where the allotment falls away from the road reserve (i.e. the allotment is lower than the level of the road), the verge shall have a minimum fall from the frontage property boundary to the adjacent kerb of 3%.

1.10.4 The maximum slope permissible within a road verge is 1 in 4.

1.10.5 The verge when considered in conjunction with the horizontal alignment and permitted fence and property frontage treatments should provide appropriate

sight distances, taking into account expected speeds and pedestrian and cyclist movements.

1.10.6 Utility service locations shall be in accordance with the relevant authorities' requirements.

1.10.7 Verges shall be covered full width with topsoil to a depth of not less than 40 mm and shall be lightly compacted and grassed in accordance with Council's minimum standards and specifications.

DG 1.11 Intersections

1.11.1 All new intersections of Access Places, Access Streets and Collector Streets, shall be three-way intersections designed and located in accordance with Austroads.

1.11.2 A roundabout shall be used in the design of four way intersections.

1.11.3 Intersections of Trunk Collector, Industrial, and Sub Arterial roads shall be designed in accordance with AUSTROADS design manual and shall allow for potential improvement to incorporate other traffic control methods e.g. traffic signals.

1.11.4 Intersections with state-controlled roads shall be designed and constructed in accordance with the requirements of DTMR.

1.11.5 The design of intersections or junctions should allow all movements to occur safely without undue delay. Projected traffic volumes shall be used in designing all intersections or junctions on trunk collector streets or higher order roads.

1.11.6 Truncations shall be provided to real property boundaries in order to maintain minimum verge widths and adequate sight distances taking into account potential for construction of solid fencing on the property boundaries.

1.11.7 The turning radii at intersections measured at the kerb invert shall be 9.0m minimum and accommodate the intended movements without allowing desired speeds to be exceeded.

1.11.8 All vehicle turning movements are accommodated using AUSTROADS design vehicle and turning templates, as follows:

- 1.11.8.1 For turning movements involving trunk collector streets or collector streets, the "design semitrailer" with turning path radius of 15 m.
- 1.11.8.2 For turning movements involving access streets but not involving collector streets, the "design single unit track/bus" with turning path radius of 13 m.
- 1.11.8.3 For turning movements and access places but not involving collector streets or access streets the garbage collection vehicle with turning path radius of 12 m.
- 1.11.8.4 For turning movements at the head of cul-de-sacs for all streets, except access place, have sufficient area provided for the "design single unit track"; and
- 1.11.8.5 Road furniture shall be located to allow for clear manoeuvring of the design semitrailer.

1.11.9 Intersection channelisation is to be provided and designed in accordance with the current DTMR or AUSTROADS design manuals.

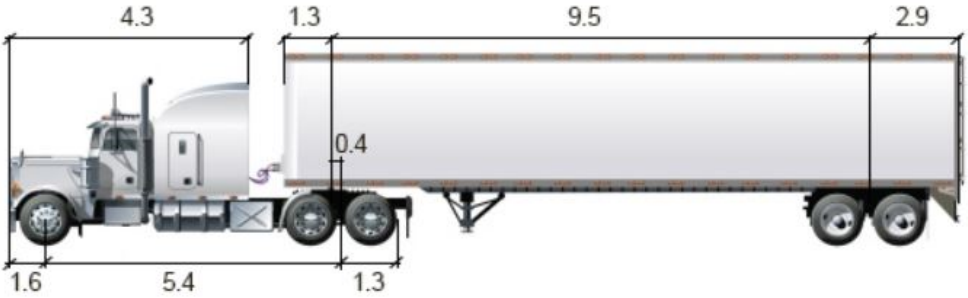
1.11.10 All channelisation shall be designed to accommodate a design vehicle providing a clearance of not less than 0.6 m between the wheel track and the kerbs at all points, unless specified otherwise by Council.

1.11.11 Traffic islands or medians of less than 2m width to be hard surfaced in concrete with a patterned broomed finish incorporating a coloured pigment in accordance with Council's requirements. This colour should generally be terracotta unless otherwise approved by Council.

1.11.12 Traffic islands, which are to be grassed or landscaped, shall be provided with a water service conduit and a perimeter subsoil drainage line connected to the underground drainage system or an open drainage channel.

1.11.13 On Trunk Collectors, Sub-Arterial and Arterial roads, median breaks will only be permitted at approved intersections.

1.11.14 Pavement markings associated with channelisation and signs shall be provided in accordance with the MUTCD.

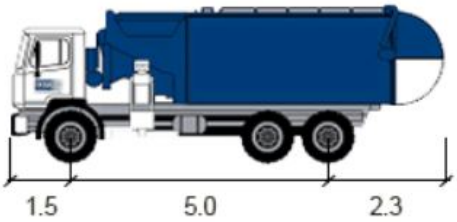


Semi-trailer

Tractor width	:	2.50	Trailer width	:	2.50
Tractor track	:	2.50	Trailer track	:	2.50
Turning radius (outside):		15.00			

Single unit truck/bus

Width	:	2.50
Track	:	2.50
Turning radius (outside):		13.00



Garbage truck

Width	:	2.50
Track	:	2.50
Turning radius (outside):		12.00

Figure 1.3 Standard Vehicles

DG 1.12 Roundabouts

1.12.1 Design of roundabouts will generally be in accordance with current Department of Transport and Main Roads Design Manuals and AUSTROADS Guide to Road Design.

1.12.2 Roundabout shall only be used at intersection of Collector Streets and Access Streets or higher order roads only. All roundabouts shall have a minimum inscribed circle diameter of 30.0m.

1.12.3 Centre islands which are to be grassed or landscaped shall be provided with a water service conduit and a perimeter subsoil drainage line connected to the underground drainage system or an open drainage channel.

1.12.4 Landscaping to centre islands to be in accordance with Council minimum standards and Specifications.

1.12.5 Roundabouts shall include provision for on road cycle lanes unless alternate cycle paths are provided.

DG 1.13 Cul-De-Sac Turning Areas

1.13.1 The turning areas at the ends of the cul-de-sac in streets is to be designed in accordance with Austroads and/or Complete Streets, excepting as follows:

1.13.1.1 Three-point turns (T-Heads) will not be permitted without the prior consent of Council. Council may review site specific alternatives where topography and site constraints exist.

1.13.1.2 Where a full turning circle is not provided to the minimum radius below, provision for turning within kerbs for Council's design garbage truck must be demonstrated.

1.13.2 Where a full turning circle is provided the minimum kerb radii shall be:

1.13.2.1 Approach and departure curves – 15m

1.13.2.2 The turning circle – 10m.

1.13.3 Turning areas at the ends of cul-de-sac in industrial developments shall be full turning circles based on criteria for the specific application, with the following minimum kerb radii:

1.13.3.1 Approach and departure curves – 30m

1.13.3.2 The turning circle – 15m.

1.13.4 All turning heads shall have adequate provision for on-street parking at cul-de-sacs in accordance with Austroads and/or Complete Streets. Provision of parking areas within the verge must not compromise the future connection of services to the allotments.

1.13.5 Reference should be made to table D3.2 for rural cul-de-sac requirements.

DG 1.14 Local Area Traffic Management

1.15.1 The road network should be designed to manage the movement and speed of traffic in local areas. In this regard, any traffic management devices such as thresholds, slow points, speed humps, chicanes and splitter islands should be designed in accordance with the requirements of AUSTROADS and are to be approved by Council.

1.15.2 Devices other than at intersections should be located to be generally consistent with streetscape requirements, existing street lighting, drainage pits, driveways, and services may decide the exact location of devices.

1.15.3 Emergency vehicles must be able to reach all residences and properties.

1.15.4 Where bus routes are involved, buses should be able to pass without mounting kerbs and with minimised discomfort to passengers.

1.15.5 Traffic management devices and associated road furniture must not prevent the passage of larger vehicles (i.e. semi-trailers) however their principle function is not to be compromised.

1.15.6 In newly developing areas where street systems are being developed in line with LATM principles, building construction traffic must be catered for.

1.15.7 Maximum vehicle speeds can only be reduced by deviation of the travelled path. Pavement narrowings have only minor effects on average speeds, and usually little or no effect on maximum speeds.

1.15.8 Speed reduction can be achieved using devices, which shift vehicle paths laterally (slow points, roundabouts, corners). The use of vertical devices (i.e. humps, platform intersections, platform pedestrian/school/bicycle crossings) is not desirable and shall only be used where specifically approved by Council.

1.15.9 Speed reduction can be helped by creating a visual environment conducive to lower speeds. This can be achieved by 'segmenting' streets into relatively short lengths (less than 200-300m), using appropriate devices, streetscapes, or street alignment to create short sight lines.

1.15.10 Adequate critical sight distances should be provided such that either party in a potential conflict situation may take evasive action. Sight distances should relate to likely operating speeds.

1.15.11 Sight distances to be considered include those of and for pedestrians, cyclists and property accesses, as well as for drivers.

1.15.12 Night time visibility of street features and LATM devices must be adequate and in accordance with the MUTCD.

1.15.13 Many devices will be designed for their normal use by cars, but with provision (such as mountable kerbs) for larger vehicles. Some typical dimensions include:

1.15.13.1 Pavement narrowing:

1.15.13.1.1 Single lane 3.5m between kerbs;

1.15.13.1.2 Between obstructions - 3.75m; and

1.15.13.1.3 Two lane 6.0m minimum between kerbs.

1.15.13.2 Bicycle lanes (including adjacent to pavement narrowings) – 1.5m minimum;

1.15.13.3 Plateau or platform areas;

1.15.13.4 75mm to 150mm height maximum, with 1 in 15 ramp slope;

1.15.13.5 Dimensions of mountable areas required for the passage of large vehicles to be determined by appropriate turning templates.

DG 1.16 Bus Stops

1.16.1 Bus stops should be provided on all bus routes so no more than 10 per cent of residents should have to walk in excess of 500 metres to catch a bus. Normally roads above the access street in the hierarchy are designed as bus routes. Table D1.2 details minimum criteria for bus stops.

1.16.2 Unless otherwise approved, bus stops shall be constructed in accordance with AUSTROADS Guide to Road Design, MUTCD and Disability Standards for Accessible Public Transport.

1.16.3 Tactile Ground Surface Indicators (TGSI) are to be installed at all bus stops and shelters in accordance with AS/NZS 1428.4:2009.

Table D1.2 Bus Stop Criteria

Road	Stops (Spacing)	Description
Collector Streets	400 metres [1]	Single Bay and shelter [2]
Trunk Collector or higher order road	400 metres	Single Bay and shelter [2]

Notes:

1. Loop roads with single entry/exits only require stops and bays on one side of the road.
2. Shelters are subject to Council's requirements.

DG 1.17 Access to Allotments

1.17.1 Criteria for acceptable access to allotments are to be in accordance with Council's Standard Drawings.

1.17.2 Criteria for acceptable access to steep allotments are to be in accordance with Section DG 2.12.

1.17.3 Criteria for acceptable access to lots in the Rural, Rural residential & Emerging communities zones are to be in accordance with Section DG 1.30.

1.17.4 All rear allotment access (hatchet or battleaxe lots), shall be provided with a reinforced concrete driveway (unless in a Rural, Rural residential or Emerging communities zone, where Council may approve another surface), have a minimum width of 3.0m and extend the full length of the access handle.

1.17.5 All rear allotment access driveways shall commence at the adjacent kerb and channel with a standard kerb crossover or at the existing edge of pavement. Conduits for internal allotment services are to be provided adjacent to the concrete driveway for the full length of the access unless otherwise approved.

1.17.6 All rear allotment access via an easement to more than one lot, shall be provided with a reinforced concrete driveway (unless in a Rural, Rural residential or Emerging communities zone, where Council may approve another surface) and have a minimum width of 5.5m to allow two-way access.

1.17.7 Where lots are accessed via an access easement, a 10.0m transition to singular (3.0m wide) access may be provided from the second last lot's crossover extending the full length of the access handle to the last lot.

1.17.8 All lots associated with an access easement must only gain access through the access easement.

DG 1.18 Parking Provisions

1.18.1 Parking provisions in accordance with the relevant sections of Austroads and/or Complete Streets shall be accorded with on all roads, except that for Major Collector Street with a traffic generation of 3000 vpd - 5999 vpd.

1.18.2 Streets which cannot comply with the on-street parking provisions of Austroads and/or Complete Streets, due to reduced allotment frontage widths or carriageway widths, shall make provision for indented or verge parking bays at a minimum frequency of 1 parking bay per 2 allotments. Particular attention should be made to providing adequate provision for on-street parking at cul-de-sacs, turning heads and elbow bends.

1.18.3 Verge widths are to be maintained alongside indented or verge parking areas. Where necessary, property boundaries shall be adjusted to meet this requirement.

DG 1.19 Pathways

1.19.1 Unless otherwise approved, pathways will be constructed taking into consideration the Disability Discrimination Act and Disability Standards for Accessible Public Transport.

1.19.2 Where a pathways link is located between allotments, the minimum width of land dedicated to Council shall be 5.0m. Concrete paving is to be for the full width of the pathway link and at least 2.5m wide and extend to the adjacent kerb and channel together with a kerb ramp. Vehicular access is to be restricted at the ends of pathways through the installation of bollards at the property line in accordance with the Councils requirements.

1.19.3 Maximum cross fall on all access pathways 2.5%.

1.19.4 Pathways constructed using alternate material (e.g. Asphalt, Paving blocks) are to be approved by Council.

1.19.5 The pathway shall extend to the property boundary remote from the roadway where the path is not connecting two street frontages.

1.19.6 Bends shall be provided with a minimum internal radius of 6m.

1.19.7 All pathways shall have a non-slip surface, generally, this can be achieved by applying a stiff broom to the wet surface. (Alternate methods shall require Council approval).

1.19.8 Where a pathway link is used for stormwater drainage overland flow relief it shall have a one way crossfall and be constructed in full width concrete with a

layback kerb and channel or approved equivalent along one edge to contain the required flow within the concrete.

1.19.9 Pathways are not to be aligned with stormwater pits where a stormwater pit is required to be located at the end of a pathway for overland flow, the pedestrian path is to be offset and appropriate measures provided to guide pedestrians away from the pit and remove any potential hazards.

1.19.10 The requirements for pathways to be constructed longitudinally along roads shall be in accordance with Table D1.3.

Table D1.3 Pathways along roads

Road Classification	Pathway Requirements [2]
Access Place	Nil (Kerb ramps to intersections only)[1]
Access Street	1.5m wide Pathway on one side of the reserve[3]
Collector Street	2.0m wide Pathway on one side of the reserve[3]
Sub Arterial/Arterial	2.5m wide Pathway on both sides of the reserve
Industrial	1.5m wide Pathway on each side of the reserve.

Notes:

1. **Unless required as part of a pedestrian/cycle network;**
2. **Minimum widths in the above table may be varied with the approval of Council;**
3. **Increase to 2.5m for cycleways.**

1.19.11 All pathways shall have appropriate immunity against cross drainage.

1.19.12 The maximum gradient shall be 16 per cent with a maximum crossfall of 2.5 per cent. Where the pathway is parallel with a road with a grade greater than 16 per cent footpath gradient shall match that of the road.

1.19.13 The finished surface level of concrete work shall be not more than 20mm above the finished surface level of adjoining ground and shall finish flush with adjoining hard surfaces.

DG 1.20 Bikeways

1.20.1 The minimum width of land dedicated to Council for a bikeway shall be 5.0 metres with a minimum 2.5 metre wide concrete paving in accordance with Cycling Aspects of AUSTROADS Guides and MUTCD - Part 9, Bicycle Facilities.

1.20.2 Bikeways constructed using alternate material (e.g. Asphalt, Paving blocks) are to be approved by Council.

1.20.3 Bikeways located in parks shall be constructed above the flow of a storm of 5 year ARI, unless approved otherwise by Council.

1.20.4 Where bikeways connect to or crosses over an Access Street or higher order road, a slow point shall be installed as approved by Council.

1.20.5 All bikeways shall have a non-slip surface. Generally, this can be achieved by applying a stiff broom to the wet surface. (Alternate methods require Council approval).

DG 1.21 Kerb and Channel

1.21.1 Concrete kerb and channel, and layback kerb and tray shall be provided on both sides of all roads except as otherwise provided for in Austroads and/or Complete Streets.

1.21.2 Standard kerbs in accordance with Council's Standard Drawing shall be used in the following cases:

- 1.21.2.1 Residential Streets – Layback Kerb and Layback Kerb and Channel;
- 1.21.2.2 Medians – Maintenance Strip Kerb;
- 1.21.2.3 Grassed and Landscaped Traffic Islands – Maintenance Strip Kerb;
- 1.21.2.4 Concrete Traffic Islands - Semi-mountable Kerb; and
- 1.21.2.5 Roundabouts (centre island only), - Maintenance Strip Kerb.

1.21.3 Where proposed construction adjoins existing kerb and channel the Designer shall confirm with Council whether the existing profile shall be extended or whether the new construction will be tapered smoothly to the existing kerb and channel. The grading of kerb and channel will normally conform to the road centreline grading. However, at locations where the kerb and channel grading diverts from the centreline grade, such as at intersections or on superelevated curves the following shall apply.

1.21.4 Minimum channel grade should be 0.5 percent unless approved other approved by Council.

1.21.5 Every effort should be made to provide vertical curves as long as possible, for improved appearance.

1.21.6 At all changes in horizontal alignment, kerbs and kerb and channel shall be constructed with horizontal curves.

1.21.7 To improve appearance where small deflections occur (e.g. on tapers), horizontal curves shall be as long as possible. Refer also to current Department of Main Roads or AUSTROADS.

1.21.8 Kerb ramps shall be provided at all tangent points of intersection kerb returns, at park entrances and at any other locations where required by Council.

1.21.9 Access crossovers for Industrial, Commercial and Multi Residential site shall be installed in accordance with Council's Standard Drawings.

DG 1.22 Signs and Road Markings

1.22.1 Permanent signing and road marking shall be in accordance with the current edition of the MUTCD. Where there is a choice of line marking colour, then only white or yellow paint is to be used.

1.22.2 Temporary or construction signing and road marking shall be in accordance with current edition of the MUTCD.

1.22.3 The relevant sign reference number from the MUTCD shall be included on the construction drawings.

1.22.4 All signs and pavement markings shall be adequately dimensioned to ensure accurate setting out.

1.22.5 Signs located in grassed areas shall have a surrounding 500mm dia x 100mm thick concrete mowing strip.

1.22.6 Signs located in concrete islands or medians shall be installed with the "V Loc" socket system and fitted with anti-theft bolts.

1.22.7 The bottom of all un-sleeved posts shall be flattened prior to placing in concrete footing.

1.22.8 Vandal proof bolts and fittings shall be used on all permanent signing.

1.22.9 Street Name signs shall be installed in accordance with Council's Standard Drawing.

DG 1.23 Road Edge Guide Posts & Guardrails

1.23.1 Road edge guide posts shall be provided at all locations where concrete kerb and channel is not constructed e.g. half road construction, tapers, ends of roads etc.

1.23.2 Guide posts shall conform to and be installed in accordance with Department of Main Roads 'Manual of Uniform Traffic Control Devices'.

1.23.3 Guardrails shall be installed in accordance with the Department of Main Roads Road Planning and Design Manual.

DG 1.24 Pedestrian Foot Bridges

1.24.1 Pedestrian foot bridges are to be provided where necessary and are to be constructed from concrete, steel or timber (all steelwork is to be hot dipped galvanised) and shall be provided with handrails / fences for pedestrian safety.

1.24.2 The clear width of all pedestrian bridges shall match the width of the approaching pathway / bikeway unless otherwise approved by Council and shall have squeeze points to control access.

1.24.3 Designers shall consult with Council at concept stage to confirm location, widths, flood immunity etc.

DG 1.25 Tram Line Crossings

1.25.1 Road crossings are to be constructed in accordance with Department of Transport and Main Roads Standard Drawings.

1.25.2 Flashing lights and crossing warning signs to the Department of Transport and Main Roads standards are to be erected on all new road crossings or crossings where the traffic density will increase because of the development.

1.25.3 Prior to commissioning of flashing lights and warning lights appropriate temporary controls including warning signage shall be installed and maintained at all road crossings.

DG 1.26 Fencing

1.26.1 All fencing located inside the road reserve shall have a minimum height of 1.2m, and shall be of a type that discourages climbing and constructed in accordance with Council's Standard Drawing.

1.26.2 A continuous chain wire mesh fence shall be constructed along all interfaces between the development and the tramway reserve and shall be constructed in accordance with Council's Standard Drawing.

Rural Design Criteria

DG 1.27 General

1.27.1 In addition to the foregoing sections this section specifically applies to all those sites identified as being suited to rural and rural residential subdivisions inclusive of rural home sites and hobby farms types of developments. For roads within the Rural Living Areas reference should be made to Table D1.1. Table D1.4 details specific road demands for rural roads.

	Rural Access Place	Rural Access St	Rural Collector	Rural Sub Arterial	Rural Arterial
Traffic Volumes or Road Class (vpd)	<100	100-199	200-999	1000-7999	>8000
Road Reserve (flat terrain ≤ 5%)	20m	20m	20m	25m	25m
Road Reserve[2] (undulating/Hilly >5%)	25m	25m	25m	30m	30m
Formation	8m	8m	10m	10m	12m
Pavement Width	6m	6m	6.5m	8m	10m
Seal Width	Optional[1]	6m (min)	6.5m	8m	10m
Shoulders[3]	1.0m	1.0m gravel	1.75m gravel	As collector Incl. 0.5m sealed on each side	As collector Incl. 1.5m sealed on each side
Desirable Speed Environment	80km/h	80km/h	100km/h	100km/h	100km/h
Design Speed for Individual Elements (Minimum)	80km/h	80km/h	80km/h	80km/h	80km/h

Notes:

1. **Sealing 4.0m wide shall be required for longitudinal grades in excess of 10% and may be required at sites where existing adjacent roads are sealed.**
2. **In undulating terrain, this width shall be increased to enable services to be constructed on accessible flatter land on top and below batters.**
3. **Where the road is a designed on-road bicycle route (signposted and pavement marked) the shoulder provision needs to confirm to AUSTROADS Part 14 – Bicycles.**

1.27.2 Design speed is to be generally used as the basic parameter of design standards and the determination of the minimum design value for other elements in rural subdivisions is to be based on the concept of a "speed environment" as outlined in AUSTROADS Guide to Road Design.

1.27.3 Where appropriate superelevation, widening and centreline shift and their associated transitions are to comply with AUSTROADS Guidelines.

1.27.4 Where the table drain will have a flow velocity greater than 2.5m/s or is likely to scour, a stone pitched, or suitably lined dish drain is to be constructed along the invert. (Generally, table drains steeper than 6 % will require scour protection).

DG 1.28 Horizontal and Vertical Alignment

1.28.1 Horizontal and vertical curves are to be designed generally to the requirements of AUSTROADS Guide to Road Design. These requirements are essential to satisfy the safety and performance of proper road design. Roads having both horizontal and vertical curvature should be designed to conform to the terrain to achieve desirable aesthetic quality and being in harmony with the landform.

DG 1.29 Intersections

1.29.1 Intersections should generally be in accordance with AUSTROADS.

1.29.2 Adequate sight distance should be provided at intersections both horizontally and vertically. Each intersection location shall be examined for conformance with the criteria for Approach Sight Distance (ASD), Entering Sight Distance (ESD) and Safe Intersection Sight Distance (SISD).

DG 1.30 Access to Allotments

1.30.1 All accesses onto sealed roads are to be sealed. Accesses off gravel roads do not have to be sealed.

1.30.2 Drainage under accesses shall be designed and constructed to a size and length as determined by RPEQ. Minimum pipe size – 375mm diameter, Minimum length – 4.8m long.

1.30.3 All pipe and box culverts under accesses shall have headwalls to protect and retain gravel fill.

1.30.4 Precast vertical headwalls with wings are preferred, but insitu cast concrete or grouted stone may be used subject to Council Approval.

1.30.5 Precast sloping headwalls to be used on all access where the road design speed is 100km/h or where the culvert is within 4.5m of the traffic lane and the road speed is 80 km/h.

1.30.6 Accesses are to be designed to ensure that stormwater runoff from the road and the access discharge to the table drain.

1.30.7 Accesses shall be constructed in accordance with Council's Standard Drawing unless otherwise approved by Council.

DG 2 – DESIGN GUIDELINES - Site Regrading

General

DG 2.1 Scope

2.1.1 This section sets out the minimum standard specifically designed for site regrading involved land development and subdivision.

2.1.2 The designer needs to make reference to the associated design manual related to DG 1 – Road Geometry, DG 4 – Stormwater Drainage and DG 5 – Stormwater Quality Management.

DG 2.2 Objectives

2.2.1 This Manual aims to assist the Designer in achieving:

2.2.1.1 Efficient and economical design;

2.2.1.2 Enhancement of the environmental character and maintenance of natural features of the site; and

2.2.1.3 Minimal impact on adjoining properties and developments.

DG 2.3 Reference Documents

2.3.1 AS3798 Guidelines on Earthworks for Commercial and Residential Development

2.3.2 AS4373 Pruning of Amenity Trees

2.3.3 AS4970 Protection of Trees on Development Sites

2.3.4 State Planning Policy

DG 2.4 Site Regrading Concept

2.4.1 Areas of a site proposed for building or recreational purposes may not be suitable in their natural state for their intended function without improvement works, the designer shall review the natural surface contours and where necessary shall design finished surface levels that ensure the land is suitably prepared.

2.4.2 Excessive site regrading should be avoided, wherever possible site layouts should be developed to position roads and drainage networks to take advantage of natural surface grades. Site layouts that minimise the disturbance of the land will require less erosion and sediment control measures during construction phase and reduce the risk of environmental harm.

2.4.3 The designer shall consider the implications of site regrading in relation to the existing natural environment. Generally, site regrading shall be minimised in heavily treed areas.

2.4.4 The design of site regrading areas preferably should aim to achieve a balanced cut to fill to minimising haulage of imported fill or spoil to and from the development site.

2.4.5 Where practical, areas should be regraded to minimise the necessity for underground drainage systems with surface inlet pits, and allow surface water to flow naturally to roads or drainage reserves without excessive concentration.

DG 2.5 Clearing

2.5.1 Unless otherwise approved by Council any pruning and/or protection of trees shall be carried out in accordance with AS 4970 and AS 4373.

2.5.2 Clearing must be kept to a minimum. Trees and vegetation of significance shall be identified prior to design in order that the amount of disturbance may be minimised through appropriate design.

2.5.3 Reference should be made to the Vegetation Management Act and any relevant Local Laws and Policies prior to any tree clearing.

2.5.4 Generally, in areas with significant trees and vegetation:

2.5.4.1 Roadways clearing shall be limited to the limits of approved earthworks plus a sufficient lateral clearance to ensure that the works are not interfered by the trees or vegetation; and

2.5.4.2 Allotment clearing shall be limited to the minimum areas required to safely construct services such as sewers and catchment drains, and the limits of approved earthworks to allotments plus a sufficient lateral clearance to ensure the works are not interfered by the trees or vegetation.

2.5.5 No trees shall be damaged or removed from areas to be dedicated under the control of Council without prior written approval of Council.

2.5.6 Trees on existing roads shall not be damaged or removed without the approval of Council. All trees on existing roads affected by the works shall be shown and details given of proposed protection or relocation methods.

2.5.7 Prior to any clearing, all existing and future parkland shall be delineated to ensure its protection from unauthorised clearing.

DG 2.6 General Standard of Lot Preparation

2.6.1 Special requirements will apply where necessary but generally lots are to be cleared of low scrub, fallen timber, debris, stumps, large rocks and any trees which in the opinion of Council are approaching the end of their functional life or are dangerous or will be hazardous to normal use of the development. Prior consultation with Council is necessary. Such requirements shall be shown on the design plan.

2.6.2 Class 1, 2 and 3 Pest Plants are to be removed and disposed of in accordance with Land, pest and Stock Route Management Act and Regulation.

2.6.3 All timber and other materials cleared from lots shall be removed from the site. All roots, loose timber, etc which may contribute to drain blockage shall be removed.

2.6.4 All trees nominated by Council in its conditions of approval shall be preserved by approved means to prevent destruction normally caused by placement of conventional filling or other action within the tree drip zone. Details of the proposed protection measures shall be detailed on the design plans.

DG 2.7 Filling

2.7.1 If any land is to be filled all practices must ensure compliance with AS 3798 ”Guidelines on Earthworks for Commercial and Residential Developments” and State Planning Policy 2/02.

2.7.2 Fill comprising industrial wastes or by-products is not permitted.

2.7.3 No person shall be permitted to fill any land where, in the opinion of Council, such filling will detrimentally affect the area available in any natural or artificial watercourse for either present or estimated future flood flows, or will detrimentally reduce the volume within a flood plain available for the storage of flood waters.

2.7.4 No person shall be permitted to fill any land if such filling may detrimentally affect natural drainage of any of the surrounding land.

2.7.5 All new allotments are to be flood free. Immunity levels shall be in accordance with relevant Council Policies and Planning Scheme requirements.

2.7.6 Every allotment shall be filled and drained to achieve Council's performance criteria, such that an area is available above the adopted flood line, or stipulated flood level, in accordance with the following documents:

2.7.6.1 Queensland Urban Drainage Manual (QUDM);

2.7.6.2 Council's Local Laws & Policies; and

2.7.6.3 Council's Flooding and Drainage Policies

DG 2.8 Compaction

2.8.1 Compaction of earthworks shall be in accordance with AS 3798 “Guidelines on Earthworks for Commercial and Residential Developments”.

DG 2.9 Cartage of Soil

2.9.1 The designer shall nominate in their design submission whether excess spoil is generated by the proposed earthworks and in these cases shall nominate the proposed spoil dump site and external haul route which shall be subject to the written approval of the Council.

2.9.2 In cases where the spoil is generated from works within existing declared roads, Council may nominate that the spoil be placed on Council controlled land within 5 km of the project site.

2.9.3 Where rock is disposed of on site, the position of the rock is to be approved by Council and shown on the ‘as constructed’ drawings.

2.9.4 Unless otherwise approved by Council all topsoil shall be retained on the development site and utilised effectively to encourage appropriate revegetation.

DG 2.10 Allotment Earthworks

2.10.1 Allotments shall be provided with a minimum finished surface gradient of 0.5%, including catch drains, to facilitate drainage.

DG 2.11 Batter Treatments

2.11.1 Cut and fill batters shall not straddle allotment boundaries unless otherwise approved by the Council.

2.11.2 Cut batters shall not extend into existing or proposed parks or bushland reserves unless specifically approved by Council. Fill batters may extend into proposed parks or bushland reserves with a maximum slope of 1 in 10 unless otherwise approved by Council.

2.11.3 In general, cut and fill batters shall be limited to a maximum slope of 1 in 4 (1 in 10 in parks), such that stabilisation is achieved by topsoiling and grassing which can be maintained by conventional tractor slasher.

2.11.4 All embankments and cuttings must be outside the road reserve. The toe of any cut batter is to be 300mm inside the property boundary; the top of any fill batter is to be 300mm inside the property boundary.

2.11.5 In environmentally sensitive areas or steep terrain, consideration may be given to relaxation of clause 4 subject to council approval.

2.11.6 Where subdivision roads are constructed in fill and the batter slope exceeds 1 in 2, Council may require an easement over the batter and to a nominated distance past the toe of the batter.

2.11.7 Batters in road reserves but outside the verge steeper than 1 in 4 may be retained by a retaining structure subject to approval by the Council.

2.11.8 On private land, batters should preferably be 1 in 4 or flatter for batters fronting the road reserve and 1 in 2 elsewhere. Batters steeper than 1 in 2 may be approved subject to the submission of an acceptable landscape treatment.

2.11.9 All batters steeper than 1 in 2 and higher than 1.5m shall require certification as to stability by a Registered Professional Geotechnical Engineer (RPEQ).

DG 2.12 Allotment Accesses

2.12.1 The slope of the natural surface can result in difficulty in providing vehicular access to allotments fronting the road. Driveway grades within the property should be limited for safety and amenity. Refer Table 2.1 for Maximum Driveway Grades

Table D2.1 Maximum Driveway Grades

Location	Desirable	Maximum
Residential	16.6% (1 in 6)	20% (1 in 5) for 6m in every 12m
Industrial	10% (1 in 10)	16.6% (1 in 6)
Maximum change in driveway grades – all areas[1]	8%	10%

Notes:

1. Change of grade is expressed algebraically as the change in gradient between the two roadway grades.

2.12.2 Steep allotment access (10% or greater) and drainage shall be designed and constructed to include the following (unless otherwise approved by Council):

2.12.2.1 The driveway must be a minimum of three (3) metre wide concrete slab, with barrier kerb and channel provided on one side for vehicular safety and drainage purposes;

2.12.2.2 The driveway shall be constructed in such a manner as to ensure that the crossfall of the driveway be one-way and directed into the hill, for vehicle safety and drainage purposes;

2.12.2.3 A turn around shall be provided adjacent to each of the proposed dwellings sufficient to allow turning movements for an emergency services vehicle;

2.12.2.4 The driveway shall be located to minimise the visual impact, and minimise the amount of earthworks required; and

2.12.2.5 Both sides of the areas adjacent to the driveway shall be re-vegetated to minimise visual impact. This information is to be included in the application for engineering approval.

DG 2.13 Retaining Walls

2.13.1 All retaining walls are to be 150mm from the property boundary or back for the footing to be wholly contained within the allotments that the retaining wall sits.

2.13.2 Council will allow retaining walls to be constructed up to a maximum height of 1.0m without structural certification provided they are constructed fully in accordance with the technical literature provided by the manufacturer (i.e. Koppers logs, Keystone or similar).

2.13.3 All retaining walls greater than 1.0m high must be designed, detailed and certified by a structural RPEQ. Structural certification and geotechnical assessment if required shall be submitted to Council with design submission.

2.13.4 Retaining walls shall be designed to consider the location of any adjacent services (e.g. sewer). The minimum horizontal clearance between any adjacent services and the outermost edge of the retaining wall structure shall 800mm and outside the zone of influence whichever is the greater. Retaining walls must be designed to ensure that no imposed loads are applied directly to service infrastructure. Retaining walls adjacent to services shall be subject to Council approval.

2.13.5 Retaining walls associated with residential allotments or stormwater drainage must have a design life of 60 years.

2.13.6 All retaining walls must comply with the requirements of AS 4678 – Earth retaining structures.

DG 2.14 Earthworks on Hillslopes

2.14.1 Where earthworks are proposed in any development where the slope of the land exceeds 15% (unless otherwise agreed), Council requires a report from a qualified Geotechnical RPEQ addressing slope stability and construction issues.

2.14.2 The designer shall incorporate the specific measures and recommendation contained within the geotechnical report to control soil and rock movements into the design of roads and house bench pads.

2.14.3 Where batters are 2.0 meters or higher a risk assessment is to be undertaken by the Engineer to determine if fencing is required to be undertaken in accordance with the relevant Australian Standard.

DG 2.15 Earthworks to Parks

2.15.1 All earthworks within proposed or existing parkland shall:
- 2.15.1.1 Be adequately drained;
- 2.15.1.2 Have no batters exceeding 1 in 10; and
- 2.15.1.3 Have acceptable landscaping in accordance with Council's minimum standards.

DG 2.16 Footpaths/Verge Crossfall

2.16.1 All footpaths / verges shall fall from the frontage property boundary to the adjacent kerb and Whitsunday Regional Council Planning Scheme 2017– Schedule 6 –June 2017 (V3.5) 77 channel with acceptable crossfalls of between 2.5% - 5%. In the case where the allotment falls away from the road reserve (i.e. the allotment is lower than the level of the road), the footpath / verge shall have a minimum fall from the frontage property boundary to the adjacent kerb of 3%.

DG 2.17 Topsoiling and Grassing

2.17.1 Topsoil is defined as surface soils high in organic matter and contaminated by residual grass seeds and grass roots.

2.17.2 The area under paved areas, footpaths, batters and areas of fill shall be stripped of topsoil and any other organic matter.

2.17.3 On the completion of the works, topsoil shall be re-spread to allotments, batters and footpaths and fill areas to a depth of 75mm with an absolute minimum of 40mm.

2.17.4 The footpath areas, batters and all disturbed areas including allotments are to be trimmed and drill seeded with an approved grass species.

2.17.5 All cut and fill batters shall be hydro-mulched or approved equivalent.

DG 2.18 Inspection Requirements

2.18.1 Inspections and testing requirements for all allotments and roads shall be to Level 1 in accordance with AS 3798 “Guidelines on Earthworks for Commercial and Residential Developments”.

2.18.2 A higher level of inspection and testing may be required for more significant works as determined by Council.

2.18.3 Council may approve a lower level of inspection and testing for minor works and drainage works.

DG 3 - DESIGN GUIDELINES – Road Pavements

General

DG 3.1 Scope

3.1.1 This section sets out the minimum standards for the design of the road pavement to meet the required design life, based on the subgrade strength, traffic loading and environmental factors, and including the selection of appropriate materials for select subgrade, subbase, base and wearing surface.

3.1.2 The Manual contains procedures for the design of the following forms of road pavement construction:

- 3.1.2.1 Flexible pavements; and
- 3.1.2.2 Rigid pavements (i.e. concrete pavements).

3.1.3 Generally flexible pavements designed in accordance with this manual are preferred for road pavement construction in North Queensland. Council may examine pavement designs for rigid pavements subject to detailed engineering submissions of any such proposals. Council reserves the right to refuse any alternate proposal for pavement design.

DG 3.2 Objectives

3.2.1 The objective in the design of the road pavement is to select appropriate pavement and surfacing materials, types, layer thicknesses and configurations to ensure that the pavement performs adequately and requires minimal maintenance under the anticipated traffic loading for the design life adopted.

DG 3.3 Reference Documents

3.3.1 Department of Transport and Main Roads

- 3.3.1.1 Pavement Design Supplement
- 3.3.1.2 MRTS 30Asphalt Pavements
- 3.3.1.3 Road Planning and Design Manual Chapter 3 Appendix A 1st Edition

3.3.2 AUSTROADS / ARRB Publications

- 3.3.2.1 Guide to Pavement Technology
- 3.3.2.2 Guide to Road Design
- 3.3.2.3 Design of Sprayed Seals
- 3.3.2.4 ARRB-SR35 - Special Report No. 35 - Subsurface Drainage of Road Structures
- 3.3.2.5 APRG 21 - Report No. 21 - A guide to the design of new pavements for light traffic

3.3.2.6 Special Report No. 35 Subsurface Drainage of Road Structures
3.3.2.7 Guide to Pavement Structural Design
3.3.2.8 Technical Report – Pavement Design for Light Traffic – A supplement to Austroads Pavement Design Guide AP-T36/06

3.3.3 Cement and Concrete Association of Australia.
3.3.3.1 T51 Concrete Pavement Design for Residential Streets and Paths

3.3.4 Concrete Masonry Association of Australia.
3.3.4.1 T44 Concrete Segmental Pavements - Guide to Specifying
3.3.4.2 T45 Concrete Segmental Pavements - Design Guide for Residential Access Ways and Roads
3.3.4.3 T46 Concrete Segmental Pavements - Detailing Guide

Pavement Design Criteria

DG 3.4 Design Variables

3.4.1 Regardless of the type of road pavement proposed, the design of the pavement shall involve consideration of the following five input variables:
3.4.1.1 Design Traffic;
3.4.1.2 Subgrade Evaluation;
3.4.1.3 Environment Factors;
3.4.1.4 Pavement and Surfacing Materials; and
3.4.1.5 Construction and Maintenance Considerations

DG 3.5 Design Traffic

3.5.1 The design traffic shall be calculated based on the following minimum design lives of pavement:
3.5.1.1 Flexible - 20 years;
3.5.1.2 Rigid (Concrete) - 40 years; and
3.5.1.3 Segmental Block - 25 years.

3.5.2 Unless determined otherwise by the Council, the minimum number of design Equivalent Standard Axles (ESA's ie, 80 kN axle load passes) for the various road categories shall be as calculated in accordance with the requirements of the AUSTRODS publications Guide to Pavement Technology and APRG Report 21 - A guide to the design of new pavements for light traffic. For design traffic volumes approaching or exceeding 5 x 10^5 ESA's (Trunk Collector Street), Department of Transport and Main Roads' Pavement Design Manual shall be used.

3.5.3 Design traffic shall be calculated for the applicable design life of the pavement, taking into account present and predicted commercial traffic volumes, axle loadings and configurations, commercial traffic growth and street capacity. For new subdivisions, the design traffic shall take account of both the construction

traffic associated with the subdivision development, the in-service traffic, proposed and potential public transport routes and connection to adjacent development.

3.5.4 For interlocking concrete segmental pavements, the simplification of replacing ESA's with the number of commercial vehicles exceeding 3 tonne gross contained in CMAA – T45 is acceptable up to a design traffic of 5 x 5^5.

3.5.5 The pavement design shall include all traffic data and/or assumptions made in the calculation of the design traffic.

3.5.6 In the absence of other traffic data, the traffic values provided in Table D3.1 may be taken as a Whitsunday Regional Council Planning Scheme 2017– Schedule 6 –June 2017 (V3.5) 82 guide to the minimum design traffic, but shall be subject to variation depending on the circumstances for the particular development.

Table D3.1 Minimum Traffic Loadings

Street Type	%CV[1]	%ESA/CV	Minimum ESA's
Urban			
Access Place	3.6	1.0	$5x10^4$
Access Street	5	1.0	$1x10^5$
Minor Collector Street	7	1.0	$5x10^5$
Major Collector Street	10	1.0	$1x10^6$
Sub Arterial	10	1.0	$3.25x10^6$
Rural			
<250vpd	5	1.0	$2.5x10^5$
>250vpd	9	1.0	$2.5x10^6$
Industrial	To be determined by specific design data		$5x10^5$
Business/Commercial	To be determined by specific design data		$5x10^5$

Notes:

1. Consider potential for bus routes.

DG 3.6 Subgrade Evaluation

3.6.1 Subgrade evaluation shall be carried out by a NATA registered materials test authority on each different natural sub-grade material evident and shall be by the conduct of soaked 4 day CBR laboratory testing.

3.6.2 Design CBR for each subgrade area shall be determined in accordance with the method outlined in AUSTROADS publications Guide to Pavement Technology and ARRG Report 21 - A guide to the design of new pavements for light traffic.

3.6.3 The following factors must be considered in determining the design strength/stiffness of the subgrade:

3.6.3.1 Sequence of earthworks construction;

3.6.3.2 The compaction moisture content and field density specified for construction;
3.6.3.3 Moisture changes during service life;
3.6.3.4 Subgrade variability; and
3.6.3.5 The presence or otherwise of weak layers below the design subgrade level.

3.6.4 The subgrade Design CBR adopted for the pavement design must consider the effect of moisture changes in the pavement and subgrade during the service life, and hence consideration must be given to the provision of subsurface drainage in the estimation of equilibrium in-situ CBRs, and hence in the design of the pavement structure.

3.6.5 If the in situ subgrade test results in a CBR of 3 or less, the pavement is to be designed with input from RPEQ engineer experienced in the design of road pavements.

DG 3.7 Environment Factors

3.7.1 The environmental factors, which significantly affect pavement performance, are moisture and temperature. Both of these factors must be considered at the design stage of the pavement. Reference should be made to AUSTROADS publications Guide to road Design and Special Report No. 35 Subsurface Drainage of Road Structures.

3.7.2 The following factors relating to moisture environment must be considered in determining the design subgrade strength/stiffness and in the choice of pavement and surfacing materials:
3.7.2.1 Rainfall/evaporation pattern;
3.7.2.2 Permeability of wearing surface;
3.7.2.3 Depth of water table;
3.7.2.4 Relative permeability of pavement layers;
3.7.2.5 Whether shoulders are sealed or not;
3.7.2.6 Pavement type (boxed or full width); and
3.7.2.7 Subject to flooding (e.g. Causeways and Floodways).

3.7.3 The effect of changes in moisture content on the strength/stiffness of the subgrade shall be taken into account by evaluating the design subgrade strength parameters (i.e. CBR or modulus) at the highest moisture content likely to occur during the design life, i.e. the Design Moisture Content. The provision of subsurface drainage may, under certain circumstances, allow a lower Design Moisture Content, and hence generally higher Design CBR.

3.7.4 The pavement design shall include all considerations for environmental factors, and any assumptions made that would reduce or increase design subgrade strength or affect the choice of pavement and surfacing materials.

DG 3.8 Materials Testing

3.8.1 All materials testing shall be carried out by a NATA registered materials testing authority using the procedures described in the manuals or codes of practice as appropriate to Department of Transport and Main Roads and Standards Association of Australia.

Pavement Thickness Design

DG 3.9 Pavement Structure – General

3.9.1 The minimum pavement provided shall be as detailed in Table D3.2

Table D3.2 Minimum Pavement Design Criteria

Street Type	Minimum Pavement (mm)[1]	Surface Treatment	Minimum Base Course CBR	Minimum Subbase Course CBR
Access Place / Access Street / Residential Street	200	Minimum 30mm AC	80	45
Collector Streets **- Minor** **- Major**	 250 250	Minimum 30mm AC Minimum 30mm AC	 80 80	 45 60
Sub Arterial	300	50mm AC	80	60
Rural & Rural Residential **<100vpd** **100-999vpd** **>1000vpd**	 150 200 200	Gravel Two Coat Seal Two Coat Seal	 60 80 80	 45 45 60
Industrial	250	50mm AC	80	60

Notes:

1. **Minimum pavement thickness does not include the depth of surfacing.**
2. **All cul-de-sac heads and intersection turnouts in Rural and Rural Residential developments are required to have a 30mm asphalt surface treatment or concrete as a minimum.**

3.9.2 Notwithstanding subgrade testing and subsequent pavement thickness design, the thickness of subbase and base layers shall not be less than the following:
3.9.2.1 Flexible payment: Subbase 100mm, Base 100mm

3.9.2.2 Rigid pavement: Subbase 100mm, Base 150mm

3.9.3 The subbase layer shall extend a minimum of 150mm behind the rear face of any kerbing.

3.9.4 The base and surfacing shall extend to the face of any kerbing. Where the top surface of the subbase layer is below the level of the underside of the kerbing and/or guttering, the base layer shall also extend a minimum of 150mm behind the rear face of the kerbing. Regardless of pavement design, all kerbing to be constructed on a minimum of 100mm pavement material.

3.9.5 For un-kerbed roads, the subbase and base layers shall extend at least to the nominated width of shoulder.

3.9.6 A change of pavement types may be considered for intersection thresholds and traffic control features.

DG 3.10 Flexible Pavements

3.10.1 Flexible pavements with a design traffic up to 5 x 10^5 ESA's shall be designed in accordance with AUSTROADS publications Guide to Pavement Technology and ARRG Report 21 - A guide to the design of new pavements for light traffic.

3.10.2 Flexible pavement with a design traffic above 5 x 10^5 ESA's shall be designed in accordance with Department of Transport and Main Roads' Pavement Design Manual.

3.10.3 In areas of high water table (within 300mm of subgrade level). Base course should be cement modified (1% by weight)

3.10.4 Concrete segmental pavements with design traffic up to 5 x 10^5 and estimated commercial vehicles exceeding 3T gross shall be designed in accordance with CMAA-T45.

3.10.5 For design traffic above 5 x 10^5 estimated commercial vehicles exceeding 3T gross the design shall be in accordance with AUSTROADS Guide to Pavement Technology with the calculation of design traffic in terms of ESA's.

DG 3.11 Rigid Pavements

3.11.1 Rigid (concrete) pavements, with design traffic up to 5 x 10^5 ESA's shall be designed in accordance with either CCAA -T51 or AUSTROADS Guide to Pavement Technology.

3.11.2 Rigid (concrete) pavements for design traffic above 5 x 10^5 ESA's, the design shall be in accordance with AUSTROADS Guide to Pavement Technology.

Surfacing Design

DG 3.12 Bitumen Wearing Surface

3.12.1 Except where the pavement is designed for asphaltic concrete or segmental paver surfacing or where a gravel pavement is permitted, the wearing surface shall be a bituminous as follows:

3.12.1.1 Urban Residential, Low Density Residential – Primer or primer seal, plus 2 seal coats of sprayed bitumen) Seal (14mm / 7mm Aggregate) (only permitted where widening existing bituminous seals)

3.12.1.2 Rural & Rural Residential - Primer or primer seal, plus 2 seal coats of sprayed bitumen Seal (16mm / 10mm Aggregate).

DG 3.13 Segmental Pavers

3.13.1 Segmental pavers shall be concrete segmental pavers 80mm thick, shape Type A, and designed to be paved in a herringbone pattern unless otherwise approved by Council. Concrete segmental pavements are only to be used for pathways and local pavement 'highlight' features (e.g. 'threshold' treatments). The use of clay pavers on road wearing surfaces is not permitted.

3.13.2 The edges of all paving shall be constrained by either kerbing and/or guttering, or by concrete edge strips.

3.13.3 Sand bedding layers are to be provided with adequate drainage.

DG 3.14 Asphaltic Concrete

3.14.1 All roadworks shall be surfaced with an appropriate thickness of Asphaltic Concrete in accordance with Table D3.2.

3.14.2 Council requires the use of dense graded asphalt on all roads.

3.14.3 All roads greater than 10% in grade shall have a 10mm primer seal or other Council approved measure applied to the base course prior to the placement of the AC.

3.14.4 Asphalt Surfacing:

3.14.4.1 Where asphalt surfacing is required to be between 30mm and 50mm, it is considered to function as a wearing surface only;

3.14.4.2 Asphalt 40mm or thicker is required to be a dense graded asphalt (DG14) in accordance with Department of Transport and Main Roads' MRTS 30;

3.14.4.3 Asphalt of 30 – 40 mm thickness must be a dense graded asphalt (AC10) in accordance with Austroads; and

3.14.4.4 A light prime is to be applied over the pavement material prior to the asphalt being laid.

DG 3.15 Subsoil Drains

3.15.1 Subsoil or sub-pavement drains shall be provided on both sides of the formation in the following Whitsunday Regional Council Planning Scheme 2017– Schedule 6 –June 2017 (V3.5) 89 locations, unless the geotechnical report indicates the absence of subsurface moisture at the time of investigation and the likelihood that changes in the subsurface moisture environment will not occur within the design life of the pavement and/or the pavement has been specifically designed to allow for likely variations in subgrade and pavement moisture contents:

- 3.15.1.1 Cut formations where the depth to finished subgrade level is equal to or greater than 400mm below the natural surface level;
- 3.15.1.2 Locations of known hillside seepage, high water table or isolated springs;
- 3.15.1.3 Irrigated, flood-prone or other poorly drained areas;
- 3.15.1.4 Subgrades, which are highly susceptible to moisture, (i.e. commonly displaying high plasticity or low soaked CBRs);
- 3.15.1.5 Pavement materials, which are susceptible to moisture;
- 3.15.1.6 Existing pavements displaying signs of distress due to excess subsurface moisture; and
- 3.15.1.7 At cut to fill transitions.

3.15.2 Subsoil drains shall always be installed to all grassed/landscaped central medians and islands, unless otherwise approved by Council.

3.15.3 Where only one side of the formation is in cut, and the other side in fill, it may be sufficient to provide subsoil or sub-pavement drains only along the edge of the formation in cut.

3.15.4 In some circumstances it may be necessary to note on the engineering design the need for additional subsoil and sub-pavement drains that may become apparent during the construction process, due to changes in site moisture conditions or to areas of poorer subgrade being uncovered that were not identified in the geotechnical investigation.

3.15.5 The requirements for subsoil drains should be assessed and designed by a registered geotechnical engineer or specialist pavement engineer.

3.15.6 Subsoil drains shall be constructed in accordance with Council's Standard Drawing.

3.15.7 In kerbed roads, the preferred location for the line of the trench is directly behind the kerb.

3.15.8 In un-kerbed roads, subsoil and sub-pavement drains shall be located within the shoulder, preferably at the edge of the pavement layers.

3.15.9 At the time of sub-soil drainage installation tree root barriers are to be installed in the appropriate locations and the kerb suitably marked (temporarily) to indicate where the tree is to be planted.

3.15.10 The minimum desirable longitudinal design grade shall be 1.0 - 1.5%. (Absolute minimum grade of 0.5%).

3.15.11 Trench widths shall be a minimum of 300mm, with a minimum depth below finished subgrade level of 300mm in earth and 200mm in rock. All subsoil drain trenches shall be wrapped in an appropriate geotextile fabric.

3.15.12 Outlets shall be spaced at maximum intervals of 150 metres. Where possible, subsoil and subpavement drainage pipes shall discharge into gully pits or other stormwater drainage structures. Where not possible, outlets shall be provided through fill batters.

3.15.13 Flushing Points are to be provided at the commencement of each run of drain, and at intervals not exceeding 50 metres. Flushing points shall generally be located directly at the rear of kerb or at the edge of shoulder, as applicable.

3.15.14 Flushing Points and Outlets shall be constructed in accordance with Council's Standard Drawing.

DG 3.16 Drainage Mat (Blankets)

3.16.1 Drainage mats are designed where there is a need to ensure continuity of a sheet flow of water under fills, to intercept and control seepage water and springs in the floors of cuttings, to intercept water which would otherwise enter pavements by capillary action or for protection of vegetation or habitat downstream of the road reserve where a fill would otherwise cut the flow of water.

3.16.2 In embankments drainage mats are constructed after the site has been cleared and grubbed and before commencement of embankment construction.

3.16.3 In excavations drainage mats are constructed after completion of the subgrade construction and before construction of the pavement.

3.16.4 The minimum thickness of compacted filter material shall be 300mm plus an allowance for the expected consolidation or 500mm if the amount of consolidation of embankment foundation is not known.

3.16.5 The requirements for and design of drainage mats shall be undertaken by a geotechnical engineer experienced in the design of road pavements.

3.16.6 All drainage mats shall be wrapped in appropriate geotextile.

DG 4 – DESIGN GUIDELINES – Stormwater Drainage

General

DG 4.1 Scope

4.1.1 This section sets out the minimum standards for the design of stormwater drainage systems for urban and rural areas.

4.1.2 The designer needs to make reference to the associated design manuals related to D1 Road Geometry and D5 Stormwater Quality Management.

4.1.3 The Queensland Urban Drainage Manual (QUDM) shall be the basis for the design of stormwater drainage, except as amended by these manuals.

DG 4.2 Objectives

4.2.1 The objectives of stormwater drainage design are as follows:

4.2.1.1 To collect and convey stormwater from a catchment to its receiving waters with minimal nuisance, danger or damage and at a development and environmental cost which is acceptable to the community as a whole;

4.2.1.2 Limit flooding of public and private property, both within the catchment and downstream, to acceptable levels; and

4.2.1.3 To provide convenience and safety for pedestrians and traffic in frequent stormwater flows by controlling those flows within prescribed velocity/depth limits.

4.2.2 For new developments a stormwater drainage system in accordance with the "major/minor" system concept in accordance with QUDM; that is, the "major" system shall provide safe, well-defined overland flow paths for rare and extreme storm runoff events while the "minor" system shall be capable of carrying and controlling flows from frequent runoff events.

4.2.3 For redevelopment areas where the proposed development replaces an existing development, the on-site drainage system is to be designed in such a way that the estimated peak flow rate from the site for the design average recurrence interval (ARI) of the receiving minor system is no greater than that which would be expected from the existing development and is not concentrated in such a way as to cause nuisance to downstream properties.

DG 4.3 Reference Documents

4.3.1 Department of Energy and Water Supply - Queensland Urban Drainage Manual Institute of Engineers Australia.

4.3.2 Australian Rainfall and Runoff - A Guide to Flood Estimation Australian Standards

4.3.3 AS 3600-2009 Concrete Structures.

DG 4.4 General

4.4.1 The QUDM shall be the basis for design of stormwater drainage except where amended by these manuals.

4.4.2 Minor system flows (as defined by QUDM) are to be conveyed underground to a legal point of discharge unless otherwise approved by Council.

4.4.3 Councils have or are in the process of producing drainage management plans for particular catchments within their boundaries.

4.4.4 The design of the stormwater drainage system, for the development shall be such that the upstream drainage is not adversely affected and that the downstream drainage system is capable of adequately catering for the discharge of the modified flow produced as a result of the development.

4.4.5 If the downstream system is not capable of carrying the modified discharge, the designer shall indicate the measures proposed to ensure the downstream system is capable of carrying the modified discharge. This will involve negotiation with adjoining landowners for minor creek systems to produce easements over downstream drainage paths. Written approval from the respective property owners is required for the easement and any engineering works on their property from the development site to the legal point of discharge.

4.4.6 Alternatively, where a development will result in increased runoff the stormwater drainage system may include on-site measures to such as detention basins, to ensure that the peak discharge from the development area is restricted to a level no greater than that discharging prior to the development.

4.4.7 All works proposed within creeks and natural watercourse, or lands under the control of other Authorities must have the approval of all relevant authority prior to commencing the work and evidence of such approvals shall be provided with the design submission.

4.4.8 The design of the stormwater drainage system shall accommodate the future developed peak flows from upstream catchments on the basis of development in accordance with the Planning Scheme.

4.4.9 The designer shall be responsible for assessing the existing and future developed flow regime entering the development site from upstream catchments and shall provide detailed calculations with the design submission.

4.4.10 Unless approved otherwise by the Council, piped drainage systems shall extend to the boundaries of the subject land, with inlet and discharge works within the subject property.

4.4.11 All Material and components of the Stormwater Drainage system shall be durable and fit for purpose, with a minimum lifespan 60 years.

DG 4.5 Design Average Recurrence Interval

4.5.1 Design Average Recurrence Interval (ARI) shall be in accordance with Table D4.1 (modified from QUDM Table 7.3.1).

4.5.2 For the purpose of drainage, a major road shall be defined as a major collector or higher order road.

Table D4.1 Recommended Design Average Recurrence Intervals

Design Type	ARI Interval (years)	
Major System Design	100	
Minor System Design		
Central Business & Commercial	10	
Industrial	5	
Urban Residential High Density (greater than 20 dwelling units/ha)	10	
Urban Residential Low Density (greater than 5 and up to 20 dwelling units/ha)	5	
Rural Residential (2 to 5 dwelling units/ha)	5	
Open Space (Parks etc)	1	
Major Road	Kerb & Channel Flow	10[1]
	Cross Drainage (Culverts)	50[2]
Minor Road	Kerb & Channel Flow	Refer to relevant category in QUDM
	Cross Drainage (Culverts)	10[2]

1. The design ARI for the minor drainage system in a major road shall be that indicated for the major road, not that for the Development Category of the adjacent area; and

2. Culverts under roads should be designed to accept the full flow for the minor system ARI shown, in addition, the designer must ensure adequate public safety controls (e.g. D*V product) exist and that nominated Major Storm flow does not cause unacceptable damage to adjacent properties, or adversely affect the use of the land. If upstream properties are at a relatively low elevation, it may be necessary to install culverts of capacity greater than that for the minor system ARI design storm to ensure unacceptable flooding of upstream properties does not occur. In addition, the downstream face of causeway embankments may need protection where overtopping is likely to occur.

DG 4.6 Design Rainfall Data

4.6.1 Design Intensity Frequency Duration (IFD) Rainfall Charts can be obtained from http://www.bom.gov.au/water/designRainfalls/revised-ifd/?year=2016. The IFD Chart for the nearest suburb should be used for stormwater drainage design.

DG 4.7 Catchment Area

4.7.1 The catchment area of any point is defined by the limits from where surface runoff will make its way, either by natural or man-made paths, to this point. Consideration shall be given to likely changes to individual catchment areas due to the full development of the catchment.

4.7.2 The catchment boundary shall be determined by using the most accurate information available and details of catchments shall be provided to Council with the design submission.

DG 4.8 Kerb Inlets and Manholes

4.8.1 Kerb Inlet pits shall be in accordance with Council's Standard Drawings. All pits are to be recessed sufficiently to maintain a continuous lip line in accordance with these drawings. Alternate proprietary kerb inlets systems may be used only where approved by Council.

4.8.2 Where alternate proprietary kerb inlets systems have been approved for use by a Council, a copy of certified inlet capacity design charts for the alternate inlets shall be provided to Council with the design submission.

4.8.3 Blockage factors shall be used for the design of the drainage system as shown in Table D4.3.

Table D4.3 Kerb Inlet Blockage Factors

Inlet Type	Blockage Factor
On Grade – Side Entry (no grate)	20%
On Grade – Side Entry (with grate)	10%
On Grade – Grate Only	50%
Sag - Side Entry (no grate)	20%
Sag – Side Entry (with grate)	Nil
Sag – Grate Only	50%

4.8.4 The kerb inlet capacity design charts shall be used in accordance with the following:

4.8.4.1 Curves indicated on the charts that are shown in full are considered "Reliable" curves;

4.8.4.2 Curves indicated on the charts that are shown dashed up to an Approach Flow of 250 l/sec are considered "Satisfactory" for use;

4.8.4.3 Curves indicated on the charts that are shown dashed with an Approach Flow in the range 250 l/sec to 500 l/sec are "Estimates Only" and are to be used with caution in critical locations; and

4.8.4.4 No extrapolation beyond the limits of these charts shall be permitted.

4.8.5 Side entry pits with grates are preferred. Grated inlet pits with no side entry shall only be used in areas with a low risk of consequential damage from blockage and shall be subject to Council approval.

4.8.6 Manholes shall be provided on stormwater drainage lines in accordance with the requirements of QUDM. Manholes for pipes up to 1200mm dia shall be constructed in accordance with the Council's Standard Drawings. Council may examine proposals for the use of proprietary manufactured directional changes for stormwater systems and the acceptance of these will be subject to the satisfaction of the Council.

4.8.7 Other factors to be considered in the design are as follows:

- 4.8.7.1 Pits to be free draining;
- 4.8.7.2 Kerb inlet pits at intersections generally are to be located at the tangent point taking into account the position of pedestrian paths and kerb ramps. Inlets shall not be placed on kerb return unless specifically approved by Council;
- 4.8.7.3 Reductions in pipe sizes shall not be permitted; and
- 4.8.7.4 Pipework openings are to be located within a single wall. i.e. pipes shall not be permitted to enter through the corner of the pit structure.

4.8.8 The desirable maximum inlet pit depth should be limited to 1.5m to enable maintenance.

4.8.9 The desirable minimum and maximum stormwater manhole depth is to be limited to 1.2m and 3.0m respectively.

4.8.10 Inlet pits should be located at the mid-point of allotment frontages to reduce the likelihood of conflict with service conduits and future driveways.

DG 4.9 Pipes/Box Culverts

4.9.1 Stormwater drainage pipes and boxes shall be generally of reinforced concrete (including FRC) construction and in accordance with the following:

- 4.9.1.1 Minimum pipe size 375mm dia, minimum box culvert size 450mm x 300mm;
- 4.9.1.2 Minimum clear cover shall be 600mm in general or in accordance with manufacturers specification, otherwise approved by the Council;
- 4.9.1.3 The minimum vertical and horizontal clearances between a stormwater pipe and any other pipe or service conduit shall be 150mm;
- 4.9.1.4 In areas of high water table, the designer must consider buoyancy uplift in relation to pipe/culvert joints; and
- 4.9.1.5 In aggressive environments or where any part of the pipe / box culvert is below the Highest Astronomical Tide (refer to Queensland Tide Table for local conditions), pipes / box culverts will have cover to reinforcement in accordance with the exposure classification requirements of AS 3600.

DG 4.10 Overland Flow

4.10.1 Overland flow paths or emergency relief paths shall be formed and located in accordance with the requirements of QUDM. The following additional requirements shall also be required.

4.10.1.1 Where a pathway link is used for overland flow the pathway shall be concrete for its full width, shall have a maximum crossfall of 2.5 % and be constructed with a layback kerb and channel or approved equivalent along one edge. The ARI 100 year flow shall be contained completely within the pathway;

4.10.1.2 The footpath profile at the overland flow tip out point shall be designed to provide a fall from the kerb at the road edge towards the pathway / park;

4.10.1.3 Flows through parks shall have non-erosive velocity or adequate protection against scouring to the satisfaction of Council;

4.10.1.4 Where a stormwater pit is required to be aligned with a pathway for overland flow, the pedestrian path is to be offset and appropriate measures provided to guide pedestrians away from the pit and remove any potential hazards; and

4.10.1.5 Where flows discharge into receiving waters or drainage reserves, adequate protection against scouring of the batter slope shall be provided to the satisfaction of Council.

DG 4.11 Drainage Calculations

4.11.1 If a legal point of discharge and tailwater conditions have not been provided by Council as development conditions, they shall be confirmed with Council prior to proceeding with detailed design.

4.11.2 Hydraulic calculations shall generally be carried out in accordance with QUDM. The calculations shall substantiate the hydraulic grade line adopted for design of the system. A sample of a summary sheet for hydraulic calculations is given in QUDM.

4.11.3 Catchment plans and hydraulic calculations including any additional calculations in support of overland flow path capacities, weir flows over kerbs, culvert designs etc. shall be provided to Council with the design submission. Where a hydraulic modelling programme is used, calculations to be provided with the design including listings of all programme input parameters.

DG 4.12 Open Channels

4.12.1 Generally, open channels will only be permitted where they form part of the trunk drainage system and shall be designed to have smooth transitions with adequate access provisions for maintenance and cleaning. Where Council

permits the use of an open channel to convey flows from a development site to the receiving water, such a channel shall be designed in accordance with QUDM.

4.12.2 Maximum side slopes on grass lined open channels shall be 1 in 4, with a preference given to 1 in 6 side slopes, channel inverts shall generally have minimum cross slopes of 1 in 10.

4.12.3 Low flow provisions in open channels to prevent scouring from trickle flows shall be provided to all grass lined channels. Trickle flow protection shall be contained within a pipe or hard lined channel and shall be designed to cater for the 3 month ARI storm event (60 per cent of the 1 Year ARI storm event flow).

4.12.4 Subsurface drainage shall be provided in grass-lined channels to prevent waterlogging of the channel bed.

4.12.5 Profiles of all grass lined channels shall such that mowing may be undertaken by a tractor and slasher to the satisfaction of Council.

4.12.6 Where the flow velocity and / or depth within an open channel pose a safety hazard, barrier fencing and / or appropriate hazard warning signs shall be provided to discourage access to the channel. The extent of precautions should be determined following consultation with Council.

4.12.7 The depth velocity product and the gutter flow widths are to be included in the submitted drainage calculations.

DG 4.13 Allotment Drainage

4.13.1 Interallotment drainage systems must be designed in accordance with *Q.U.D.M section 7.13*. The minimum standard shall be Level 3 as defined in *Q.U.D.M table 7.13.4*, however the Engineer may direct a higher level for specific developments or parts thereof.

4.13.2 Interallotment drainage system must be provided to all allotments where:

4.13.2.1 Any part of the allotment falls away from the frontage roadway; or the mid-block finished surface level is less than 600 mm above the lowest invert level along the frontage kerb and channel.

4.13.3 Interallotment pipes shall generally be:

4.13.3.1 R.C. Pipe (minimum class 2) rubber ring jointed;

4.13.3.2 F.R.C pipe rubber ring jointed; and

4.13.3.3 uPVC pipes to be rubber ring jointed. Standard manufactures fittings shall be used in all cases: site fitted saddles are not permitted.

4.13.4 Interallotment drainage system shall be discharged into an underground drainage system or approved open channel. Discharge of interallotment systems to kerbs and channel shall not be permitted.

4.13.5 The depth of the house connection shall be determined as follows (subject to the above minimum);

4.13.5.1 Determine the longest run of house drain to the connection point possible within the allotment;

4.13.5.2 Allow 0.3 meters cover to the house drain at the head of the line; and

4.13.5.3 Allow minimum grade of 1 in 100 for the house drain.

4.13.6 Inspection manholes may be precast or cast insitu concrete boxes or precast FRC or RC pipe systems to the dimensions shown in table D4.4.

Table D4.4 Inspection Manholes

Maximum Depth to invert (mm)	Boxes – internal dimensions (mm)	FRC or RCP Systems
900	600 x 600	600mm diameter
>900	600 x 900	750mm diameter
Minimum wall thickness	100[1]	N/A
Notes: **1. Precast boxes shall be approved prior to installation, wall thickness may vary according to manufacturer.**		

4.13.7 Manholes shall be provided in the following locations:
- 4.13.7.1 One per lot;
- 4.13.7.2 Changes in grade;
- 4.13.7.3 Changes in direction;
- 4.13.7.4 Changes in pipe diameter; and
- 4.13.7.5 End of lines.

DG 4.14 Telemetry Systems

4.14.1 Where required by the Local Authority pump station control panel shall incorporate SCADA equipment for transmission of monitoring data and control to Council's existing master system. Council should be contacted to obtain a copy of their Technical Specification for Telemetry Systems.

4.14.2 It should be noted that where amalgamated Councils have varying telemetry systems, left over from pre-amalgamation Councils, pump station telemetry systems and requirements may vary within that Council and requirements must therefore be reconfirmed as a part of the design.

DG 4.15 Retaining Walls

4.15.1 Where retaining walls are incorporated in the retention of earth batters, adequate drainage shall be incorporated behind the top of the wall to ensure surface stormwater flows do not flow over the top of the wall but are contained in a designed system to pass the wall.

4.15.2 Appropriate scour protection is to be provided to the base of the wall.

4.15.3 Retaining walls within drainage lines must be block and concrete core filled, with weepholes, Design drawings to be provided to Council.

DG 4.16 Detention Basins

4.16.1 Detention basins may be considered as drainage solutions but shall be subject to approval of Council. Where approved detention basins shall be designed in accordance with QUDM.

DG 4.17 Headwalls

4.17.1 Pipe / Box culvert headwalls shall be in accordance with the Department of Transport and Main Roads Standard Drawings 1303 – 1306 and 1318 Proprietary precast headwall may also be used as an alternative to cast insitu structures.

4.17.2 The designer shall ensure that in addition to standard aprons and cut-off walls adequate protection works commensurate with design velocities and flows shall be provided to prevent downstream scouring and erosion.

4.17.3 Where floodgates are to be used, headwalls and aprons shall be specifically designed to accommodate the floodgate and minimise the potential for debris and siltation to impede the operation of the floodgate. Most precast headwalls are not suitable for use with floodgates.

DG 4.18 Table Drains

4.18.1 Table drains shall generally be constructed with a minimum depth of 600mm or to a depth of 300mm below the pavement subgrade, whichever is greater.

4.18.2 Table drain profiles may be either v-shaped or trapezoidal. Reference should be made to the Local Authority Specific Requirements for each Councils preferred profile.

DG 4.19 Easements

4.19.1 Where stormwater drainage pipes pass through property other than a road reserve an easement shall be provided over the line in favour of the Council. The width of this easement is determined by the depth at which the stormwater pipe is laid and based on twice the depth to the pipe obvert plus the pipe diameter (with a minimum width of three (3) metres) and located centrally over the pipe.

4.19.2 If a stormwater pipe passes adjacent to a property and based on the above formula the area of influence passes within the property, an easement over that portion shall be required.

4.19.3 The width of easement shall contain the ARI 100 year storm flow from the upstream catchment or be three (3) metres wide, whichever is greater. 4. Allotment drainage or catch drains which have a change in horizontal alignment greater than 45 degrees shall be provided with concrete or wire-reinforced rock mattresses at such change points which shall be designed to cater for flows in accordance with QUDM.

4.19.4 Easement required over interallotment drainage systems must be built to a level 3 as defined in Q.U.D.M.

4.19.5 The property owner will be responsible for all routine above ground maintenance within interallotment drainage easements. Council shall be responsible for repairs of a capital nature. For example, the property owner must ensure that drainage paths are clear and kept unblocked at all times, such as removing leaves and debris.

DG 4.20 Outlet & Outlet Protection

4.20.1 Outlet into natural watercourse, open channels and tidal areas shall be designed in accordance with the requirements of QUDM.

4.20.2 Protection works to outlet shall be designed to meet the following criteria:

- 4.20.2.1 Dissipate the outflow velocity to minimise scouring;
- 4.20.2.2 Provide protection from stream flows in receiving waters;
- 4.20.2.3 Provide protection from overland (Major Storm) flows into receiving waters; and
- 4.20.2.4 Provide protection from local scouring or undermining of the outlet structure.

4.20.3 Where a headwall is located within the tidal splash zone, it will be designed to comply with the exposure classification requirements of AS 3600.

4.20.4 An energy dissipating outfall shall be provided where the velocity of the outflow or nature of the discharge from the pipe system into the receiving water could cause scouring in the receiving channel.

4.20.5 All tidal outlets shall be fitted with floodgates to prevent the intrusion of salt water into the system.

4.20.6 Outlets with floodgates shall be designed to ensure that they can operate freely at all times, and are protected from siltation, excessive vegetation growth, debris and the impacts of stream flows in the receiving waters.

4.20.7 The designer shall provide calculations to show that they have accounted for losses due to floodgates or other water control devices in the hydraulic design.

4.20.8 All outlets shall be located to facilitate inspection and maintenance access.

DG 5 – DESIGN GUIDELINES – Water Reticulation

General

DG 5.1 Scope

5.1.1 This document sets out the acceptable solutions for the planning, design and construction of water reticulation systems that are to be constructed by a Developer and handed to Council to operate. This section also covers certain service connection issues relating to development approvals and private infrastructure that needs to be to Council standards.

5.1.2 The water reticulation system shall be defined as mains less than 300mm diameter. Design of mains 300mm diameter and greater shall be subject to the specific criteria nominated by Council. All mains less than 300mm diameter shall be designed in accordance with this manual.

5.1.3 No connections will be permitted to bulk water supply mains that are used for the sole purpose of bulk water transfer of water to water reservoirs.

5.1.4 The planning, design, construction and certification of water reticulation infrastructure is to be carried out in accordance with the following provisions:

- 5.1.4.1 Council's general criteria as set out in these manuals and Council's Standard Specifications and Drawings that are based on the Desired Standards of Service;
- 5.1.4.2 The criteria contained within the Water Services Association of Australia WSA 03 – 2011 – Water Supply Code of Australia;
- 5.1.4.3 The designer shall note the Queensland Workplace Health and Safety – Guide to the Workplace Health and Safety Obligations of Designers of Structures and the design shall include the required Safety Design Report; and
- 5.1.4.4 For general guidance on infrastructure elements not contained within council's documents, the criteria contained within the Department of Energy and Water Supply Planning Guidelines for Water Supply and Sewerage may be used for guidance.

5.1.5 Aspects of modification or clarification of the Water Supply Code of Australia WSA 03 – 2011 are detailed in Appendix B of this document.

5.1.6 Council's Land Development Guidelines and Standard Specification and Drawings shall take precedence over the Water Services Association of Australia Codes and the Department of Energy and Water Supply Planning Guidelines for Water Supply and Sewerage.

DG 5.2 General

5.2.1 It is the Consulting Engineer's responsibility to ensure that the current version of this section is used and that all infrastructure is constructed in accordance with this section.

5.2.2 It is the Consulting Engineer's responsibility to ensure that all work is undertaken to council's requirements. Responsibility for supervision, testing, inspection, commissioning and remedial work rests with the Consulting Engineer.

5.2.3 Where a water supply source is being developed to service the development, the source shall either meet or exceed the Australian Drinking Water Guidelines 2011 (ADWG), or the developer shall provide the necessary infrastructure to treat the source to the ADWG, including disinfection before storage and/or distribution.

DG 5.3 Objective

5.3.1 The objective of a water supply system is to provide to the consumer a reticulated portable water supply to meet the demands imposed upon it by both the consumers and fire-fighting requirements.

DG 5.4 Reference Documents

5.4.1 Australian Standards:
- 5.4.1.1 AS/NZS 2566 Buried Flexible Pipelines
- 5.4.1.2 AS 2368 Test Pumping of Water Wells
- 5.4.1.3 AS 3952 Water Supply – Spring Hydrant Valve for Waterworks Purposes

5.4.2 National Health and Medical Research Council

5.4.3 Australian Drinking Water Guidelines

5.4.4 QLD Government Legislation
- 5.4.4.1 Water Act
- 5.4.4.2 Water Supply (Safety and Reliability) Act Water Services Association of Australia
- 5.4.4.3 WSA 03 – 2011 – Water Supply Code of Australia
- 5.4.4.4 WSA 01 –2004- Polyethylene Pipeline Code Information and Guidance Note
- 5.4.4.5 WSA-TN4 Guidelines for design of pressure pipeline systems for water supply using PVC-M and PVC-O pipes

5.4.5 Department of Energy and Water Supply
- 5.4.5.1 Planning Guidelines for Water Supply and Sewerage National Uniform Drillers Licensing Committee 2012
- 5.4.5.2 Minimum Construction Requirements for Water Bores in Australia

DG 5.5 General

5.5.1 All connections or alterations to Council water reticulation mains shall be made by the Developer at the Developers cost and subject to appropriate conditions agreed with Council.

5.5.2 The design of the water reticulation will take into consideration all external demands that are presently acting on the system or are likely to do so in the future. Council shall be consulted to ascertain these external demands, points of connection to existing reticulation and operating parameters.

5.5.3 Council approval of water reticulation does not relieve the Consulting Engineer of responsibility for the design.

5.5.4 In staged developments, to ensure an efficient distribution system is established, the designers are required to submit to the Council an overall layout of the proposed subdivision, including all stages demonstrating that each stage of the development achieves minimum pressures and showing the sizing of mains to be incorporated. This proposal shall be submitted to the Council for approval in principle before the submission of any construction plans and specifications will be accepted for review.

5.5.5 Prior to proceeding with detailed design, the Consultant shall liaise with Council to ascertain whether a network analysis (to determine the optimum size of the internal mains) is required by Council as part of the design submission for the development. For the design of water reticulation schemes and where Council requires a network analysis, it shall be completed by the Consultant at the Developers cost following discussions with Council and be based on the design criteria detailed in Section DG5.7 below.

5.5.6 If a network analysis is required, the designer will be required to provide digital data compatible with Councils software, with the design submission, to enable the reticulation network to be input into Council's network model for checking. The network analysis shall be undertaken for the total development using Bentley WaterCAD compatible software and available for handover to Council for incorporation into the Council network program.

5.5.7 The network analysis shall be based on the design drawings and be spatially accurate.

5.5.8 In sloping development sites, the water reticulation network is to be designed in pressure zones to allow Council to control maximum and minimum pressures within the development.

5.5.9 The network design shall be planned to satisfy the requirements of this manual and to meet Council Customer Service Standards, which are published pursuant to the requirements of the Water Supply (Safety and Reliability) Act 2008, at a minimum whole-of-life cost (capital cost, operational and maintenance cost) for an environmentally acceptable solution and not simply a least capital cost solution. 8. Refer to Appendix D Whitsunday Regional Council Standard Conditions for Water Supply Above RL50.

DG 5.6 Existing Mains

5.6.1 Council should be contacted to obtain copies of any "As Constructed" plans and details of any planned augmentation works.

5.6.2 Where, as a result of the development, existing mains are located on non-standard alignments or have less than minimum cover, the developer shall bear the cost of relocation, replacement or lowering, subject to the approval of the Council.

5.6.3 Pavement widening associated with some developments can place existing mains under the new pavement. In such cases, where the existing main has inadequate cover, the developer shall bear the cost of its replacement in a material approved by the Council, or reconstruction at an adequate cover depth or reconstruction on a standard alignment in the new verge.

DG 5.7 Design Criteria

5.7.1 Flow Parameters - unless advised otherwise by Council, the Average Daily consumption and peaking factors for the design of Water Supply Schemes shall be as follows:

5.7.1.1 Average Daily Consumption (AD) 500 litre/person/day

5.7.1.2 Mean Day max Month (MDMM) 1.50 x AD Peak Day (PD) 2.25 x AD

5.7.1.3 Peak Hour (PH) 1/12 x PD

5.7.2 In the absence of specific flow consumption data, the Average Daily Consumption shall be calculated using the equivalent demands shown in Table 6.1.

Table 6.1 Equivalent Demands

Description	Equivalent Persons/Connection
Single Family Dwelling	
Lots > 1500m^2	3.7
Lots 1101 – 1499m^2	3.4
Lots 901 – 1100m^2	3.1
Lots 401 – 900m^2	2.8
Lots <400m^2	2.5
Multi Unit Accommodation	
Units > 3 bedrooms	0.4 + 0.6/bedroom
Units = 3 bedrooms	2.2
Units = 2 bedrooms	1.6
Units < 2 bedrooms	1.0
Caravan Parks	
Van Site / Camping Site	1.2
Shops/Offices	
Per 90m^2	1.0
Notes:	

1. **Based on 2.8 Equivalent Persons/Equivalent Domestic Connection (EP/EDC), with 1 EDC equivalent to a single residential dwelling on a standard size allotment (401m^2 to 900m^2).**
2. **For undeveloped land equivalent populations shall be calculated in accordance with the maximum allowable population density in the Planning Scheme, or estimation of maximum allowable density agreed with Council prior to design.**

5.7.3 Pressure Parameters – minimum and maximum service Pressures (excluding fire-fighting) – see table 6.2.

Table 6.2 – Pressure Parameters

Requirement	Details
Minimum Pressure	22 metres head at peak hourly consumption
Minimum Pressure Location	At the property boundary for all lots
Minimum Pressure Network Condition (for modelling from a reservoir).	Based on the reservoir level for Peak Hour of the third day of three consecutive Peak Day events (for dynamic models). In the absence of dynamic model results the minimum reservoir level shall be assumed at 15% of storage height. Liaise with Council to confirm minimum pressure constraints available at the connection to the existing system.
Maximum Pressure	80 metres head. Where the pressure in a main exceeds 800 kPa, Council may require the installation of Pressure Reducing Valves (PRV) that may (at Council's discretion) include telemetry control. Prior to proceeding with any design, Council shall be provided with details of the area affected and the number of lots involved.
Maximum pressure location	At the lot boundary
Maximum Pressure Network Condition (for modelling from a reservoir).	Based on reservoir level at 95 percent of top water level.

5.7.4 Fire Fighting Parameters

Table 6.3 – Fire Fighting Parameters

Category	Fire Flow Requirement	Number & Duration
Residential (i.e. An area comprising of predominantly residential dwellings of a maximum of 3 storeys)	15 L/s for 2 hours	1 @ 2 hours
Commercial (i.e. An area comprising of shop and office accommodation of a maximum of 3 storeys) and Industrial	30 L/s for 4 hours For schemes serving a population of less than 1000 a fire flow of 15 L/s for 2 hours should be satisfactory except where a special hazard or risk development exists	1 @ 4 hours
High Risk (i.e. A development where there is a probability of a fire occurring or there is a high cost of resultant damage (personal injury or property))	To be determined	Adopt a special hazard or risk fire
Residual pressure plan is to be 12m minimum at hydrant at all times, assuming that the elevation of the supply point is equal to the ground elevation at the hydrant. Positive residual pressures must exist within the reticulation during the fire event.		

5.7.5 Background Demand - the following minimum criteria should be adopted for background demand during a fire event:

5.7.5.1 Predominantly Residential Areas:

5.7.5.1.1 The minimum residual pressure specified should be exceeded with a background demand of 2/3 Peak Hour demand;

5.7.5.1.2 A check should be undertaken at Peak Hour demand to ensure that pressures in the network remain positive; and

5.7.5.1.3 The calculated background demand should not be less than Average Day demand.

5.7.5.2 Predominantly Commercial / Industrial Areas – In this case, the following scenarios should be investigated with the worst case being adopted:

5.7.5.2.1 At Peak Hour demand of the Commercial / Industrial area (e.g. between 10am to 4pm). The intent of this scenario is to assess the local reticulation performance; and

5.7.5.2.2 At 2/3 Peak Hour demand of the water supply zone (e.g. around 6pm). The intent of this scenario is to assess the zone trunk performance.

5.7.5.3 Mixed Residential / Commercial / Industrial Areas – In such cases a combination of background demand conditions similar to the Predominantly Commercial / Industrial Areas above should be examined.

5.7.6 Storage Parameters – refer table 6.4.

Table 6.4 – Storage Parameters

Component	Sizing
Reservoirs (Ground Level)	3 (PD-MDMM) + (greater of Emergency Storage/Firefighting Storage)
Reservoirs (Elevated)	$6\ (\frac{PH - MDMM}{12})$ + firefighting reserve

5.7.7 Pump Parameters – refer table 6.5.

Table 6.5 – Pump Parameters

Design type		Parameters
Treated water pumps feeding a ground level reservoir		MDMM over 20 hours
Treated water pumps feeding an elevated reservoir		Capacity (L/s) = $\frac{6PH - \text{reservoir operating volume}}{6 \times 3600}$ (Volume in litres)
Standby Pumps		Standby pump capacity to match the largest single unit pump capacity
Reticulation booster pump station		PH + fireflow
Pumped System	Peak Instantaneous flow + fireflow	This situation may exist in smaller systems if variable speed pumps would replace any elevated storage. In these instances, it would be necessary to calculate instantaneous flow based on concurrent demand. This would exceed PH by a significant margin

5.7.8 Pipeline Parameters

Table 6.6 Pipeline Parameters

	Parameter
Pipe Capacity – trunk & reticulated mains	Size for PH + Fire Flow
Friction Equation	Hazen-Williams
Maximum Velocity	2.5m/s velocities up to 4.0m/s may be acceptable during fire flows
Minimum Velocity	N/A

5.7.9 Headloss Calculations - For headloss calculations, the Hazen-Williams formula is generally used. Values of the Hazen Williams friction co-efficient (C) to be adopted are as per table 6.7.

Table 6.7 Headloss Calculations

Pipe Diameter (D)	C Value
D ≤ 150mm	100
150mm < D ≤ 300mm	110
300mm < D ≤ 300mm	120
D > 600mm	125
Note: The above values take into account losses for pipe fittings such as bends, valves, tees, crosses etc and the effect of pipeline ageing.	

5.7.10 Road Crossing

5.7.10.1 all road crossings shall be minimum 100mm diameter;

5.7.10.2 all road crossings under Council controlled roads shall be constructed in Ductile Iron; and

5.7.10.3 all Road crossings under Industrial Roads, Major Collectors or higher order roads shall be constructed with an isolation valve each side of the road.

DG 5.8 Dedication of Land Easements & Permits to Enter

5.8.1 General Infrastructure - All pumping stations, booster stations, storage tanks, reservoirs, water towers and the like are to be located on freehold land that is owned by or will be dedicated to Council at the time of plan sealing, except that small pumping stations may, with State Government's approval, be located in land that is or will become road reserve. This land shall be provided to Council at no cost as freehold and zoned for water infrastructure purposes; and

5.8.2 Pumping Stations not sited beside a road reserve are to be provided with a 5-metre wide access transferred to Council as freehold.

5.8.3 When pipelines and appurtenances relating to pipelines are constructed in land other than in what is or will become, a dedicated road reserve or property owned by Council, Council requires easements to be registered in its favour over all such pipelines and appurtenances;

5.8.4 Easements shall be a minimum of 3 metres wide and located centrally over the pipeline. Mains are to be no closer than 1 m from an easement boundary; and

5.8.5 In the event that works are to be constructed through properties not under the control of the Developer, the Developer shall submit with the Operational Works Application:

5.8.5.1 A 'Permit to Enter & Construct' letter, signed by each property owner through whose property the infrastructure is to be constructed, consenting to the construction of the works;

5.8.5.2 Where the property is owned or to be dedicated to Council approval of the relevant section of Council that will manage the property; and

5.8.5.3 Proof of the registration of easements in favour of Council as specified above.

DG 5.10 Reticulation Network

5.10.1 All water mains shall be laid on a standard alignment and unless directed otherwise alignments shall be as follows:

5.10.1.1 Urban – 2.5m

5.10.1.2 Rural – 2.5m

5.10.2 Bending of pipes is not permitted notwithstanding any clause to the contrary in the WSA Code.

DG 5.11 Cover

5.11.1 Unless noted otherwise on the approved Project Drawings the minimum depth of cover to be provided for mains shall be as follows:

5.11.1.1 Verge, Parks etc. 600mm

5.11.1.2 Under Kerbed Roads 800mm

5.11.1.3 Under Un-Kerbed Roads 900mm

5.11.2 The maximum depth of cover to be provided for mains shall be 1500mm.

DG 5.12 Hydrants

5.12.1 Hydrants shall be installed for fire-fighting purposes on all potable water mains unless approved otherwise by Council.

5.12.2 Generally, hydrants shall be at 80m maximum centres for all urban areas and wherever possible located opposite allotment boundaries, and at every second allotment boundary for Rural, Park Residential and Low Density Residential allotments.

5.12.3 Hydrants shall be located at ends of lines in cul-de-sacs opposite the nearest allotment boundary.

5.12.4 Hydrants shall be located near access legs of battle-axe or hatchet shaped allotments.

5.12.5 Staged developments resulting in temporary dead ends shall have a hydrant located within close proximity to the end of line to enable maintenance flushing.

5.12.6 In undulating areas, hydrants should also be positioned at all high and low points of the main.

5.12.7 Hydrants shall be constructed in accordance with Council's Standard Drawings.

DG 5.13 Valves

5.13.1 Valves shall be located opposite the first truncation point at a three-way intersection; or opposite the nearest allotment boundary.

5.13.2 All valves shall be located within the verge. Valves shall only be located within the road carriageway where specifically approved by Council.

5.13.3 Valves shall be installed where necessary to isolate sections of the system for maintenance purposes such that maintenance can be carried out causing minimum inconvenience and disturbance to the consumers. Generally, the design is to ensure that no more than 4 valves are required to be turned off to isolate a section with the maximum number of houses inconvenienced should be no greater than 20.

5.13.4 Cul-de-sacs shall have an isolation valve if more than 4 lots are served.

5.13.5 At tee junctions a valve shall be located on the leg of the tee. Where necessary to achieve maintenance isolation requirements, additional valves shall be installed to one or both sides of the tee junction.

5.13.6 The maximum spacing between isolation valves shall be 300m.

5.13.7 In higher density areas the spacing of isolation valves may be reduced to the requirement of the Council.

5.13.8 Valves shall be constructed in accordance with Council's Standard Drawings.

DG 5.14 Irrigation

5.14.1 All irrigation systems connected to Council's water supply shall be installed to satisfaction of Council. The installation of water meters, RPZ backflow prevention device and isolation valves are mandatory in all irrigation system. Refer Design Manual D9 Landscaping for design of irrigation systems.

5.14.2 A hydraulic design certificate is required for the irrigation system and to ascertain the required service size.

5.14.3 All connections to Council's existing system shall be completed by the Developer at the Developer's cost and subject to appropriate conditions agreed with Council.

Pump Stations

DG 5.15 General

5.15.1 Pump stations shall be subject to specific requirements of the local authority. Council should be consulted prior to design to confirm the specific requirements for pumps, electrical, switchboards, telemetry, etc.

5.15.2 Council acceptance of pump station design does not relieve the Consulting Engineer of responsibility for the correctness of the design.

DG 5.16 Pump Stations

5.16.1 Pump stations are to be contained in an above ground structure. The structure is to be constructed from reinforced masonry block and/or reinforced concrete. The structure is to be sized to allow for adequate internal access to all items for operational control but particularly for maintenance works. Openings will allow the easy reach and replacement of the largest item contained in the pump station. The use of multistage/centrifugal pumps is preferred.

5.16.2 A back-up power supply is to be provided either by a generator or diesel pump unless a five (5) day reservoir capacity is provided. Suitable arrangements for ducting airflow to the generator / diesel pump and the disposal of exhaust gases so as not to create a nuisance is required. Sufficient fuel is to be stored to operate for 12 hours at rated load (at AD demand).

5.16.3 Noise suppression is to be addressed and incorporated into the pumps station design. The pump station design is to comply with the Environmental Protection Act during normal use.

5.16.4 The tenure of property on which pump stations and access roads are situated are to be transferred to Council as freehold title. Pump station sites are not to encroach upon gazetted road areas unless otherwise approved by Council.

5.16.5 Access to the pump station site is to be via an appropriate standard sealed access and the pump station site is to accommodate maintenance vehicles and their manoeuvring.

5.16.6 Internal and external pump station surfaces are to be painted as directed.

DG 5.17 Telemetry Systems

5.17.1 Where required by the Local Authority, pump station control panel shall incorporate SCADA equipment for transmission of monitoring data and control

to Council's existing master system. Council should be contacted to obtain a copy of their Technical Specification for Telemetry Systems.

5.17.2 It should be noted that where amalgamated Councils have varying telemetry systems, left over from pre-amalgamation Councils, pump station telemetry systems and requirements may vary within that Council and requirements must therefore be reconfirmed as a part of the design.

DG 5.18 Alternative Water Pumping Systems

5.18.1 Alternative water pumping systems to provide increased pressures and flows to individual developments in lieu of a water storage reservoir may be considered by Council if sufficient justification can be provided. Such systems should generally include a number of centrifugal pumps installed in parallel and coordinated by a pump controller, which senses, and responds to water demand. The controller shall also regulate the pump speed to give a graduated increase or decrease in the volume of water being supplied and evenly shares the work between pump units.

5.18.2 In general, Council will only permit the use of such booster pump stations where all of the following conditions apply:

- 5.18.2.1 Where Council considers it impractical to build a storage reservoir for topographical, geotechnical, or aesthetic reasons;
- 5.18.2.2 Where a reservoir would service only that particular development;
- 5.18.2.3 Where the number of lots to be serviced by the booster pump station is less the 25; and
- 5.18.2.4 Where the booster pump station building can be blended with the architectural style of residences within the development.

5.18.3 The consultant should submit an initial report and associated recommendations for consideration by Council prior to any detailed design. As a minimum the report should include:

- 5.18.3.1 Reason for and benefits to the community based on the total life cycle costs of an alternative water pumping system;
- 5.18.3.2 Connection points to the existing system;
- 5.18.3.3 Water supply schematic plan;
- 5.18.3.4 Maintenance issues; and
- 5.18.3.5 Environmental reasons.

DG 5.19 Dual Water Supply Systems

5.19.1 The Dual Water Supply System comprises Water Supply Code WSA 03-2011 and the Whitsunday Regional Council Amendments (Appendix B) to the above supplement.

5.19.2 Appendix C describes Whitsunday Regional Council's specific requirements for Dual Water Supply System works up to and including DN 300 that vary from or are additional to those detailed in the Water Supply Code WSA 03-2011.

DG 5.20 Private Boosters

5.20.1 Written approval for the use of private boosters must be obtained from Council.

DG 5.21 Conduits

5.21.1 A conduit shall be provided to all landscaped or grassed Medians, Traffic Islands and Roundabout islands to facilitate a future water service connection for landscaping purposes.

5.21.2 Where the length of a median exceeds 50m, conduits shall be provided at 50m centres. At roundabouts and channelised intersections the conduit layout should enable all landscape islands to be connected to a single water service connection.

5.21.3 Conduits under roadways shall be a minimum 100mm dia. uPVC Class 9 sealed each end with push-on caps.

5.21.4 Cover to conduits under roads shall be 600mm minimum or 100mm below subgrade, whichever is the greater.

5.21.5 The position of all conduits under roadways shall be clearly marked by the casting a nonferrous cuphead bolt into of the top of the kerb.

5.21.6 Where concrete footpaths are constructed on the road verge and the future water service connections are not being provided, a conduit shall be provided under the footpath opposite the allotment boundary to facilitate the future installation of water services by Council. Generally, water services shall be located at an alternate boundary to Ergon Energy's pillar box. Exceptions may be considered in individual circumstances were unusual conditions or lot layouts exist and where approved by Council and Ergon Energy.

5.21.7 Conduits under footpaths shall be a minimum 80mm dia. uPVC Class 6 with 300mm cover and are to extend 300mm past the edge of the footpath. The position of all conduits under footpaths shall be clearly marked by casting a non-ferrous cuphead bolt into the property side of the footpath while the concrete is wet.

DG 6 – DESIGN GUIDELINE – Sewerage System

General

DG 6.1 Scope

6.1.1 This document sets out the minimum standards for the planning and design of sewer reticulation systems that are to be constructed by a Developer and handed to Council to operate. This section also covers certain service connection issues relating to development approvals and private infrastructure that need to be to Council standards.

6.1.2 The sewer reticulation system shall be defined as sewers of 150mm and 225mm diameter, used to collect and convey sewage from properties. Designs for sewers larger than 225mm diameter shall be subject to specific criteria nominated by the Council. All sewers 225mm diameter or less shall be in accordance with this manual. This definition of sewer reticulation systems applies only to these Whitsunday Regional Council Sewerage Design Manual and Specifications and is independent of the definition of trunk infrastructure as relates to trunk infrastructure charges.

6.1.3 Wherever possible, development should avoid the use of sewerage pump stations when a gravity solution is available. If a pump station is the only option, a buffer zone and screening should be given to the nearest private property.

6.1.4 The planning, design, construction and certification of infrastructure is to be carried out in accordance with following provisions:

- 6.1.4.1 Council's general criteria as set out in this manual and Council's Standard Specifications and Drawings that are based on the Desired Standards of Service;
- 6.1.4.2 The criteria contain within the Water Services Association of Australia (WSAA) publications identified in D7.4. While vacuum and pressure sewer scheme WSA codes are listed, they are still considered unconventional infrastructure –refer D7.7;
- 6.1.4.3 The designer shall note the Queensland Workplace Health and Safety – Guide to Workplace Health and Safety Obligations of Designers of Structures and the design shall include the required Safety Design Report; and
- 6.1.4.4 For general guidance on infrastructure elements not contained within council's documentation, the criteria contained with the Department of Energy and Water Supply Planning Guidelines for Water Supply and Sewerage may be used for guidance.

6.1.5 Aspects of modification or clarification of the Water Services Association of Australia codes are detailed in Appendix E of this manual.

6.1.6 Council's Land Development Guidelines and Standard Specification and Drawings shall take precedence over the Water Services Association of Australia Codes and the Department of Energy and Water Supply Planning Guidelines for Water Supply and Sewerage.

6.1.7 Smart Sewers are considered Unconventional Infrastructure. Smart Sewer planning, design, construction and certification may be carried out in accordance with Queensland Urban Utilities Sewerage Standards – Nu Sewer – Design and Construction Specification Version 6 and aspects of modification or clarification within the manual and approved by Council.

6.1.8 For construction standards for Electrical Switchboards for Sewage Pumping Stations, refer Appendix J – Addendum to Sewer Pumping Code.

DG 6.2 General

6.2.1 It is the Consulting Engineer's responsibility to ensure that the current version of Whitsunday Regional Council Development Manual is used and that all infrastructure is constructed in accordance with this section as a minimum standard.

6.2.2 It is the Consulting Engineer's responsibility to ensure that all work is undertaken to council's requirements. Responsibility for supervision, testing, inspection, commissioning and remedial work rests with the Consulting Engineer.

DG 6.3 Objective

6.3.1 The objective of the sewerage system is to transport sewage from domestic, commercial and industrial properties using gravity flow pipes and, where gravity system is not possible by pumping to the treatment plant.

6.3.2 While various options can be determined that meet the minimum technical requirements, the selected option should meet least community cost for whole lifecycle. To achieve the optimum solution will require sewerage reticulation issues to be considered at the commencement of the planning process and to integrate with other planning issues, and not be considered an end of process infrastructure provision exercise.

DG 6.4 Reference Documents

6.4.1 Australian Standards:
- 6.4.1.1 AS/NZS 1547-2012 On-site domestic wastewater management.
- 6.4.1.2 AS/NZS 3500-2013 Plumbing and drainage set

6.4.2 Council Approved Products Register

6.4.3 QLD Government Legislation:
- 6.4.3.1 Water Act 2000
- 6.4.3.2 Water Supply (Safety and Reliability) Act 2008
- 6.4.3.3 Plumbing and Drainage Act 2002
- 6.4.3.4 Queensland Plumbing and Wastewater Code

6.4.4 Water Services Association of Australia:
- 6.4.4.1 WSA 02-2014 Gravity Sewerage Code of Australia
- 6.4.4.2 WSA 04-2005 Sewerage Pumping Station Code of Australia

6.4.4.3 WSA 05-2013 Conduit inspection Reporting Code of Australia
6.4.4.4 WSA 06-2008 Vacuum Sewerage Code of Australia
6.4.4.5 WSA 07-2007 Pressure Sewerage Code of Australia
6.4.4.6 WSA 01-2004 Polyethylene Pipeline Code

6.4.5 Department of Energy and Water Supply's - Planning Guidelines for Water Supply and Sewerage

Design Criteria

DG 6.5 General

6.5.1 Sewers shall be designed to accommodate flows from upstream catchments, calculated on the basis of their future development in accordance with Council's Strategic Plan, and accordingly, shall be extended to the upstream boundary(ies) of the proposed development (where required) to service upstream properties with the least whole of life cost. Designers should consult with Council to confirm location of any future connections points, details of any planned augmentation works and sewerage catchment areas.

6.5.2 Council approval of sewerage reticulation does not relieve the Consulting Engineer of responsibility for the correctness of the design.

6.5.3 In staged developments, to ensure an efficient distribution system is established, the designers are required to submit to the Council an overall layout of the proposed subdivision, including all stages, showing the sizing of mains to be incorporated. This proposal shall be submitted to the Council for approval in principle before the submission of any construction plans and specifications will be accepted for review. Refer to Application Procedures.

DG 6.6 Existing Sewers

6.6.1 Prior to proceeding with the design, the designer shall obtain from Council "As Constructed" sewer information relevant to the proposed development and confirm point(s) for connection.

6.6.2 Works associated with some developments can impact on existing mains. Where as a result of the development an existing main has inadequate cover, it shall be reconstructed with a material approved by the Council or such other alternate protection measures deemed necessary by Council. Subsequent to construction, CCTV and/or ovality Testing is to be undertaken as determined by Council after the completion of works in accordance with this Manual and supervised by a Council Representative.

6.6.3 Where finished surface levels around existing manhole covers are altered, the manhole shall be reconstructed to conform with the requirements of this manual.

6.6.4 All connections or alterations to Council sewerage network, shall be made by the Developer at the Developers cost and subject to appropriate conditions agreed with Council.

DG 6.7 Unconventional Infrastructure

6.7.1 Conventional infrastructure includes gravity sewers, lift stations, area pumping stations and pressure (rising) mains. Unconventional infrastructure includes smart sewers, small bore systems of any kind, including vacuum systems, hybrid low pressure systems, common effluent drainage systems, grinder pumps serving small clusters of properties and the like, and any other unconventional or unusual systems.

6.7.2 The use of unconventional infrastructure shall require special approval by Council and may require extended maintenance periods and a higher value for performance bonds.

6.7.3 In unconventional systems, Council may not have approved design criteria. Accordingly, proposals will be considered on the basis of best engineering practice and are to be subject to a lifetime benefit cost analysis.

6.7.4 If unconventional infrastructure is proposed the Consultant shall submit an initial report and associated recommendations for consideration by Council prior to any detailed design. The report should include as a minimum:

6.7.4.1 Description of proposed infrastructure;
6.7.4.2 Reasons for departing from Conventional systems;
6.7.4.3 Reasons for and cost benefits to Council;
6.7.4.4 Connection points to existing system;
6.7.4.5 Schematic layout plan; and
6.7.4.6 Maintenance and operational issues.

6.7.5 Subject to Council's assessment of the Consultant's initial report and prior to any detailed design, Council may engage an independent Consultant to act for Council in assessing the initial report and to recommend suitable system parameters.

6.7.6 All costs associated with the engagement of the independent Consultant shall be at the Developers expense.

6.7.7 Any subsequent designs of infrastructure shall be planned to satisfy the requirements to meet Council Customer Service Standards, which are published pursuant to the requirements of the Water Supply (Safety and reliability) Act, at a minimum whole-of-life cost (capital cost, operational and maintenance cost) for an environmentally acceptable solution and not simply a least capital cost solution.

DG 6.8 Design Criteria

6.8.1 Capacity – population estimates shall be based on those equivalent demands detailed in Table 6.1; and

6.8.2 The minimum pipe capacity shall be based on the criteria detailed in Table 6.2.

Table 6.1 Equivalent Demands

Description	Equivalent Persons/Connection
Single Family Dwelling	
Lot > 1500m^2	3.7
Lot 1101m^2 to 1500m^2	3.4
Lot 901m^2 to 1100m^2	3.1
Lot 401m^2 to 900m^2	2.8
Lot <400m^2	2.5
Multi-Unit Accommodation	
Units > 3 bedrooms	0.4 + 0.6/bedroom
Units = 3 bedrooms	2.2
Units = 2 bedrooms	1.6
Units < 2 bedrooms	1.0
Caravan Parks	
Van Site / Camping Site	1.2
Shops/Offices	
Per 90m^2 GFA	1.0

Notes:

1. **Based on 2.8 Equivalent Persons / Equivalent Domestic Connection (EP/EDC) with 1 EDC equivalent to a single residential dwelling on a standard size allotment (401m^2 to 900m^2)**
2. **For undeveloped land equivalent populations shall be calculated in accordance with the maximum allowable population density in the Planning Scheme for that land use, or estimation of maximum allowable density agreed with Council prior to design.**

Table 6.2 Sewerage Loading

Average Dry Weather Flow (AWDF)	270/EP/d	Based upon analysis of pump station flows and STP inflow records during dry weather
Peak Wet Weather Flow (PWWF)	5 x ADWF or C^1 x ADWF whichever is greater	C^1 Peaking Factor = 15 x (EP)(^-0.1587) Note - Minimum value C^1 to be 5

Peak Dry Weather Flow (PDWF)	C^2 x ADWF	C2 Peaking Factor = 4.7 x (EP)-0.105
Vacuum Sewer Peak Wet Weather Flow (PWWF)	4 x ADWF	Peaking Factor of 4
Smart Sewer Peak Wet Weather Flow (PWWF)	4 x ADWF	Peaking Factor of 4

6.8.3 Pipe velocity shall be based on the details show in Table 6.3

Table 6.3 Pipe Velocities

Design Criteria	Recommended Value
Mannings 'n' (PVC)	0.013
Mannings 'n' (Poly)	0.013
Minimum Velocity @ PWWF	0.6m/s
Minimum Velocity @ PDWF	0.3m/s
Depth of Flow @ PWWF – Proposed Sewers	Max Flow depth shall not exceed ¾ pipe full

6.8.4 Minimum grades for sewer reticulation mains are to be as summarised in Table 6.4

Table 6.4 Minimum Grades for Gravity Sewers

Diameter	Minimum Grade	Minimum Grade Percentage
100mm – Property Connection Branches	1 in 60	1.66%
150mm – Property Connection Branches	1 in 80	1.25%
150mm – First MH Length, head of sewer	1 in 100	1.00%
Second MH Length	1 in 150	0.67%
Remaining MH Lengths	1 in 150	0.67%
225mm	1 in 290	0.34%
300mm	1 in 420	0.24%
375mm	1 in 570	0.18%
450mm	1 in 730	0.14%
525mm	1 in 900	0.11%
600mm	1 in 1000	0.10%
675mm	1 in 1200	0.08%
≥ 750mm	1 in 1500	0.07%

6.8.5 The maximum allowable Equivalent Domestic Connections for various gravity sewer pipeline grades and diameters is listed in Table 6.5 below.

Grade	150 diameter	225 diameter	300 diameter	375 diameter
570				1530
550				1557
500				1633
450				1721
420			983	1782
400			1007	1826
350			1076	1952
300			1163	2108
290		549	1183	2144
250		591	1274	2310
200		661	1424	2582
180	236	697	1501	2722
150	259	763	1644	2982
125	284	836	1801	3266
100	317	935	2014	3652
75	366	1080	2325	4217
50	448	1322	2848	5164

6.8.6 Sewer Depths – sewers shall not be greater than 3m deep unless approved by Council.

6.8.7 Where sewers are greater than 3m deep, the consultant engineer must submit calculations demonstrating sufficiency of the strength of the proposed pipe type and trenching condition.

DG 6.9 Sewer Alignment

6.9.1 The preferred, or standard, alignment of sewer lines in relation to property boundaries is presented in Table 6.6.

Table 6.6 Preferred Alignment of Sewers

Location	Alignment
Carriageway	Not Permitted, crossings only
Verge	Not usually permitted, subject to Council approval
Private Property (other than Commercial property)	
Side Boundary	0.8m inside allotment
Front and Rear Boundary	1.5 inside allotment
Commercial Boundary	
Front Boundary	1.5m inside front of allotment

6.9.2 Where sewer lines are located along the road frontage of allotments, the preferred alignment is 1.5m inside the allotment. However, to reduce the number of manholes on curved roads and where truncations occur, the sewer alignment may be varied slightly subject to Council approval.

6.9.3 Where the allotment is located adjacent to a designated Council Park or Drainage Reserve, and the sewer is proposed to be constructed adjacent to the Park or Drainage Reserve boundary, the sewer shall be constructed on a 0.8m alignment and wholly within the Park or Drainage Reserve. Where the sewer is proposed to be located elsewhere in the park, approval for the location must be obtained from Council.

6.9.4 Where sewers are to be located within existing road reserves, the designer shall check that the sewers do not conflict with other utility services and locate the sewers to the satisfaction of Council and in accordance with the services clearances as set out in WSA 02-2014 5.4.

6.9.5 Where retaining walls are located on or near the boundary of allotments, sewers, property connection points, manholes etc. must not be constructed under or within the zone of influence of the retaining wall foundations. Consideration is to be given to the difficulty of maintenance excavation on the lower side of retaining walls.

6.9.6 Where access for persons is required, adequate clearance must be provided around access structures and property connection points. For access structures, an area within a 1.5 metre radius (on three sides to permit the set up and use of confined space equipment and other maintenance equipment such as jet rodders and remote cameras) must be provided around the central point of the facility.

6.9.7 Stubs must be extended a minimum of 0.5m past the property boundary.

DG 6.10 Manholes

6.10.1 Manholes shall be placed on gravity sewers at the following locations:

- 6.10.1.1 At changes of pipe diameter;
- 6.10.1.2 At ends of lines where ends are more than 30m from previous manhole;
- 6.10.1.3 At ends of lines where the line depth is greater than 1.5m;
- 6.10.1.4 At end of lines servicing greater than one Property Connection Branches; and
- 6.10.1.5 At council approved connections to trunk sewer.

6.10.2 Manhole shall not be constructed across property boundaries. Minimum clearance from the edge of manhole to the property boundary shall be 400mm.

6.10.3 The maximum change of angle through a manhole shall be 90° unless specifically approved otherwise by Council.

6.10.4 Manholes shall be constructed in accordance with the Standard Drawings S-0020 – S-0026.

6.10.5 Rectangular covers shall be provided to manholes less than 1500mm deep measured from the top of the manhole cover to the obvert level of the outlet.

This has been derived so that a minimum 1.0m high clear working space is available within the manhole.

6.10.6 End of line treatments/alternatives may be acceptable as determined by Council.

DG 6.11 Covers and Surrounds

6.11.1 Manhole covers shall be finished flush with the surface in roadways, footpaths and paved surfaces. Elsewhere, unless noted otherwise on the approved Project Drawings, covers shall be finished 50mm above the surface of the ground, in a manner designed to avoid as far as possible, the entry of surface water.

6.11.2 Manhole covers are to be gas tight.

6.11.3 Manhole covers are to be located such that the position of the access opening is directly over the outlet pipe.

6.11.4 The installation of all precast manhole covers shall be in accordance with the manufacturers' recommended procedures and requirements and subject to appropriate conditions agreed with Council.

DG 6.12 Dedication of Land, Easements and Permits to Enter

6.12.1 General Infrastructure –

6.12.1.1 All pumping stations, lift stations, storage tanks and the like are to be located on freehold land that is held by or will be transferred to Council at the time of plan sealing, except that lift stations, and small pumping stations may, with State Government's approval, be located in land that is or will become road reserve. This land shall be provided to Council at no cost as freehold and noted for sewerage purposes;

6.12.1.2 Pumping Stations and lift stations that are not sited beside a road reserve are to be provided with a 5-metre wide access transferred to Council as freehold; and

6.12.1.3 Dedicated or freehold land requirements shall include provision for the pump station offset as indicated in D7.16 Pump Stations.

6.12.2 Pipelines –

6.12.2.1 When pipelines and appurtenances relating to pipelines are constructed in land other than in what is or will become, a dedicated road reserve or property owned by Council, Council requires easements to be registered in its favour for all sewage rising (pressure) mains and all gravity sewers.

6.12.2.2 Easements shall be a minimum of 3m wide and located centrally over the pipeline, where no property boundary is common to any easement boundary. In the case where a pipeline is laid on a standard alignment from a proposed property boundary, the boundary of the lot and one boundary of the easement must be coincident and where the property boundary is to be created in the future, the boundary must be coincident to the easement boundary.

6.12.2.3 Sewers are to be no closer than 1m from an easement boundary except where the sewer is on a preferred alignment; and

6.12.2.4 In the event that works are to be constructed through properties not under the control of the Developer, the Developer shall submit with the Operational Works Application a 'Permit to Enter & Construct' letter, signed by each property owner through whose property the infrastructure is to be constructed, consenting to the construction of the works;

6.12.2.5 Where the property is owned or to be dedicated to Council approval of the relevant section of Council that will manage the property; and

6.12.2.6 Proof of the registration of easements in favour of Council as specified above.

DG 6.13 Property Connections

6.13.1 Property connections shall be installed in accordance with Council's Standard Drawing.

6.13.2 Property connections should generally be located at the lowest corner of the allotment between 0.5 and 1.5m upstream of the allotment boundary or manhole.

6.13.3 Property connections will not be accepted within 0.5m of a lot boundary.

6.13.4 Property connections into manholes will be permitted at ends of line manholes only. Elsewhere, property connections are required "on line" and not into manholes.

6.13.5 Property connections into maintenance shafts require Council approval.

6.13.6 Combined Property Drains are not permitted in any development works.

6.13.7 For commercial / industrial premises, where the PCB is to be built over, a manhole is to be constructed at the point of connection.

6.13.8 Where a sewer main lies within an adjoining allotment, the property connection is to extend a distance of 1.0m into the allotment. For battle-axe allotments with the property connection located within the access, the Property drain shall extend from the property connection along the access to a point 1.0m within the main part of the allotment or, where a sealed driveway is required for the full length of the hatchet 'handle' then 1m past the extents of the driveway to allow a suitable future point of connection. Where a sewer is contained within a stormwater drainage easement, then the property connection should extend a minimum of 1m past the easement boundary and into the lot it is serving. All property connections should be finished a minimum of 1m clear of any infrastructure.

6.13.9 Property connections sizes shall be as follows:

6.13.9.1 Residential (single Dwelling) – 100mm dia; and

6.13.9.2 Others (i.e. Commercial, Industrial, Multi Residential) – 150mm dia.

6.13.10 Property connections to existing sewer mains shall only be permitted when the construction of a new main to service the proposed properties is not possible.

6.13.11 All Property connections shall be deep enough to service the entire lot using the following property drain design criteria:

6.13.11.1 300mm minimum cover at the start of the drain or at any other control point on the allotment, (where property drains are subject to vehicular traffic, cover shall be increased to 600mm);

6.13.11.2 1 in 60 minimum grade from the most distant corner where any Property or structure can be located on the allotment, on an alignment parallel to the property boundary; and

6.13.11.3 Consideration will be given to the finished level of the lot after all earthworks are complete including likely benching for building platforms.

DG 6.14 On-Site Sewerage Facilities – Treatment and Disposal

6.14.1 The Consultant shall submit a report containing a detailed assessment of site and soil factors as per AS1547 2000 Appendix 4.1B. The report shall consider all major constraints and opportunities relating to the management of wastewater in relation to the development. The report must include all site and soil evaluation (SSE) findings and recommendations so that the most appropriate on-site sewerage facility can be chosen for the development and, in particular, be of sufficient quality and size to receive, treat and absorb all wastewater outputs that is likely to be produced on a property. It is not necessary at this stage to indicate a location for the land application area (LAA) but the report must include a site plan for each lot which indicates all unfavourable land due to site restraints, required setbacks and site features thus leaving the final location of the land application area (LAA) flexible until the detailed report is carried out at building stage and final building location is determined.

6.14.2 The minimum requirements for the wastewater disposal report:

6.14.2.1 Site plan showing dams, creeks, bores and water courses over the whole development site;

6.14.2.2 Flood overlay for entire development if applicable (available on Councils website)

6.14.2.3 Contour plan maximum of 1 metre intervals;

6.14.2.4 Areas of each block with proposed Lot No’s and property boundaries;

6.14.2.5 Proposed use of the land to be developed;

6.14.2.6 Soil survey, including indicative permeability of soil by either a percolation test or textural classification of soil (minimum of one test site per proposed lot);

6.14.2.7 Depth of ground water, if any encountered during testing;

6.14.2.8 Estimated daily flows of 300 litres per bedroom per day to be utilised in calculations for daily flows;

6.14.2.9 Method of disposal, e.g. Irrigation, ETA, Absorption;

6.14.2.10 Minimum level of treatment of wastewater for each proposed lot;

6.14.2.11 Size of estimated disposal area to suit system;

6.14.2.12 Calculations to justify disposal site; and

6.14.2.13 Assessment of any additional accumulative nutrient loadings of the area caused by onsite waste water disposal from the proposed development.

Pumping Stations and Pressure Mains

DG 6.15 General

6.15.1 Council should be consulted prior to design to determine specific requirements for pumps, electrical, switchboard and telemetry etc. Outlined below are Council's minimum requirements unless specified otherwise.

6.15.2 Council prefers that sewage be conveyed by gravity. Pump station will only be accepted if all other options have been considered and rejected.

6.15.3 Council requires documentary evidence that life cycle costs of all options have been analysed before approving a pumping station.

6.15.4 When the use of a pumping station has been approved it must be designed and constructed in accordance with this Manual and WSA 04-2005 and WRC Standard Drawings.

6.15.5 A submersible sewage pumping station built to Council requirements and incorporating two submersible sewage pumps with motor sizes up to 22 kW each will be regarded as a "standard" installation. Any station with pumps larger than 22kW will be regarded as a "non-standard" installation and will need to be specifically designed to suit the design flows. The design of a "non- standard" station must be carried out in consultation with Council.

6.15.6 Wet well washers are required in all sewage pumping stations unless otherwise approved by council.

DG 6.16 Pump Stations

6.16.1 Pump stations shall be designed as detailed on Standard Drawings S0050 – S-0052 and S-0057 – S-0060. Project specific design drawings are to be provided with the operational works submission which include the following: Relative levels (A through G) as denoted on these drawings as well as all pump start, stop and alarm levels appropriate to operating conditions shall be provided with the pump station design.

6.16.2 Operation levels for pump stations to be controlled by ultra-sonic level controllers or hydrostatic probes and not by float switches. Major pump stations as determined by the Council shall be controlled by ultra-sonic level controllers.

6.16.3 The pump stations overflow pipe shall be designed to cater for the maximum possible flow. Council and the Department of Environment and Heritage Protection should be consulted to determine emergency storage and overflow requirements.

6.16.4 The designer shall be responsible for obtaining all necessary licenses and approvals associated with the provision of pump station emergency overflow.

6.16.5 Pump stations shall be located as far as possible away from existing or proposed habitable dwellings. A 100m setback is desirable with absolute minimum of 30m unless otherwise approved by Council for standard pump stations only. New developments are to comply with the setback conditions from existing pump stations.

6.16.6 The tenure of property on which pump stations and access roads are situated shall be transferred to Council as freehold title. Pump station sites shall not encroach upon gazetted road areas unless otherwise approved by State Government and Council

6.16.7 Access to the pump station site shall be via an appropriate standard sealed 3.5m wide road (within the 5m access reserve) and the pump station site shall accommodate maintenance vehicles and their manoeuvring. An acceptable layout and hard standing area will need to be determined in consultation with council.

6.16.8 The sealed access can be either of the following construction:

6.16.8.1 2 coat seal on 100mm sub-base and 100mm base course, subject to the sub grade strength indicated by the CBR;

6.16.8.2 30mm asphalt on minimum 100mm base course; and

6.16.8.3 125mm thick reinforced concrete.

6.16.9 Pump stations will be located a minimum 300mm above the 1%AEP flood and/or storm event whichever is greater. The finished ground level around the pump station will be shaped to fall away from the pump station. 10. Detailed calculations of the pump station, Sewerage Pump Station Commissioning Plan and pressure main sizing shall be submitted to Council with the design and/or Operational Works submission in the format required by Council.

6.16.10 The Sewerage Pump Station Commissioning Plan shall be completed in accordance with WSA 04- 2005 2.17.

6.16.11 Pump Station switchboards are to be painted with a graffiti resistant paint prior to application.

6.16.12 New or upgraded pump stations which are or will be part of the trunk main reticulation network or have less than 6 hours emergency storage capacity will be required to have a standby generator as part of the sewer scheme. The standby generator will be located a minimum of 300mm's above the 1%AEP flood and/or storm event whichever is greater.

DG 6.17 Sewage Pumping Systems

6.17.1 Sewage Pumping Station Design Criteria - Sewage pumping stations shall be designed in accordance with the minimum specific design criteria shown in Table 7.14 and WSA 04-2005.

Table 7.14 Sewage Pumping Station Design Criteria

Description	Adopted Design Parameter	Comments

Pump Motor Drives	- <15kW – Soft Start - >15 to 22kW – VFD - >22kW – special design – refer to Council	Where VFD's are used, cables are to be shielded. Where VFD's are used, a magnetic flow meter must be provided with the pump station.
Number of Pumps	Two (2)	Pump station controls must allow for automatic alternating duty pumps.
Wet Well Operating Volume (kL) - Fixed Speed Pumps	$\frac{0.9 \times Q}{N}$	Where 'Q' is the flow rate (l/s) if a single pump operating and 'N' is the allowable number of pump starts, the number of pump starts (N) should be not more than 10 for pumps less than 50kW rating. For pumps greater than 50kW rating, according to manufactures recommendations
Wet Well Operating Volume (kL) – Variable Speed Pumps	$\frac{0.9 \times Q}{N}$	Q = Discharge of a single pump (L/s) at 50 Hz. N = Maximum number of starts per hour recommendation by the motor manufacturer.
Bottom Water Level (duty pump cutout)	- For fixed speed pumps: 100mm above minimum submergence level of pumps. - For variable speed pumps: minimum of 100mm above top of motor casing.	In case of variable speed drives a permanent water level must be maintained above the motor casing to ensure continuous cooling of the motor.
Well Diameter	Minimum internal well diameter 2100mm internal well diameter may be increased in increments of 300mm depending upon considerations such as: - Clearance around pumps and pipework; - Depth of pump station; and - Geotechnical conditions.	
Top Water Level (TWL) (standby start)	Must be set no higher than 300mm below invert level of inlet sewer. Must be no lower than 100mm above duty start but confirmed by project specific design.	
Operating Range (TWL – BWL)	This shall be in accordance with WSA 04, Clause 5.4. Generally this	

	range should be between 1000mm and 2800mm.	
Duty Point	With static head corresponding to top water level and pipe friction factors as follows determine Duty Point 1 and 2: - Duty Point 1 – Single Pump operation: - C1 x ADWF (L/s) vs. Static Head = Friction Head (m) - Duty Point 2 – Duty Pump operating in parallel with Standby Pump: - 5 x ADWF (L/s) vs. Static Head + Friction Head (m).	Where: Static Head = Highest Point in Pressure (Rising) Main – Water Level in Wet Well. Friction Head = is a derived from the Hazen Williams formula. C1 = Peaking Factor from Table 7.2 of this Manual.
Pump Selection	Select a pump that is capable of operating at both duty points and which operates within the range of the system resistance curves that are determined by the Conditions detailed below: - Where pressure sewers are allowed to interconnect with existing sewers (refer Table 7.15), pumps are to be designed to operate against the ultimate pressure in the receiving main unless otherwise approved by Council; - Condition 1 – Normal Operating Condition lower limit system resistance curve: - Static Head corresponding to Top Water Level with pressure (rising) main friction factors as follows: C = 120 (dia. 300mm) - Condition 2 – Normal Operating Condition Upper limit system resistance curve: - Static Head corresponding to Bottom Water Level with pressure (rising) main friction factors as follows: C = 100 (dia. <300mm)	The friction factors used in pump selection depend on Top and Bottom Water Level so as to ensure the fullest possible range of heads are taken into account in the selection of the pumps.
Emergency Storage	6 hours ADWF	May vary dependent on location of the overflow. Emergency storage may

		include gravity sewers, manholes and pump station we well volume above TWL.
Duty Pump Capacity	Refer DNRM Guidelines (or subsequent department)	Refer DNRM Guidelines (or subsequent department)
Standby Pump Capacity	Refer DNRM Guidelines (or subsequent department)	Refer DNRM Guidelines (or subsequent department)
Total Pump Station Capacity	Refer DERM Guidelines (or subsequent department)	Refer DERM Guidelines (or subsequent department)

6.17.2 Pump Information - The following information shall be provided when the plans are submitted for approval:
- 6.17.2.1 Preliminary pump selection;
- 6.17.2.2 Rating of the motor;
- 6.17.2.3 Weight of the motor;
- 6.17.2.4 Duty Point;
- 6.17.2.5 Estimate of KWh/1000 litres pumped; and
- 6.17.2.6 Performance, power and efficiency curve.

DG 6.18 Pressure Mains

6.18.1 For detailed design of sewer pressure mains (rising mains) the requirements of Design Manual D6 Water Reticulation should be noted and the mains shall be designed as per the procedures relevant to Water Supply Mains with the exception of the following:
- 6.18.1.1 Air release valving should be provided to high points as required;
- 6.18.1.2 Scour valving should be provided to low points as required. Scouring must be to a scour manhole or adjacent gravity sewer system;
- 6.18.1.3 Thrust Block and Trenching Details shall be as per the Standard Drawings W-0040 and W-0041; and
- 6.18.1.4 Line valves, scours and air valves are to be provided as required to reduce scour volume.

6.18.2 Consideration needs to be given to the potential for sulphide generation in pressure mains.

6.18.3 Sewer rising mains shall be a minimum 125mm DN HDPE PN16 unless approved otherwise by Council. Sewer rising mains shall be ‘cream’ in colour.

6.18.4 Sewer pressure mains shall be ‘cream’ in colour.

6.18.5 All Discharge manholes shall be fitted with a HDPE or wound PVC manhole liner suitable for exposure to sewerage. Where the discharge manhole is an existing manhole, the manhole internal surfaces shall be adequately dried and then coated with an approved epoxy coating.

6.18.6 Sewer pressure mains shall be designed in accordance with the minimum specific design criteria shown in Table 7.15 and WSA 04- 2005.

Table 7.15 Pressure Main Design

Description	Adopted Design Parameter	Comments
Flow equation	Hazen-Williams	
Minimum Diameter	100mm – unless otherwise approved by Council	
Friction Factors	Refer Item 10 in Table 7.14	
Minimum Velocity (on a daily basis)	0.75m/s	To prevent the deposit of solid materials such as grit
Preferred Minimum Velocity (on a daily basis)	1.5m/s	To provide for slime stripping on a regular basis
Maximum Velocity	2.5m/s	To prevent damage to pipe lining
Configuration	Pressure Mains should be sized to optimise the balance between reduction of detention times and life cycle cost. Factors to be considered include but not be limited to: - Population growth; - Staging; - Operational features to provide for maintenance and replacement activities; - Minimisation of energy costs; and - Detention times (reduction of odours)	
Interconnection of Pressure (rising) Mains from different Pump Stations	Only with the approval of Council. Generally interconnection of pressure (rising) mains from different pump stations will not be approved unless there are substantial economic and operational benefits	Selection of the class of mains shall be for the maximum condition, refer pump selection, Table 7.14

Private Pump Station and Pressure Mains

DG 6.19 General

6.19.1 Sewage pumping stations serving more than one “Titled” property shall meet the requirements of this Manual and WSA 04–2005.

6.19.2 Where a gravity sewer connection is not directly available to a development, Council may approve a private sewage pumping station, which will discharge via a private pressure (rising main) to the property line, after which, it shall be a Council main, and then connected to Council’s reticulation infrastructure. The

Developer shall prepare and provide to Council "As Constructed" drawings. A private pressure main is not acceptable within a Council controlled road reserve.

6.19.3 All costs associated with connection of a private pressure main to an existing gravity sewer system (system analysis, design and upgrades to provide capacity) shall be met by the Developer.

DG 6.20 Connection to Existing Gravity Main

6.20.1 The approved connection point for a private pressure (rising) main shall be a discharge manhole that is connected to an existing gravity sewer manhole. Discharge manholes shall conform to Council's Standard Drawing.

6.20.2 Council may require the provision of a non-corrosive pipe installed for the length of sewer to the next downstream manhole and will require the provision of an inert lining to all internal surfaces of the pressure main discharge manhole.

DG 6.21 Alternative Connection Points

6.21.1 Council may consider an alternative connection point. Where an alternative is proposed, the Consultant shall request written approval from Council. The request shall outline the reasons for the alternative connection point and the connection methodology proposed.

6.21.2 A private pressure main is not permitted to inject into another private pressure main.

6.21.3 If Council approves the alternative connection to be a Council rising main, the conditions outlined in Table 7.15 shall apply.

DG 6.22 Private Pump Station Sizing and Operation

6.22.1 Pumping stations shall be designed with sufficient in-system storage (in the well, upstream sewers or a dedicated self-draining high level storage) so that in the event of pump or power failure, 6 hours' emergency storage is provided with inflow at average dry weather flow, provided the scheme is not a low pressure sewer scheme or vacuum system. In system storage shall be measured from duty start level to the level of the lowest relief point. Low pressure sewer or vacuum schemes shall be looked at separately by Council.

6.22.2 Less than 6 hours of storage may be provided, as long as a standby generator is part of the sewer scheme.

6.22.3 The pumps are to be set up to operate automatically as Duty / Standby and should be of the positive displacement electric type.

6.22.4 An alarm shall be provided in the form of a prominently positioned flashing red light set to activate at the invert level of the incoming Property drain.

DG 6.23 Private Pressure Mains

6.23.1 Medium density polyethylene pressure main class PN16 is approved for use with cream colouring.

6.23.2 If the pressure main is not readily available in cream colour, the pressure main shall be wrapped in cream coloured tape.

DG 6.24 Specific Requirements

6.24.1 As the private sewage pumping station is a component of the internal plumbing and drainage, Council's Plumbing and Drainage Services Section shall check the design drawings for compliance with current legislation and relevant standards.

6.24.2 Owners of private pumping stations are responsible for all costs and charges associated with the installation, operation and maintenance. Council may consider entering into a service agreement with the owner of the pump station for the ongoing operation and maintenance of the pump station.

6.24.3 As constructed details and the location of the pressure main shall be submitted to Council.

6.24.4 Where Council accepts a Maintenance Service Agreement with the owner of a private pump station, the following conditions will apply:

6.24.4.1 The pump station control panel should incorporate SCADA equipment for transmission of monitoring data and control of Council's existing master system;

6.24.4.2 Council requirements for integrating the SCADA equipment will not relieve the owner of the responsibility for the operation and maintenance of the pump station during the agreed defect liability period;

6.24.4.3 Council will not accept responsibility under the Service Agreement until the pump station has been accepted "off maintenance" with all defects rectified and the pump station is operating to the satisfaction of Council;

6.24.4.4 Notwithstanding the above, Council may monitor the operation and performance of the pump station during the defects liability period; and

6.24.4.5 The following information shall be provided when the plans are submitted for approval:

6.24.4.5.1 Place of Manufacture of all components;

6.24.4.5.2 Pump Manufacturer, Model, Type, and Impeller diameter (as a cut sheet)

6.24.4.5.3 Rating of the motor;
6.24.4.5.4 Weight of the pump and motor;
6.24.4.5.5 Duty Points;
6.24.4.5.6 KWh/1000 litres pumped;
6.24.4.5.7 Performance curves; and
6.24.4.5.8 Guarantee.

6.24.5 Upon commissioning, the following information shall be provided to the Council for checking prior to survey plans being endorsed by Council:
6.24.5.1 Curves with at least four points plotted of the actual performance established in the field, or similar supervised works certificate;
6.24.5.2 Actual KWh/1000 litres pumped;
6.24.5.3 Complete wiring diagrams and details;
6.24.5.4 Mechanical details and parts list of pump and motor;
6.24.5.5 Maintenance catalogue showing daily, weekly, monthly and annual requirements;
6.24.5.6 A complete set of the manufacturers recommended spares delivered to Council; and
6.24.5.7 A set of cover lifters delivered to Council.

Telemetry Systems and Management Plan

DG 6.25 Telemetry Systems

6.25.1 All pump stations must be fitted with telemetry system in accordance with Council's Specification for Telemetry Systems. Council should be contacted to obtain a copy of their Technical Specification for Telemetry Systems.
6.25.2 It should be noted that where amalgamated Councils have varying telemetry systems, left over from pre-amalgamation Councils, pump station telemetry systems and requirements may vary within that Council and requirements must therefore be reconfirmed as a part of the design.

DG 6.26 Management Plan

6.26.1 Where required, a facility management plan is to be provided which will detail procedures and arrangements in place for routine operation and management of the facility (eg. Service Agreement) The Facility Management Plan shall include:
6.26.1.1 Details of proposed regular maintenance of private sewer systems; and
6.26.1.2 A bi-annual report of sewerage flows to Council's sewer and details of maintenance activities.

DG 7 – DESIGN GUIDELINES – Maintenance Shafts

DG 7.1 General

7.1.1 The use of maintenance shafts is permitted in reticulation sewers subject to the design parameters detailed in this Manual and WSA 02-2014.

DG 7.2 Design Parameters for MS's and TMS's

7.2.1 The following design parameters apply to maintenance shafts and terminal maintenance shafts in addition to or instead of those detailed in WSA 02-2002:

- 7.2.1.1 Sizing and installation of maintenance shafts to generally comply with the manufacturers recommendations;
- 7.2.1.2 Maintenance shafts shall be graded to the intersection point of the sewer main and maintenance shaft coupling / fitting;
- 7.2.1.3 Maintenance shafts may be used on 100mm, 150mm and 225mm diameter sewer mains and Property connection branches only;
- 7.2.1.4 Maintenance shafts shall be used to a maximum depth of 3.0m;
- 7.2.1.5 Testing of maintenance shafts shall generally be carried out in conjunction with the testing of the sewer main;
- 7.2.1.6 Property connection branch inspection tees shall be 2000mm clear of the centre of the Maintenance Shaft;
- 7.2.1.7 Property connections must not be made into maintenance shafts;
- 7.2.1.8 Maintenance shafts must be provided with a Council approved 600mm dia. Ductile Iron Class B cover located within a precast surround. The trench bedding material shall extend below the shaft inspection opening surround;
- 7.2.1.9 A maximum of five (5) Maintenance Shafts will be permitted between two conventional maintenance holes with a total length of sewer of not more than 300m between maintenance holes;
- 7.2.1.10 Maintenance Shafts are to be located with a maximum spacing of 60 metres to a maintenance hole or shaft;
- 7.2.1.11 The combined flow entering a MS will not exceed 22 L/s;
- 7.2.1.12 The flow to be redirected at an angle greater than 45 degrees will not exceed 12 L/s; and
- 7.2.1.13 The vertical distance a sewer connection entering the riser and the invert of a MS will be a minimum of 1100mm. Where this distance is less then 1100mm the incoming sewer will enter at the invert of the MS.

7.2.2 Maintenance shafts and terminal maintenance shafts are not permitted in the following locations:

- 7.2.2.1 As the receiving manhole at a pumping / lift station;
- 7.2.2.2 As a discharge manhole for a pressure (rising) main;

7.2.2.3 Within roadway central medians, roundabouts or within kerb and channel;
7.2.2.4 As the connection structure for future development stages; and
7.2.2.5 In an area zoned Industrial, Commercial, or Multi-unit.

DG 8 – DESIGN GUIDELINES – Water Seals, Boundary Traps and Water-sealed MH's and Gas Check MH's

DG 8.1 General

8.1.1 Water seals - Water seals are not required.
8.1.2 Gas Check MH's - Gas check MH's are not required.
8.1.3 Vertical and Near Vertical Sewers - Prior approval must be obtained from Council for the use of vertical or near vertical sewers.
8.1.4 Vortex Inlets and Water Cushions - Prior approval must be obtained from Council for the use of water inlets and water cushions.
8.1.5 Inverted Syphons – The use of inverted syphons is not permitted.
8.1.6 Flow measuring devices – flow measuring devices are not required to be installed. Notwithstanding, provision shall be made in the design of the valve chamber to allow the future installation of an electromagnetic flow meter.
8.1.7 Wet weather storage - Prior approval must be obtained from Council for using wet weather storage as a means of reducing downstream infrastructure.

DG 9 – DESIGN GUIDELINES – Utilities

General

DG 9.1 Scope

9.1.1 This section sets out the minimum standards for the provision of utility services within new subdivisions and developments.

9.1.2 The designer needs to coordinate the provision of services within the confines of the road verge in consultation with and to the requirements of the Service Authorities / Providers.

DG 9.2 Objective

9.2.1 The objective of the Manual is to assist the designer in making provision for the following utility services within the design of new subdivisions and developments:

- 9.2.1.1 Telecommunications;
- 9.2.1.2 Electricity Supply;
- 9.2.1.3 Road Lighting; and
- 9.2.1.4 Gas.

DG 9.3 Reference Documents

9.3.1 AS/NZS 1158-2010 Lighting for Roads and Public Spaces

9.3.2 Ergon Energy Standard Drawings

- 9.3.2.1 Standard Drawing 5162/1 - Joint Electricity, Gas and Telecommunications; and
- 9.3.2.2 Standard Drawing 5162/2 - Joint Electricity, Gas and Multiple Telecommunications.

9.3.3 Civil Aviation Safety Authority Australia – Manual of Standards Part 139 Aerodromes;

9.3.4 Ergon Energy Lighting Construction Manual;

9.3.5 Ergon Energy Underground Construction Manual

9.3.6 G645:2011 Fibre Ready Pit and Pipe Specification for Real Estate Development Projects / NBN Co Installing Pit and Conduit Infrastructure – Guidelines for Developers

DG 9.4 Service Authority's General Requirements

9.4.1 Prior to an application to reconfigure a lot, the Service Authorities should be consulted to confirm that the provision of services to the proposed development would be provided. E.g. Telstra, Ergon and NBN Co.

9.4.2 Following receipt of Development Approval from Council the designer shall make application to both Authorities for "Offer of Connection Services" for electricity and telecommunication services.

9.4.3 Approved proposal plans shall be supplied to both Authorities, for staged developments, this shall include an overall concept layout outlining stages and expected timing for each stage.

9.4.4 Should any amendment occur in the design, both Authorities are to be notified immediately together with an amended plan.

9.4.5 Where a development includes lots that may have higher service demands (i.e. Industrial, Commercial, Multi Residential etc.), details of the expected yields and the maximum permissible development yield for each lot in accordance with its current zoning shall also be provided to both Authorities.

9.4.6 Underground telecommunication services shall be provided to all new developments.

9.4.7 Unless otherwise approved by Council, an underground electricity supply is to be provided to all new developments and all new consumer mains connections to developments to be supplied from a pillar.

9.4.8 The designer shall be responsible for coordinating and checking the locations of all telecommunication and electrical services to avoid conflicts with other services (i.e. Stormwater pits etc).

9.4.9 Layout plans for telecommunication and electrical services including the road lighting design shall be submitted to Council with the design submission.

9.4.10 Evidence of the agreement to provide an electricity supply and telecommunication services must be given to Council prior to the sealing of plans of survey.

DG 9.5 Telecommunication Services

9.5.1 Installing of underground telecommunication conduits shall be in accordance with the Service Authority's requirements.

9.5.2 Consideration shall be given to the location of any roadside cabinets, pillars and pits within the subdivision design.

9.5.3 Where an underground telecommunication service is to be provided, telecommunication conduits shall be placed in a shared trenching arrangement, refer Ergon Energy Standard Drawings 5162/1 and 5162/2 for shared trench arrangement that incorporates telecommunication, electrical and gas services.

9.5.4 Unless approved otherwise by Council, all telecommunication services shall be located within the road reserve at a distance of 0.3m – 1.2m from the property boundary.

9.5.5 The developer is responsible for the provision of telecommunication conduits across roads, existing roads are to be bored.

9.5.6 Permanent non-ferrous cable markers are to be installed in the kerb to mark the location of all road crossings.

DG 9.6 Electricity Supply

9.6.1 Unless otherwise approved by Council, electricity reticulation is to be placed underground.

9.6.2 Where an underground electrical service is to be provided it shall be placed in a shared trench arrangement. Refer relevant Ergon Energy Standard Drawings for shared trenching arrangements that incorporates telecommunication, electrical and gas services.

9.6.3 Sharing of trenches with sewerage and water mains shall not be permitted. Where existing or proposed services are likely to impede on standard electricity alignments, Council and the Ergon Energy are to be consulted to confirm service alignments and clearances.

9.6.4 Unless approved otherwise by Council, all electrical services shall be located within the road reserve at a distance of 0.3m – 1.2m from the property boundary.

9.6.5 The developer is to liaise with the Ergon Energy in relation to any requirement for an electrical substation with a view to providing sufficient suitable land on which to site the infrastructure.

9.6.6 Where a pad-mount substation is to be located within the frontage of a proposed or existing parkland, the location shall be subject to Council's approval.

9.6.7 No other services shall pass beneath the Ergon Energy pillars or substations.

9.6.8 The developer is responsible for the provision of electrical conduits across roads, existing roads are to be bored.

9.6.9 Permanent non-ferrous cable markers are to be installed in the kerb to mark the location of all road crossings.

9.6.10 Electrical pillars shall generally be located at an alternate boundary to water meters and gas service crossings. Exceptions may be considered in individual circumstances were unusual conditions or lot layouts exist and where approved by Council and the Ergon Energy.

9.6.11 Pillars shall be located at property boundaries exceptions can occur where there are stormwater easements or other constraints. The Ergon Energy should be consulted to determine alternate locations in these cases.

9.6.12 The Ergon Energy conditions of connection including contributions for initial cable installation works shall be met prior to the acceptance of the works "On Maintenance" by Council.

9.6.13 Where advised by the Ergon Energy an additional communication conduit supplied by the service provider shall be laid to Ergon Energy requirements.

Overhead Supply

DG 9.7 General

9.7.1 The overhead electrical reticulation shall be designed in accordance with the Ergon Energy requirements.

9.7.2 Power poles shall be placed on an appropriate alignment as approved by Council and the Ergon Energy.

DG 9.8 Road Lighting

9.8.1 All road lighting designs shall be prepared by an RPEQ Engineer shall be included in the design submission for acceptance by Council.

9.8.2 Road lighting design must be in accordance with this manual and AS/NZS 1158 and the Ergon Energy Lighting Construction Manual and Underground Construction Manual. Specific consideration must be given to identification and lighting of Local Area Traffic Management devices (LATM's) and intersections.

9.8.3 All light columns, luminaries and lamps are to be specified from the Ergon Energy Lighting Construction Manual and Underground Construction Manual.

9.8.4 All installation works shall be in accordance with the Ergon Energy Lighting Construction Manual.

9.8.5 Lighting on declared roads shall be designed and installed to the requirements of the Department of Transport and Main Roads.

9.8.6 It is a Council requirement that road lighting be installed under Rate 2 conditions of Tariff 71 - Public Lamps at all new subdivisions and developments.

9.8.7 The required lighting category for a particular road hierarchy shall be determined from Table D9.1.

Table 9.1 Lighting Categories

Category	Application[1]	Luminaire Type	Lamp Type	Rate[2]
V3	Sub Arterial Road	Aeroscreen	150 – 400 watt HPS	2
V5	Major Collector Road	Aeroscreen	150 – 400 watt HPS	2
P3	Minor Collector Road	Normal	80 Watt MV[4]	2
P4	Residential Street Access Street	Normal[3]	50 Watt MV[4]	2

	Access Place			
P4	Industrial Collector Street Industrial Access Street	Normal	80 Watt MV[4]	2
P1 – P3	Pathway and Cycleway	Normal[5] OR Council Specific	80 Watt MV Council Specified	2 3
P3	Bus Stop	Aeroscreen OR Normal	Wattage as required HPS – Cat V lighting MV – Cat P Lighting	2

1. **Roadway Classifications are contained in Table D1.1 "Street and Road Hierarchy – Deemed to Comply Requirements" of Design Manual "D1 Road Geometry". Where discrepancies exist between No. of Dwellings, Traffic Generation and Roadway Classification, lighting design shall be based on the Council designated Roadway**
2. **Rate 2 – Lighting owned and maintained by the Ergon Energy. Rate 3 – Lighting owned and maintained by Council.**
3. **Where "Nostalgia" luminaires are used, the lamp type is to be an 80 Watt MV. The "Nostalgia" luminaire must meet the glare control requirement stipulated in AS/NZS 1158.3.1:2005, design is to be based on "I" table 201262.CIE and the luminaire sourced directly from Sylvania.**
4. **Once permitted by the Electricity Authority, T5 fluorescent or compact fluorescent lamps shall be used where they offer a lower energy consumption or lower cost solution than the lamps nominated.**
5. **Where lighting is located next to residences (on a pathway or cycleway) then a Type 4 – Aeroscreen luminaire is required.**
6. **In general, street lighting poles are to be located opposite common allotment boundaries, to minimise potential interference with vehicle access, access to services (i.e. hydrants) and glare complaints from residents. It is desirable that poles not be located opposite boundaries of "battle axe" allotments due to a higher potential for vehicle collision.**
7. **Council may consider a lesser standard for subdivisions with lots greater than 4000m2 and outside the designated urban footprint. e.g. Category P5 or lighting at intersections, cul-de-sac's and other hazardous locations.**

9.8.8 Lighting shall be provided at the following locations in accordance with the development approval conditions and AS/NZS 1158:

9.8.8.1 Straight Sections;

9.8.8.2 Curves;

9.8.8.3 Intersections and Junctions;
9.8.8.4 Pedestrian Refuges;
9.8.8.5 Cul-de-sacs; and
9.8.8.6 Local Area Traffic Management Devices including Roundabouts. (The maintained horizontal illuminance is not to be less than 3.5 lux).

9.8.9 Where a pedestrian crossing has been installed it shall be lit in accordance with AS 1158.4 – 2009, Lighting of Pedestrian Crossings.

9.8.10 Lighting of entry points to pathways and cycleways shall be achieved by the selected placement of a road light nearby.

9.8.11 Additional lighting shall be provided at a designated bus stop facility; the design shall include the entry and exit lengths of the bus stop.

9.8.12 Lighting columns are to be offset a minimum of 820mm (+/- 20mm) from the invert of kerb and channel to centre of the pole. For a road with a flush kerb or a low density residential road that has a table drain instead of layback kerb and channel, the lighting column is to be offset 1300mm (+/- 20mm) from the outer edge of traffic lane to centre of the pole.

9.8.13 Where required to clear conflicts e.g. stormwater, sub-soil drain flushing points, water supply infrastructure, sewerage infrastructure, lighting columns can be located up to 0.5m in either direction from boundary prolongation along the roadway and at an alignment up to 1.1m from the invert of the kerb and channel.

9.8.14 The placement of lighting columns shall not occur within 1m of any water main that crosses the road.

9.8.15 Lighting columns that are to be installed at all new subdivisions and developments are to be a four hole base plate mounted steel pole as specified in the Ergon Energy Lighting Construction Manual.

9.8.16 When joining to an existing installation or extending a subdivision in stages, lighting columns and luminaires shall match as near as possible with the existing infrastructure.

9.8.17 The use of aeroscreen luminaires may be required when road lighting is installed near airports, refer to the Civil Aviation Safety Authority Australia – Manual of Standards Part 139.

9.8.18 Documentation shall be submitted to Council with the design submission demonstrating compliance with the AS/NZS 1158.

9.8.19 Foundation footing for minor road lighting must be cast in situ, a precast concrete foundation is not permitted without prior approval of council.

9.8.20 Existing timber street light poles are to be replaced with a steel lighting column when overhead powerlines are augmented underground.

DG 9.9 Park Lighting

9.9.1 Lighting requirements in parks will be advised by Council in accordance with the classification of the park.

9.9.2 A point of supply is required to all parks location will be advised by Council in consultation with Ergon Energy

9.9.3 Pathways or cycle ways within parks that require lighting shall be lit to the minimum lighting category P3 or above as deemed appropriate from the selection criteria tabled in AS/NZS 1158.

DG 9.10 Gas

9.10.1 Gas reticulation within a new subdivision or development may be installed subject to Council's approval.

9.10.2 Where reticulated gas is approved by Council, the gas service shall be located in the shared trench arrangement. Refer Ergon Energy Standard Drawings 5162/1 and 5162/2 for shared trenching arrangements that incorporates telecommunications, electrical and gas services.

9.10.3 The location of a central storage facility shall be on a separate freehold parcel of land with appropriate security to the satisfaction of the Council.

9.10.4 The Developer shall be responsible for obtaining all relevant approvals and licences necessary for installation.

DG 10 – DESIGN GUIDELINES – Landscaping

General

DG 10.1 Scope

10.1.1 This section sets out the minimum standards for landscaping within new subdivisions and on-street works for private developments.

10.1.2 This manual contains procedures for the design of:

- 10.1.2.1 On-street landscaping works, including buffers mounds, traffic islands and roundabouts; and
- 10.1.2.2 Public Open Spaces including, signage, furniture and playgrounds.

DG 10.2 Objective

10.2.1 The objective of this manual is to define Councils minimum landscaping requirements and to assist the designer in achieving the following:

- 10.2.1.1 Visually enhancement of the streetscapes;
- 10.2.1.2 Enlargement of the habitat and plant diversity in order to provide a food source for indigenous fauna;
- 10.2.1.3 Enhanced living environments by reducing the impacts of noise, fumes and car headlights;

10.2.1.4 Provision of shade trees; and
10.2.1.5 Crime prevention through environmental design (CPTED).

DG 10.3 Reference Documents

10.3.1 Whitsunday Regional Council:
10.3.1.1 Planning Scheme – Landscaping Code;
10.3.1.2 Local Laws and Policies;
10.3.1.3 Levels of Service/Operations Plan – Parks & Gardens
10.3.2 Australian Standards:
10.3.2.1 AS/NZS 1158.3-2005 Pedestrian area (Category P) lighting
10.3.2.2 AS 3500 National Plumbing and Drainage, Part 1.2 Water Supply – Acceptable Solutions
10.3.2.3 AS/NZS 4486 Playgrounds and playground equipment - Development, installation, inspection, maintenance and operation.
10.3.3 Wet Tropics Weed Pocket Guide

DG 10.4 General

10.4.1 At the time of development, the developer shall provide all on-street landscaping, this shall include street tree planting, grass establishment to road verges, and landscaping of traffic islands and buffer mounds.
10.4.2 Council should be consulted prior to commencement of the design to ascertain whether there are any site specific design requirements.
10.4.3 Some Local Authorities have plant selection guidelines and suburban planting themes designers are encouraged to consult with Council in the preparation of the landscaping design.
10.4.4 Landscaping plans shall be prepared by a person of professional standing in the field of Landscape architecture or landscape design, at a standard acceptable to Council.
10.4.5 CCA treated timber is not to be used for the construction of Council assets.
10.4.6 ACQ, Copper Azole, LOSP, or another alternative timber treatment, will be considered for approval by Council, so long as each individual piece of timber is clearly marked to show the treatment type, e.g. 'ACQ, Copper Azole, LOSP' or other similar text as appropriate. In some instances, (e.g. high use public areas), Council will require these markings to be burn branded into exposed timber areas also. In this regard reference should also be made to Council specific standard drawings for additional marking of treated timber elements that are used in the construction of Council assets in high use public areas.

DG 10.5 Existing Vegetation

10.5.1 In order to retain any established landscape character, all trees located within existing road reserves shall be protected and retained unless approved otherwise by Council.

10.5.2 Significant trees located within the verge of new road reserves shall be protected wherever possible and where advised by Council. This may require the adoption of non-standard utility service alignments therefore designers are encouraged to discuss proposed solutions with Council.

DG 10.6 Verges

10.6.1 All verges shall be covered full width with topsoil to a depth of not less than 50mm and shall be lightly compacted and grassed in accordance with Councils minimum standards and Specifications.

10.6.2 In order to guarantee a high standard of maintenance all verges are to be in a mowable condition, free from rocks and loose stones, and graded to even-running contours.

10.6.3 Aside from grass establishment and tree planting, landscaping of the verge between the property boundary and kerb is not a Council requirement. However, additional landscaping within the verge may be considered subject to Council approval. Generally, any additional landscaping shall be clear of underground services or alternatively limited to ground covers or small shrubs less than in 500mm height.

10.6.4 Should any excavation of the underground services in this vicinity of the additional verge landscaping be required, thus destroying the vegetation, Council will not be held responsible for plant replacement. Maintenance of planting in this vicinity will be the sole responsibility of the adjacent property owner/occupier.

DG 10.7 Street Tree Planting

10.7.1 The ultimate aim of street tree planting is to provide:

10.7.1.1 An attractive streetscape with character and charm. An individual character may be obtained by using a specific tree species for each street;

10.7.1.2 Shade, and the reduction of heat and glare from the road pavement. Parked cars may remain cool during the summer months; and

10.7.1.3 Habitat provision and enhancement. Native flowering trees provide a source of food and shelter for insects, birds and animals.

10.7.2 An avenue of trees of identical species and size planted at regular intervals has far greater visual and aesthetic impact than a mis-matched selection of

incompatible trees. In order to promote continuity in new streetscapes, a single species should be nominated for each street.

10.7.3 Where a development is occurring in an established street setting, an assessment of the existing trees should be made, and the most prevalent and healthy species chosen for verge planting.

10.7.4 Tree species shall be selected for their suitability to the site conditions (e.g. small trees under power lines, drought resistance, soil suitability) and shall be in accordance with any relevant Council plant selection guidelines and suburban planting themes.

10.7.5 To ensure consistency in growth rate and form all trees shall be no less than two (2) metres in height and shall be well established in their root and branch formation. A minimum 45 litre container should ensure a good survival factor.

10.7.6 The alignment and placement of street trees measured from the tree at the estimated ultimate size shall be in accordance with the following:

- 10.7.6.1 Greater than 4.0 metres from electricity or telecommunication poles or pillars;
- 10.7.6.2 Greater than 7.5 metres from streetlights to ensure effective street lighting;
- 10.7.6.3 Greater than 4.0 metre radius from high voltage transmission lines;
- 10.7.6.4 Greater than 2.0 metres from stormwater drainage pits;
- 10.7.6.5 Trees are to be planted in the front of properties at the centre of the lot at a rate of one per lot, or at the necessary rate to provide a maximum 20 metre spacing;
- 10.7.6.6 Trees are to be placed a minimum 1000mm from the back of kerb where achievable;
- 10.7.6.7 Trees are to be placed a minimum of three (3) metres from driveway;
- 10.7.6.8 At intersections trees are to be placed a minimum of ten (10) metres back from the face of the kerb of the adjoining street;
- 10.7.6.9 Trees are to be located so as not to obstruct access to any services or signage; and Trees are to be located so as not to obstruct pedestrian or vehicular traffic, nor create traffic hazard or cause damage to existing trees.

10.7.7 Street trees shall be planted in accordance with Standard Drawings SEQ G-010 – SEQ G-012 and installed in accordance with Council Specifications.

10.7.8 Street trees should not be a plant listed in:

- 10.7.8.1 Land Protection (Pest and Stock Route Management) Regulation;
- 10.7.8.2 Pest Management Plan; or
- 10.7.8.3 Wet Tropics Management Authority Publication Agricultural and Environmental Weeds.

DG 10.8 Buffer Zones

10.8.1 Mounds / Buffers adjacent to major roads controlled by the Department of Main Roads must comply with the requirements as specified by the Department of

Main Roads and as detailed herein. Generally, these buffers are ten (10) metres wide along the full frontage of the major road.

10.8.2 The aim of the Buffer Mound landscaping is to: Reduce the visual impact of adjacent development by screening rooflines; Reduce the visual impact of proposed noise attenuation barriers, which may be constructed at some time in the future on the mound crest; Reduce the visual impact of the mound's severe geometric landform by screening with foliage to ground level; Introduce a "natural" vegetated landscape appearance by replacing open agricultural land with a facade of dense planting; Reinforce the local character by indigenous tree and shrub species; and Provide additional functions, i.e.. shade over adjacent bikeways.

10.8.3 In order to accomplish the above aims, the species mix of plant selection should incorporate a range of species to provide variation in form, colour and texture, to contribute to a natural appearance. The front line of planting should have foliage down to ground level.

10.8.4 To ensure that buffer mounds are given the best possible chance of successful establishment and prolonged survival, a temporary irrigation system is required to be installed to the mounding. The preferred system is with a drip-style irrigation system or similar below the surface of the mulch, which reduces the chances of vandalism and reduces excess water loss as a result of runoff and evaporation.

10.8.5 Strong recognisable character is further reinforced by repetition of some suitable species as street and park trees in the adjacent subdivision

10.8.6 Use of disciplined plant selection based on themes such as colour, texture, or natural species associations, in addition to site suitability, creates higher quality landscapes than random assortments of nursery stock chosen solely for short notice availability and growth suitability.

10.8.7 Advance ordering and growing on contracts are desirable to ensure availability of desired species in the large quantities required.

10.8.8 Local rainforest species, which typify and reinforce the regions image, are preferred. Most are hardy, long-lived and have dense growth, which suppress weeds and reduce long-term maintenance.

10.8.9 The landscaping shall be designed so as not to create a safety risk to people using the mound and adjacent areas (i.e. no thorns, heavy nuts or poisonous fruits or berries).

10.8.10 No tree planting shall be done higher than 1/3 from the base of mound i.e. no trees on top of the mound.

Public Open Space

DG 10.9 General

10.9.1 At the time of development, the developer shall landscape all public open spaces to the satisfaction of Council and in accordance with this manual and Council's Levels of Service/Operations Plan.

10.9.2 Where a development is proposing to undertake any work within existing or proposed park a landscaping plan shall be prepared for consideration by Council.

10.9.3 Developers should have regard to Table 10.1 – Guidelines for Embellishment.

Table 10.1 – Guidelines for Embellishment

		Guidelines for Embellishment													
Classification	**Profile**	**Playground**	**BBQ' s**	**Shelters**	**Amenities**	**Structures**	**Irrigation**	**Mulched Beds**	**Manicured Lawns**	**Grassed Areas**	**Dog Park Areas**	**Exercise Equipment**	**Shade Trees**	**Park Furniture**	**Sporting Equipment**
Regional (Recreational)	High	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
District/ Cemetery (Recreational)	High	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
Local (Recreational))	Medium							✓		✓			✓	✓	
Local (Recreational)	Low									✓			✓		
District & Regional Sports Park	High	✓		✓	✓	✓	✓			✓			✓	✓	✓

10.9.4 Landscaping plans shall be prepared by a person of professional standing in the field of landscape architecture or landscape design, at a standard acceptable to Council.

10.9.5 CCA treated timber is not to be used for the construction of Council assets.

10.9.6 ACQ, Copper Azole, LOSP, or another alternative timber treatment will be considered for approval by Council, so long as each individual piece of timber is clearly marked to show the treatment type, e.g. 'ACQ, Copper Azole, LOSP' or other similar text as appropriate. In some instances, (e.g. high use public

areas), Council will require these markings to be burn branded into exposed timber areas also. In this regard reference should also be made to Council specific standard drawings for additional marking of treated timber elements that are used in the construction of Council assets in high use public areas.

DG 10.10 Crime Prevention through Environmental Design

10.10.1 It is important when designing parks that the principles of crime prevention through environmental design are considered, in particular:

10.10.1.1 Dense stands of vegetation should be confined to park peripheries, and should not be located alongside paths and play equipment. Vegetation should not block casual surveillance of picnic and play areas from adjacent residences;

10.10.1.2 Landscaping should not restrict sightlines and opportunities for natural surveillance within and of a site therefore all new vegetation around centres of activity should be single clean trunked trees with shrubs which do not grow beyond 500 mm height. This will avoid the problem of concealment and allow a greater area of surveillance from the road;

10.10.1.3 Lighting where required should be sufficient to deter loitering and vandalism; Large shrubs and trees should be planted in such a way as to prevent or reduce illicit access to buildings and neighbouring properties; and

10.10.1.4 Safety in large parks or areas of vegetation within a development may be enhanced by planting trees in thin strips which maximises the number of trees planted but which also restricts the ability of offenders to hide within a “mass” of vegetation.

DG 10.11 Treatment to Park Boundaries

10.11.1 Vehicles should be prevented from driving into parks, drainage reserves and public open spaces by the provision of barriers along the road frontages. These may be log barriers, bollards or natural features such as existing vegetation or newly planted and staked trees. Access for maintenance vehicles shall be provided through a lockable gate or removable bollard.

10.11.2 Definition of the park side boundaries should be indicated by installing log barrier fencing or bollards at approximately 20 metre centres, down each side. These should be offset from the surveyed boundary by 100 mm in order to allow future erection of private fencing without having to remove Council’s markers. Definition of the park boundary is intended to deter encroachment onto park by adjacent private properties and to define the park limits.

10.11.3 Log barriers and bollards shall be in accordance with Council’s Standard Drawing, unless otherwise approved by Council.

DG 10.12 Internal Circulation

10.12.1 The park layout should be designed to ensure that internal circulation or movement within the park is:
- 10.12.1.1 Safe;
- 10.12.1.2 Unencumbered;
- 10.12.1.3 Highly visible internally and externally; and
- 10.12.1.4 Linked to external cycle and pedestrian networks.

10.12.2 Design features including access points, street frontages, carparks, pedestrian/bike paths, park equipment and lighting should be considered.

10.12.3 Design of paths, car parking and access points should consider the needs of people with mobility challenges. Pathways shall be in accordance with Design manual D1 and comply with accessibility standards.

DG 10.13 Planting

10.13.1 Council parks seek to provide a range of recreation opportunities and there is scope to utilise planting design to help achieve this objective, options include:
- 10.13.1.1 Shade trees evenly planted throughout the site to maximise protection from the sun;
- 10.13.1.2 Island or corridor planting to concentrate trees for easy maintenance and encourage bird life for pleasure viewing;
- 10.13.1.3 Grouped planting will also provide shade adjacent to open space to allow unencumbered active play areas; and
- 10.13.1.4 Lines of tree planting to define edges of informal kick-about areas.

10.13.2 A minimum 75% of the proposed tree planting should be endemic, and species should be selected on their adaptability to site conditions, and their value to local fauna. Where the proposed park adjoins an area of established native vegetation, an extension of this habitat into the park should be implemented by using compatible species. The designer should also be encouraged to use rare and endangered plant species, or species proven to have excellent bird, butterfly and insect attracting qualities.

10.13.3 In order to promote the unique landscape characteristics of the region exotic flowering trees and non-native palms should only be used as features or emphasis, where necessary.

10.13.4 Some Local Authorities have plant selection guidelines and suburban planting themes and designers are encouraged to consult with Council in the preparation of the landscaping design.

10.13.5 Street trees should not be a plant listed in:
- 10.13.5.1 Land Protection (Pest and Stock Route Management) Regulation;
- 10.13.5.2 Local governments Pest Management Plan; and

10.13.5.3 Publication, Agricultural and Environmental Weeds (Wet Tropics Management Authority).

DG 10.14 Grassing

10.14.1 All parks shall be covered with topsoil to a depth of not less than 50mm and shall be lightly compacted and grassed in accordance with Councils' minimum standards and specifications.

10.14.2 In order to guarantee a high standard of maintenance all parks shall be in a mowable condition, free from rocks and loose stones, and graded to evenrunning contours.

10.14.3 Grass should be established within the proposed park as quickly as possible in order to avoid erosion and sedimentation to the local waterways, and prevent the establishment of weeds in accordance with Council's Manuals and Specifications.

DG 10.15 Mounding

10.15.1 Mounding may be used within the park design to provide topographical interest, to emphasise views, to help screen adjacent properties or eyesores, or as part of the internal design. The mounds should not exceed a gradient of 25% (1 in 4) in order to reduce erosion and allow mowing. Planting of trees and shrubs over the mound will further emphasise height and shape.

10.15.2 Care should be given to ensuring that the mound does not restrict visibility into and out of the park thus threatening the safety of users or provide unwanted visibility into private properties.

DG 10.16 Furniture

10.16.1 Park furniture should reflect the intended function of the park and compliment any distinguishing features present e.g. seating situated to maximise a view scape. Some preferred features of furniture include:

10.16.1.1 Park benches located under a natural or built shade structure to allow day long use. If the shade is built, it should have an impervious roof e.g. colourbond to provide shelter during rain;

10.16.1.2 Well drained ground and hard surfacing below any structure. Surface material could be pavers, coloured or exposed aggregate concrete etc;

10.16.1.3 Shade structures should maximise protection from the sun during the hours of 11 am - 3 pm; and

10.16.1.4 Refuse bins should be located for ease of use and pickup by refuse trucks e.g. adjacent to playgrounds or picnic areas, at park exits.

10.16.2 Designs of furniture should reflect a strong aesthetic and vandal resistant appearance.

10.16.3 Where possible, natural features may be used e.g. mounding for seating, trees or natural rock for bollards to simulate park furniture; and

10.16.4 Some Local Authorities have park furniture themes and master plans designers are encouraged to consult with Council in the preparation of the landscaping design.

DG 10.17 Signage and Interpretation

10.17.1 A park name sign is to be provided. The park name is to be submitted to Council for approval with the landscaping drawings. The proposed name is to preferably have the same theme as the subdivision's street names. The name is to be creative and imaginative in order to appeal to children for local parks and to adults for district and regional parks.

10.17.2 If the park has any historic, cultural or natural value the provision of interpretive signage will provide further interest to local users. Council can provide assistance in developing interpretive concepts

DG 10.18 Lighting

10.18.1 Lighting requirements within parks will be advised by Council in accordance with the classification of the park.

10.18.2 As a guide 2 park lights on poles shall be provided for every park of 4,000 square metres. However, this may vary depending upon the shape and alignment of the park, and the presence of existing vegetation. Generally, parks should be well lit providing a safe nocturnal environment for local users. Council will consider the relaxation of one or both lights where existing street lights are adjacent to the park area. Underground power should be provided to each pole. Light fittings should be vandal resistant.

10.18.3 Pathways within parks that require lighting shall be lit to the lighting category determined from the road Lighting Standards AS/NZS 1158.3 Pedestrian area (Category P) lighting.

DG 10.19 Provision of Water

10.19.1 Facilities for drinking, such as drinking tap / bubbler, shall be provided for each park area, and should be located near active recreational areas, adjacent to a well-used access route, and within an area serviceable from the road frontage.

A soak-away trench shall be provided to the base of each tap to prevent ponding and waterlogging.

10.19.2 In order to irrigate the park 1 water service connection in a cast iron valve box should be provided for each 2,000 square metre of park and should be a minimum 40 mm diameter with hose connection.

10.19.3 As an alternative, irrigation may be provided, on condition that the proposed system complies with the Council Standard Specification for Irrigation.

DG 10.20 Water Features

10.20.1 Water features should not be included in infrastructure to be handed to Council.

DG 10.21 Playgrounds

10.21.1 To ensure play equipment is as safe as possible and appropriate for the intended users, it should conform to the current and relevant Australian Standards for playgrounds and play areas and additional standards as may be established by Council.

10.21.2 Where playground equipment is required by Council as a condition of the development permit of the subdivision, or proposed to be installed by the developer, the following requirements should be considered and incorporated into the design:

10.21.2.1 Type of play equipment proposed should be selected in consultation with Council;

10.21.2.2 The age range of the users should influence the type of equipment provided; and

10.21.2.3 The siting of the playground should not infringe upon adjacent residential properties; a minimum distance of 10 metres between equipment and park boundaries should be provided and suitably landscaped with a minimum of 3 metre of screen planting to reduce noise and visual impact. Such landscaping is to be consistent with CPTED Principles.

10.21.3 To conform to safety requirements impact absorbing surfacing should be installed to the play area, e.g. sand, continuous rubberised matting, shredded car tyres.

10.21.4 Shade cover over playgrounds is to be provided, in order to encourage day long use. Preferably this should be a permanent shade structure approved by Council, however shade trees planted at maximum 6 metre centres around the safety area are acceptable.

10.21.5 The provision of seating overlooking the playground will be required.

10.21.6 Bench seating should be of the recycled plastic or aluminium type.

DG 10.22 Maintenance

10.22.1 The design of a park should carefully consider long-term maintenance requirements. Mulched garden beds containing trees and shrubs are easier to mow around than numerous small trees and shrubs planted individually throughout the grassed areas.

10.22.2 Where single shade trees occur they should be mulched to 200 mm depth in a minimum 1.2 metre diameter circle, thus avoiding damage to trunks by mowers or whipper snippers.

10.22.3 Access to the parks, drainage reserves and public open spaces for maintenance vehicles should be via a lockable gate or removable bollards.

10.22.4 A maintenance programme is required to be submitted to Council with the submission of the landscape designs. The programme should be prepared by the Landscape Architect / Designer and should detail all proposed maintenance works.

Irrigation

DG 10.23 General

10.23.1 All irrigation systems connected to Council's water supply shall be installed to satisfaction of Council. The installation of water meters, backflow prevention device and isolation valves are mandatory in all irrigation system. Refer AS 3500.

10.23.2 The installation of an irrigation system to all landscaped traffic islands and roundabouts is mandatory.

10.23.3 An irrigation plan prepared by an irrigation consultant, shall be submitted to Council for approval together with the landscaping plans, and the proposed planting plans for the traffic islands / roundabouts.

10.23.4 The design of all watering systems must ensure an efficient and economical application of water. Such systems are to be designed to use low water application, and shall run only during Council's nominated times.

10.23.5 The irrigation system shall use the following components and shall be installed in accordance with Council Specifications:

10.23.5.1 A backflow prevention unit, installed to the requirements of AS 3500;

10.23.5.2 20mm, 25mm or 32mm or 40mm diameter blue line poly pipework (as required) to garden bed areas; laid in a ring around the periphery of each garden bed;

10.23.5.3 Pop-up sprinklers to periphery of garden beds. Fixed shrub heads to centre of islands only; and

10.23.5.4 Automatically operated controller in PVC box laid flush with finished ground level.

10.23.6 All irrigation pipework installed under roadways shall be laid in minimum 100mm dia. uPVC Class 9 conduit.

10.23.7 The water connection and installation of the irrigation system shall be carried out by Council personnel or an approved contractor at the developers / applicants cost. The maintenance period for irrigation works shall be 12 months and shall run concurrently with the "On Maintenance" / establishment period for landscaping works. Thereafter all maintenance and watering will be the responsibility of the Council.

10.23.8 The installation of an irrigation system on Council property, other than buffer mounds, traffic islands and roundabouts, e.g. verges will not be permitted unless:

10.23.8.1 The system is separate from the development and all pipework is located adjacent to the kerb and channel; and

10.23.8.2 Or the verge is irrigated from sprinklers that fall within the development property boundaries.

10.23.9 These requirements have come about in order to prohibit the installation of water lines across the underground services located within the verge. These water lines would not appear in Council records and are therefore at risk of breakage during service repair work/trench excavation.

10.23.10 If a separate irrigation system within the verge is desired, the developer will be required to pay all installation costs, which include:

10.23.10.1 Tapping into main;

10.23.10.2 Installation of 25mm diameter (typical) backflow prevention device;

10.23.10.3 Installation of pipework and pop-up sprinklers; and

10.23.10.4 Installation of solenoid valves and automatic controller.

SG – Specification Guidelines

SG 1 – Earthworks

General

SG 1.1 Scope

1.1.1 This specification details all requirements pertaining to earthworks operations associated with construction sites. This specification excludes earthworks associated with roadworks construction.

1.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

1.1.3 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

SG 1.2 Reference Documents

1.2.1 Australian Standards:

1.2.1.1 AS 3798 Guideline on Earthworks for Commercial and Residential Developments

Materials

SG 1.3 Topsoil

1.3.1 Topsoil is defined as surface soils normally high in organic matter and contaminated by residual grass seed and grass roots. Topsoil shall be free from large roots, stones, rocks and unsuitable material as defined below.

SG 1.4 Unsuitable Material

1.4.1 Reference is made to AS 3798 Section 4.2 "Unsuitable Materials" for definitions and guidelines regarding unsuitable materials with regard to earthworks operations.

SG 1.5 Suitable Material

1.5.1 Reference is made to AS 3798 Section 4.3 "Suitable Materials" for the definition and guidelines regarding acceptable materials for earthworks operations.

Construction

SG 1.6 General

1.6.1 Specific reference is made to AS 3798 in relation all activities pertaining to earthworks operations. Specific construction details are noted in Section 6 of AS 3798 and all appropriate methods of testing, frequency of testing and reporting procedures are to be in accordance with this Australian Standard.

SG 1.7 Protection of Earthworks

1.7.1 The Contractor's responsibility for care of the works shall include the protection of earthworks in accordance with the approved Erosion and Sediment Control Strategy.

1.7.2 The Contractor shall install effective erosion and sedimentation control measures, prior to commencing earthworks, and shall maintain these control measures as required.

1.7.3 Adequate drainage of all working areas shall be maintained throughout the period of construction to ensure run-off of water without ponding, except where ponding forms part of a planned erosion and sedimentation control system.

1.7.4 When rain is likely or when work is not proposed to continue in a working area on the following day, precautions shall be taken to minimise ingress of any excess water into earthworks material. Ripped material remaining in cuttings and material placed on embankments shall be sealed off by adequate compaction to provide a smooth tight surface.

1.7.5 Should insitu or stockpiled material become over wet as a result of the Contractor not providing adequate protection of earthworks, the Contractor shall be responsible for replacing and/or drying out the material and for any consequent delays to the operations.

SG 1.8 Clearing and Grubbing

1.8.1 Clearing and grubbing operations shall be in accordance with AS 3798 Section 6.1.4.

1.8.2 The extent of clearing and grubbing shall be taken to mean the removal and disposal of:

- 1.8.2.1 Trees, Shrubs and overhanging branches, both living and dead;
- 1.8.2.2 Tree stumps and roots to a depth not less than 300mm below ground surface;
- 1.8.2.3 Rocks, rubbish and other artificial obstructions from the ground surface;
- 1.8.2.4 Abandoned services to a depth not less than 300mm below ground surface;
- 1.8.2.5 Old foundations, buildings and structures;
- 1.8.2.6 Minor made structures (such as fences);
- 1.8.2.7 Other materials, which are unsuitable for use in the works.

1.8.3 Un-grubbed rocks under embankments may be left undisturbed providing there is a depth of at least 600mm of earth covering over them when the filling operations are completed.

1.8.4 Unless otherwise specified or directed, the area to be cleared is the minimum width required to construct the works plus a margin of 2m beyond tops of cuts and toes of embankments. The area to be cleared and grubbed should be shown on a plan, preferably the Erosion and Sediment Control Plan.

1.8.5 Any trees, shrubs and overhanging branches identified on the Project Drawings to be retained or protected shall be clearly marked by the contractor prior to commencing clearing operations.

1.8.6 Beyond the areas to be cleared only those trees, shrubs and over hanging branches which directly interfere with the construction of the works shall be removed or pruned as necessary.

SG 1.9 Topsoil Operations

1.9.1 Stripping of topsoil shall be in accordance with AS 3798 Section 6.1.5.

1.9.2 Removal of topsoil shall only commence after erosion and sedimentation controls have been implemented and when clearing, grubbing and disposal of materials have been completed on that section of the Works.

1.9.3 Topsoil throughout the extent of the work shall be removed and stockpiled separately clear of the work with care taken to avoid contamination by other materials.

1.9.4 Topsoil material stripped from the site shall be stockpiled for later use in spreading on footpaths, allotments and parkland areas.

1.9.5 Topsoil stockpiles shall not contain any timber or other rubbish and shall be trimmed to a regular shape.

1.9.6 To minimise erosion, stockpiles are to be protected by effective usage of erosion and sediment control devises, which are to be defined within the Erosion and Sediment Control Management Plan.

1.9.7 Where seeding of stockpiles to encourage vegetation cover is specified, such work shall be carried out in accordance with the Specification S8 LANDSCAPING.

1.9.8 Nominally 75mm depth of topsoil is to be re-spread over such areas with an absolute minimum of 40mm material to be provided in any one location.

SG 1.10 General Earthworks

1.10.1 Placement and Compaction of earthworks shall be in accordance with AS 3798 Sections 5 and 6.

1.10.2 The methods of testing and frequency of testing shall be in accordance with AS 3798 Sections 7 and 8.

1.10.3 Unless a higher level of testing is specified or directed the minimum level of geotechnical testing services to be accorded earthworks activities shall be as determined by Level 2 in Appendix B of AS 3798.

1.10.4 All testing is to be carried out by a NATA registered laboratory with appropriate accreditation and suitably qualified personnel.

SG 1.11 Excavations

1.11.1 Materials encountered in excavation shall be loosened and broken down as required so that they are acceptable for incorporation in the works.

1.11.2 All excavations shall be constructed to the shape and slopes shown on the approved Project Documents.

1.11.3 Batter shall be trimmed neatly to the shapes specified and shall be free of loose or unstable material.

1.11.4 Horizontal tolerances for the excavation of batters, measured at right angles to the batter line, shall be – 50mm +250mm (where the + tolerance is in the direction which increases the width of excavation).

1.11.5 Vertical tolerances for all excavation shall be ± 50mm.6. When completed all culvert excavations, benches, berms and drains shall be free draining.

1.11.6 At all times the requirements of the Workplace Health and Safety Act shall be complied with and all works shall be made safe during the performance of such activities.

SG 1.12 Embankments/Fill Areas

1.12.1 All embankments and fill areas shall be constructed to the shape and slopes shown on the approved Project Documents.

1.12.2 When completed, the average planes of the batters of embankments shall conform to those shown on the approved Project Documents.

1.12.3 Horizontal tolerances for the embankment batters, measured at right angles to the batter line, shall be – 0mm +250mm (where the + tolerance is in the direction which increases the width of embankment).

1.12.4 Vertical tolerances for all embankments / fill areas, shall be ± 50mm except where such fill defines the subgrade level for a structure, then the vertical tolerances are to be +15mm – 30mm.

1.12.5 When completed all embankments / fill areas shall be free draining.

1.12.6 At all times the requirements of the Workplace Health and Safety Act shall be complied with and all works shall be made safe during the performance of such activities.

1.12.7 Stabilise final embankment and fill areas with suitable revegetation, landscaping, turf or grass seeding. These areas and works should be shown in the landscape plans.

SG 1.13 Trenching Operations

1.13.1 The excavation for trenches shall be taken out to the exact alignment, width and level as shown on the Project Drawings and associated specifications.

1.13.2 Trenches shall not be excavated wider than the dimensions shown on these relevant drawings and the Contractor shall take all precautions as necessary to ensure that the excavation is made in a careful manner and that it is rendered secure and safe by all appropriate means.

1.13.3 At all times the requirements of the Workplace Health and Safety Act shall be complied with and all works shall be made safe during the performance of such activities.

1.13.4 Suitable drainage shall be accorded to all trenching activities and de-watering of trenches shall be undertaken should infiltration of water occur. All materials excavated from trenches shall be separated by material type for latter inclusion into the works or disposal from the site should these materials be deemed unsuitable in accordance with the requirements of AS 3798.

1.13.5 Excavation and trenching operations shall proceed with sufficient resources to ensure uninterrupted progress and continuance of the works with subsequent services. Completion and backfilling are to be undertaken as soon as possible to minimise the extent of site open to the effects of the environment.

SG 2 – Road Pavements

General

SG 2.1 Scope

1.1.1 This specification details all requirements pertaining to the construction of flexible road pavements, including kerbing, subsoil drainage and trimming of verges.

1.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

SG 2.2 Reference Documents

2.2.1 Australian Standards:
- 2.2.1.1 AS1289 Methods of Testing Soils for Engineering Purposes
- 2.2.1.2 AS2439.1 Perforated Drainage Pipe and Associated Fittings
- 2.2.1.3 AS3706.7 Determination of Pore-sized Distribution – Dry Sieving Methods

2.2.2 All Australian Standards referenced in this specification shall be the current edition.

2.2.3 Department of Main Roads Standard Specifications
- 2.2.3.1 MRS 11.03 Drainage, Retaining Structures and Protective Treatments
- 2.2.3.2 MRS 11.04 General Earthwork
- 2.2.3.3 MRS 11.05 Unbound Pavements
- 2.2.3.4 MRS 11.11 Sprayed Bitumen Surfacing (Excluding Emulsions)
- 2.2.3.5 MRS 11.14 Road Furniture
- 2.2.3.6 MRS 11.17 Bitumen
- 2.2.3.7 MRS 11.19 Bitumen Cutter and Flux Oils
- 2.2.3.8 MRS 11.20 Cutback Bitumen
- 2.2.3.9 MRS 11.22 Supply of Cover Aggregate
- 2.2.3.10 MRS 11.30 Dense Graded Asphalt Pavements
- 2.2.3.11 MRS 11.45 Pavement Marking Department of Main Roads Publications
- 2.2.3.12 Manual of Uniform Traffic Control Devices)

SG 2.3 Pavement Material

2.3.1 Pavement materials used for pavement construction shall comply with Table S2.1 unless otherwise approved by the relevant authority.

Table S2.1 Pavement Materials

Pavement Material	Type of Material Permissable	Grading	CBR (Minimum)
Subgrade Replacement	Type 2.5	B, C or D	15
Sub-base (for Access Places and Access Streets)	Type 2.3	B, C or D	45
Sub-base (for all roads of Major Collector or higher in the hierarchy)	Type 2.2	B, C or D	60
Base (for Access Places and Access Streets)	Type 2.2	B, C or D	60
Base (for all roads of Major Collector or higher in the hierarchy)	Type 2.1	B or C	80

2.3.2 All references to material type in the above table refer to the Main Roads Standard Specification MRS11.05 "Unbound Pavements".

2.3.3 All materials shall be sourced from a Quality Assured material supplier and the results of the manufacturer's testing to assure the quality of the product shall be incorporated with the Contractor's Quality records.

SG 2.4 Asphaltic Concrete Surfacing

2.3.4 For surfacing on pavements with nominal depth 30mm, the material quality requirements, material quality compliance testing requirements and all other matters pertaining to Asphaltic Concrete road pavement surfacing shall conform to the requirements as specified in Austroads.

2.3.5 For surfacing on pavements with nominal depths greater than 30mm, the material quality requirements, material quality compliance testing requirements and all other matters pertaining to Asphaltic Concrete road pavement surfacing shall conform to the appropriate Main Roads Standard Specification (Main Roads Specification MRS 11.30 "Dense Graded Asphalt Pavements").

SG 2.5 Sprayed Bitumen Surfacing

2.5.1 For surfacing of pavements with sprayed bitumen. the material quality requirements, material quality compliance testing requirements and all other

matters pertaining to hot bitumen road pavement surfacing shall conform to the appropriate Queensland Department of Main Roads Specification:

2.5.1.1 Main Roads Specification MRS 11.11 "Sprayed Bitumen Surfacing (Excluding Emulsions)"
2.5.1.2 Main Roads Specification MRS 11.17 " Bitumen"
2.5.1.3 Main Roads Specification MRS 11.19 " Bitumen Cutter and Flux Oils"
2.5.1.4 Main Roads Specification MRS 11.20 " Cutback Bitumen"
2.5.1.5 Main Roads Specification MRS 11.22 "Supply of Cover Aggregate"

SG 2.6 Concrete Interlocking Pavers

2.6.1 Concrete interlocking pavers shall be manufactured and supplied in accordance with the requirements of Specification S3 SEGMENTAL PAVING.

SG 2.7 Road Furniture

2.7.1 The manufacture, supply and material requirements appropriate to the specification for Road Signs and guidepost shall be as per the Main Roads Standard Specification "MRS11.14 Road Furniture".
2.7.2 All signs to be Class 1 reflectivity.
2.7.3 Signs located in concrete islands or medians shall be supplied with the "V Loc" socket system and fitted with anti-theft bolts.

SG 2.8 Pavement Marking

2.8.1 The manufacture, supply and material requirements appropriate to the specification for Pavement Marking shall be as per the Main Roads Standard Specification "MRS11.45 Pavement Marking".

Construction

SG 2.9 Inspection, Sampling & Testing

2.9.1 Inspection, sampling and testing of the pavement shall be in accordance with the requirements of this specification before, during and after the construction of the pavement.
2.9.2 All testing shall be carried out by a NATA registered laboratory with appropriate accreditation and suitably qualified personnel.

SG 2.10 Setout

2.10.1 The construction set-out for roadworks construction shall be by reference to a datum line established by a Registered Surveyor. The datum line may be either the road centreline, a pegged chainage offset line or any alternative datum suitable for the purposes of accurately setting out the roadworks in accordance with the drawings for the works.

SG 2.11 Clearing & Grubbing

2.11.1 All clearing and grubbing works shall be in accordance with the Specification for SG 1 EARTHWORKS.

SG 2.12 Topsoil Operations

2.12.1 All topsoil operations associated with roadworks construction (topsoil stripping, stockpiling and re-spreading), shall be in accordance with the Specification for SG 1 EARTHWORKS.

SG 2.13 Earthworks

2.13.1 All earthworks operations up to subgrade level shall comply with the requirements detailed in Main Roads Standard Specification MRS11.04 "General Earthworks".

SG 2.14 Trim and Compact Subgrade

2.14.1 The subgrade material is defined as the top 300mm of earthworks profiled and compacted upon which pavement materials are to be placed. The subgrade material shall be compacted in accordance with the requirements detailed in Main Roads Standard Specification MRS11.04 "General Earthworks", with the testing frequency and requirements are detailed herein.

2.14.2 The subgrade material shall be compacted to provide a relative compaction determined by AS1289 for a standard compactive effort as follows:

2.14.2.1 Minimum Dry Density Ratio (Cohesive soils) - 98%

2.14.2.2 Minimum Density Index (Cohesion less soils) - 80%

2.14.3 Testing frequency not less than one (1) test per 1000m^2 with a minimum number of three (3) tests per sample area being tested.

2.14.4 At least one (1) sample area shall be tested for type of subgrade material evident on site.

2.14.5 The subgrade material shall not include any "Unsuitable Material" as defined in Main Roads Standard Specification MRS 11.04 "General Earthworks" and shall be trimmed to the profile required to conform with the Project Drawings and the tolerances specified herein.

2.14.6 Where unsuitable material is encountered in the subgrade, a suitable "Subgrade Replacement Material" in accordance with the requirements of this specification shall be incorporated in the works.

2.14.7 In this instance, the unsuitable material shall be excavated to a level sufficient to obtain a sound foundation for the pavement. The compaction requirements and testing frequency noted previously shall apply to all operations involving any subgrade replacement material required for the works.

2.14.8 The tolerances appropriate to the construction of subgrade and to subgrade replacement material shall comply with the following:

2.14.8.1 Design Level Tolerance +15mm, - 30mm

2.14.8.2 Shape Tolerance of 25mm maximum deviation from a 3m straight edge laid in any direction.

2.14.9 Following completion of subgrade compaction, trimming, and satisfactory density testing, the whole of the subgrade area shall be inspected by proof rolling with a fully loaded single rear axle truck with a minimum axle loading of 8 tonne (or acceptable equivalent). Acceptable proof rolling shall be taken to be no visible signs of deformation or instability in the subgrade.

SG 2.15 Pavement Courses

2.15.1 The pavement course materials (Base Course and Sub-base Course) shall be transported from the material supplier to the spreading area without segregation and shall be placed at the correct moisture content.

2.15.2 The pavement course materials shall be spread in uniform loose layers on the prepared subgrade, subgrade replacement, or sub-base course and compacted to conform with the grades, profiles and cross sections as indicated on the Project Drawings and to the tolerances and compaction standards specified herein.

2.15.3 The thickness of any loose layers shall be such that after compaction it shall not be less than 100mm nor more than 200mm thick. Appropriate compaction equipment shall immediately follow the spreading and shaping of the loose materials and under no circumstances shall the materials be allowed to dry out before compaction.

2.15.4 After compaction of each pavement course, the whole of the surface shall be watered and rolled with a steel drum roller to give a hard, dense, tightly packed surface free of lenses, compaction planes and caking, in accordance with the tolerances specified herein.

2.15.5 No placement of base course material on the sub-base shall commence until the compaction standards and tolerances for construction of the lower layer have been inspected and confirmed satisfactory. [Hold Point].

2.15.6 The pavement course material shall be compacted to provide a relative compaction determined by AS1289 for a standard compactive effort as follows:
2.15.6.1 Base Course - 100%
2.15.6.2 Sub-base Courses - 100%

2.15.7 Testing frequency not less than one test per 500m^2 with a minimum of four (4) tests per sample area being tested for sand replacement method and two tests per 500 m^2 with a minimum" of eight (8) tests per sample for nuclear test.

2.15.8 The tolerances for the construction of the pavement courses shall comply with Table S2.2.

Table S2.2 Construction Tolerances

Course	Design Level Tolerance	Layer Thickness Tolerance	Shape Tolerance
Sub-base	+20mm -20mm	+40mm -20mm	25mm in 3m maximum
Base	+10mm -10mm	+15mm -15mm	15mm in 3m maximum
Overall	+20mm -10mm	+20mm -10mm	

SG 2.17 Asphaltic Concrete Surfacing

2.17.1 For Asphaltic Concrete surfacing with a nominal depth 30mm, the construction requirements, method of construction works, and compliance testing requirements for Asphaltic Concrete surfacing, shall be in accordance with Austroads

2.17.2 For Asphaltic Concrete surfacing with a nominal depth greater than 30mm, the construction requirements, method of construction works, and compliance testing requirements for Asphaltic Concrete surfacing, shall be in accordance with Main Roads Specification MRS 11.30 "Dense Graded Asphalt Pavements".

2.17.3 All roads greater than 10% gradient shall have a 10mm primer seal or applied to the base course prior to the placement of the Asphaltic Concrete. Alternate methods where approved by Council shall be as noted on the approved Project Drawings.

2.17.4 The tolerances appropriate to Asphaltic Concrete surfacing shall comply with the following:
2.17.4.1 Design Level Tolerance - +10mm, - 10mm
2.17.4.2 Layer Thickness Tolerance - +15mm, - 0mm
2.17.4.3 Shape Tolerance - 7mm in 3m Maximum (Any direction).

SG 2.18 Sprayed Bitumen Surfacing

2.18.1 The construction requirements, method of construction works, and compliance testing requirements for Hot Sprayed Bitumen surfacing, shall be in accordance with the following Queensland Department of Main Roads Specifications:

2.18.1.1 Main Roads Specification MRS 11.11 "Sprayed Bitumen Surfacing (Excluding Emulsions)"

2.18.1.2 Main Roads Specification MRS 11.17 " Bitumen"

2.18.1.3 Main Roads Specification MRS 11.19 " Bitumen Cutter and Flux Oils"

2.18.1.4 Main Roads Specification MRS 11.20 " Cutback Bitumen"

2.18.1.5 Main Roads Specification MRS 11.22 "Supply of Cover Aggregate"

SG 2.19 Concrete Segmental Pavers

2.19.1 Concrete interlocking pavers shall be constructed in accordance with the requirements of Specification S3 SEGMENTAL PAVING.

SG 2.20 Kerbing and Channelling

2.20.1 Concrete kerb, kerb and channel shall be constructed by a continuous slip form extrusion machine true to line and grade and to the profile for each kerb type in accordance with the Council's Standard Drawing.

2.20.2 Kerbing shall be constructed on sub base material compacted to 100% standard compaction as determined in accordance with the relevant Test Methods contained in AS 1289.

2.20.3 The finished kerbing shall be well compacted and shall have exposed surfaces free from voids and honeycombing.

2.20.4 Contraction joints shall be made at regular intervals not exceeding 3m. The joints shall be made by forming grooves 40mm deep and not more than 6mm wide in all exposed surfaces of the kerb and kerb and channel. All grooves shall be normal to the top surfaces and square to the alignments of the kerb and kerb and channel.

2.20.5 The horizontal and vertical alignments of the kerb and kerb and channel shall not vary from the design level by more than + 10mm, provided that:

2.20.5.1 The difference between the deviations from correct levels at any two points 30m apart shall not exceed 30mm

2.20.5.2 The deviation from a straight edge laid parallel to the centreline shall not exceed 10mm in 3m.

2.20.6 The invert of all channels shall be finished true to grade and alignment and no channelling in which water is found to pond will be accepted.

2.20.7 Any kerb or kerb and channel not true to line or with noticeable kinks, bends or other faults, or not of the required dimensions (considering the tolerances

specified herein), may be condemned and shall be broken out and removed from site.

SG 2.21 Subsoil Drainage

2.21.1 Unless otherwise detailed on the Project Drawings subsoil drainage shall be constructed beneath the kerbing on an alignment as shown on Council's Standard Drawing.

2.21.2 Subsoil drainage trenches, drainage pipe, backfill material, geotextile shall be constructed in accordance with the requirements of Main Roads Standard Specification MRS 11.03 "Drainage, Retaining Structures and Protective Treatments".

2.21.3 Subsoil Drainage cleanouts shall be constructed in accordance with the requirements of Council's Standard Drawing and shall preferably, be located with the upstream flushing point internally within a stormwater gully pit or manhole.

SG 2.22 Trim Verges and Batters

2.22.1 Following completion of all earthworks operations associated with roadworks construction, all verges and fill batters shall be graded and trimmed to the line and level indicated on the Project Drawings. Allowance shall be made in the final trimming operations for topsoiling and grassing activities.

2.22.2 Cut batters shall be lightly tined to a depth of 25 - 50mm prior to respreading of topsoil material.

SG2.23 Road Furniture and Pavement Marking

2.23.1 The construction of all Road Signs and associated Road Furniture shall comply with the requirements of the following:

- 2.23.1.1 Main Roads Standard Specification MRS 11.14 "Road Furniture"
- 2.23.1.2 Main Roads "Manual of Uniform Traffic Control Devices"
- 2.23.1.3 Council's Standard Drawing for Street Name Signs.
- 2.23.1.4 Council's Standard Drawing for Traffic Control Devices.

2.23.2 All Pavement Marking shall comply with the requirements of Main Roads Standard Specification MRS 11.45 "Pavement Marking".

SG 3 – Segmental Paving

General

SG 3.1 Scope

3.1.1 This specification details all matters pertaining to the construction of both clay and concrete segmental paving for road pavements, medians, traffic islands, driveways, cycle ways, footpaths and other pedestrian areas.

3.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

SG 3.2 Reference Documents

3.2.1 Australian Standards
- 3.2.1.1 AS1012 Method of Testing Concrete
- 3.2.1.2 AS1141.1 Particle Size Distribution of Dry Sieving
- 3.2.1.3 AS/NZS4455 Masonry Units and Segmental Pavers
- 3.2.1.4 AS/NZS4456 Masonry Units and Segmental Pavers – Methods of Test – General Introduction and list of Methods

3.2.2 Concrete Masonry Association of Australia Specifications
- 3.2.2.1 T44 Concrete Segmental Pavements - Guide to Specifying
- 3.2.2.2 T45 Concrete Segmental Pavements – Design Guide for Residential Access Ways and Roads
- 3.2.2.3 T46 Concrete Segmental Pavements – Detailing Guide

Materials

SG 3.3 Concrete Segmental Pavers

3.3.1 Concrete segmental pavers are units of not more than 0.10 square metres in gross plan area, manufactured from concrete, with plain or dentated sides, with top and bottom faces parallel and with or without chamfered edges.

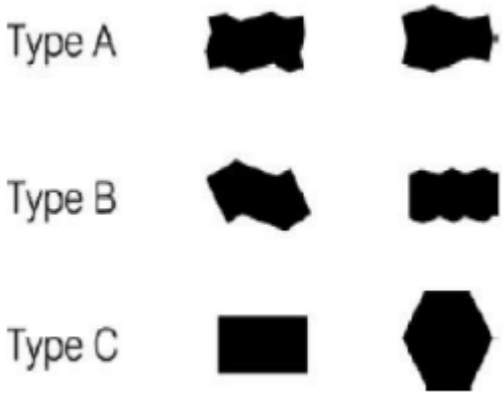
3.3.2 Concrete pavers are identified by shape as being one of the following types:
- 3.3.2.1 Shape Type A: Dentated chamfered units which key into each other on four sides, are capable of being laid in herringbone bond, and by their plan geometry, when interlocked, resist the spread of joints parallel to both the longitudinal and transverse axes of the units.
- 3.3.2.2 Shape Type B Dentated units which key into each other on two sides, are not (usually) laid in herringbone bond, and by their plan geometry,

when keyed together, resist the spread of joints parallel to the longitudinal axes of the units and rely on their dimensional accuracy and accuracy of laying to interlock on the other faces.

3.3.2.3 Shape Type C Units which do not key together and which rely on their dimensional accuracy and accuracy of laying to develop interlock.

3.3.3 Figure S3.1 shows examples of some of the more common shapes.

Figure S3.1 Paver Shapes



3.3.4 Concrete segmental pavers shall comply with the requirements of T44, T45, T46, and AS/NZS 4455 for each area of application.

3.3.5 The material requirements for concrete pavers for each application, derived from T44, are shown in Table S3.1.

3.3.6 The pavers shall meet the requirements for the relevant application given in Table S3.1 when tested in accordance with the test methods outlined in AS/NZS 4456.

Table S3.1 Material Requirement for Concrete Segmental Pavers

Application	Characteristic breaking load[2] (kN)	Characteristic flexural strength[2] (MPa)	Minimum Thickness (mm)	Shape[3]	Dimensional deviations (Cat AS455)	Abrasion Resistance (mean abrasion]
Residential Driveways **Light Traffic** **Medium Traffic[1]**	3 5	2 3	No Limit No Limit	Any Any	DPA1 or DPB1 DPA1 or DPB1	7 7
Public Footpaths **Low Volume** **High Volume and**	5 5	3 3	No Limit No Limit	Any Any	DPB2 DPB2	5 3.5

Pedestrian Malls[1]						
Roads[3] **All Roads**	5	3	80	A	DPB2	5
Notes: 1. **Capable of taking occasional 8.2-t axle loads** 2. **At 28 days** 3. **Interlocking shapes offer superior performance in road applications**						

SG 3.5 Bedding Sand

3.5.1 The bedding sand shall be well graded sand, consisting of clean, hard, uncoated grains uniform in quality, generally passing a 4.75mm sieve and shall conform with the grading limits specified in Table S3.2.

Table S3.2 Bedding Sand Grading Limits

AS Metric Sieve (mm)	% Passing
9.52	100
4.75	95-100
2.36	80-100
1.18	50-85
0.600	25-60
0.300	10-30
0.150	5-15
0.075	0-10

3.5.2 The sand shall be of uniform moisture content when spread. It shall be covered when stored on site to protect it from rain penetration.

3.5.3 The bedding sand shall be free of deleterious soluble salts or other contaminants, which may cause, or contribute to, efflorescence.

SG 3.6 Joint Filling Sand

3.6.1 The joint filling sand shall be well graded passing a 2.36mm sieve, and shall conform with the grading limits specified in Table S3.3.

Table S3.3 Joint Filling Sand Grading Limits

AS Metric Sieve (mm)	% Passing
2.36	100
1.18	90-100
0.600	60-90
0.300	30-60

0.150	15-30
0.075	5-10

3.6.2 The sand shall be dry when spread. It shall be covered when stored on site to protect it from rain penetration.

3.6.3 The sand shall be free of deleterious soluble salts or other contaminants, which may cause, or contribute to, efflorescence.

3.6.4 Sand used for bedding is not suitable for joint filling

SG 3.7 Concrete for Edge Restraints

3.7.1 Concrete supplied and placed for the construction of edge strips shall comply with the Specification for SG 7 CONCRETE WORKS.

3.7.2 Unless otherwise indicated on the Project Drawings, or where the edge restraint is provided by kerb and / or channel, the concrete used for edge restraints shall have a minimum 28-day characteristic compressive strength of 25MPa for edge restraints to pavers on road pavements and 20MPa for edge restraints to pavers on footpaths, bikeways, and medians.

Construction

SG 3.8 Paver Type, Shape, Class and Laying Pattern

3.8.1 The choice of concrete pavers shape type, shape name, colour, thickness and laying pattern shall be as shown on the Project Drawings for each area of application.

3.8.2 Council will require a minimum stock quantity for future replacements.

SG 3.9 Subgrade Preparation

3.9.1 For road pavements and areas subject to vehicle loads, the subgrade shall be trimmed and compacted to the required depth below finished surface level as shown on the approved Project Drawings and in accordance with Specification SG 2 ROAD PAVEMENTS.

3.9.2 Following completion of subgrade compaction and trimming, the whole of the subgrade area shall be inspected by proof rolling with a fully loaded single rear axle truck with a minimum axle load of 8 tonnes (or acceptable equivalent). Acceptable proof rolling shall be taken to be no visible signs of deformation or instability in the subgrade. [Hold Point]

3.9.3 For pedestrian and light traffic areas (i.e. footpaths, bikeways and medians) all soft, yielding or other unsuitable material shall be replaced with sound material and the subgrade shall be compacted to provide a minimum of 95 per cent standard compaction as determined by AS 1289.5.4.1 for standard compactive effort. The subgrade shall be trimmed to be ± 30mm of the design subgrade level.

SG 3.10 Subbase/Base

3.10.1 Base course for pedestrian and light traffic areas (i.e. footpaths, bikeways, medians) shall be as shown on the Project Drawings, where not otherwise specified the base course shall be a 125mm thick compacted to 95 per cent standard compaction as determined by AS 1289.5.4.1 for standard compactive effort. Base course material shall be minimum of Type 2.3 Pavement Material in accordance with the Specification for SG 2 ROAD PAVEMENTS.

3.10.2 For road pavements and areas subject to vehicle loads the subbase and base shall be constructed to the specified thickness and depth below finished surface level, and to the design grade and crossfalls of the finished surface, as shown on the approved Project Drawings in accordance with Specification SG 2 ROAD PAVEMENTS.

3.10.3 The base course shall extend in width to at least the rear face of all new edge restraints.

3.10.4 Notwithstanding the finished level tolerances contained within Specification SG 2 ROAD PAVEMENTS for base of ± 10mm of design levels, the level on the finished surface of the base course for road pavements to be overlain with segmental paving shall be trimmed to within + 10mm or - 0mm of design levels. The deviation from a 3m long straight edge placed anywhere and laid in any direction on the top surface of the base course for all segmental paving shall not exceed 10mm. Sand bedding material shall not be used as a levelling material to compensate for base finishing outside the above tolerances.

3.10.5 The finished surface of the base shall drain freely without ponding.

SG 3.11 Edge Restraints

3.11.1 Edge restraints in the form of kerb and / or channel or edge strips shall be constructed along the perimeter of all segmental paving as shown on the approved Project Drawings. Concrete kerb and / or channel and edge strips shall be constructed in accordance with specifications SG 2- ROAD PAVEMENTS and SG 7 CONCRETE WORKS

3.11.2 Faces of edge restraints abutting pavers shall be vertical.

3.11.3 Edge restraints shall be supported on compacted base and / or subbase of the thickness as shown on the approved Project Drawings. Where not otherwise specified or indicated, the minimum thickness of compacted base beneath the

edge restraints shall be 100mm adjacent to road pavements and medians, and 50mm adjacent to footpaths, bikeways and driveways.

3.11.4 Unless otherwise shown on the Project Drawings, expansion and contraction joints shall be provided in accordance with Specification SG 7 CONCRETE WORKS.

3.11.5 After the concrete has hardened and not earlier than three days after placing, the spaces at the back of the edge restraint shall be backfilled with earth, compacted in layers not greater than 150mm thick, then topsoiled to meet surrounding of design levels.

3.11.6 Hidden edge restraints may be used as an alternative for pedestrian and light traffic areas and shall be as detailed on the approved Project Drawings.

SG 3.12 Sand Bedding Course

3.12.1 The sand bedding course shall be spread in a single uniform layer and screeded in a loose condition to the nominated design profile and levels plus that necessary to achieve a uniformly thick nominal 25-35mm layer following final compaction of the segmental paving.

3.12.2 Any depressions in the screeding sand exceeding 5mm shall be loosened, raked and rescreeded before laying pavers.

3.12.3 Screeded sand left overnight if subject to rain shall be checked for level and rescreeded where necessary before pavers are placed. The sand shall not be screeded more than two metres in advance of the laying face at the completion of work on any day.

3.12.4 Drainage of the bedding course shall be as detailed on the approved Project Drawings.

SG 3.13 LAYING PAVERS

3.13.1 Unless otherwise specified, concrete pavers for road pavements shall be placed in herringbone laying pattern.

3.13.2 Pavers shall be uniformly placed on the screeded sand bedding to the nominated laying pattern. Pavers shall be placed so that they are not in direct contact with each other and shall have uniform 3mm nominal joint widths.

3.13.3 The first row shall be located next to an edge restraint or an established straight line, and laid at a suitable angle to achieve the required orientation of pavers in the completed pavement.

3.13.4 In each row, full units shall be laid first. Edge or closer units shall be neatly cut using a paver scour, or mechanical or hydraulic guillotine, and fitted subsequently. Cut pieces of pavers which are smaller in size than one quarter of a full block shall not be used.

3.13.5 Manholes, drainage gullies and similar penetrations through the pavement shall be finished against the paving with a concrete surround or apron designed to suit and fit the laying pattern, otherwise complying with the requirements for edge restraints.

3.13.6 Any foot or barrow traffic shall use boards overlaying paving to prevent disturbance of units prior to compaction. No other construction traffic shall be allowed on the pavement prior to compaction and provision of joint filling sand.

3.13.7 On completion of subsequent bedding compaction and joint filling operations, no more than 10 per cent of joints along any 10 metre line along a major axis of the laying pattern shall have widths outside the range of 2 - 4mm.

SG 3.14 Bedding Compaction

3.14.1 After laying the pavers, the sand bedding shall be fully compacted and the surface brought to design levels and surface profiles by not less than two passes of a high frequency low amplitude plate compactor, which covers at least 12 units. Compaction shall continue until lipping between adjoining units has been eliminated.

3.14.2 Any units which are structurally damaged during bedding compaction shall be removed and replaced. The pavement shall then be recompacted for at least one metre surrounding each replacement unit.

3.14.3 The paving operations shall be arranged so that the use of the plate compactor proceeds progressively behind the laying face without undue delay, and such that compaction is completed prior to cessation of construction activity on any day. Compaction shall not be attempted within one metre of the laying face except on completion of the pavement against an edge restraint.

3.14.4 The finished surface level shall not vary from the design level at any point laid in any direction, by more than 6mm for all road pavements and 8mm for all other areas of segmental paving. Notwithstanding this, the finished surface of the segmental paving, including where the paving abuts an edge restraint other than a drainage inlet, shall not deviate from the bottom of a 3m straight edge laid in any direction, except at grade changes, by more than 6mm for road pavements and 8mm for all other areas of segmental paving.

3.14.5 The abutting edges of two adjacent pavers should match, but in no circumstances should they differ by more than 2mm.

3.14.6 The surface level of pavers immediately adjacent to surface drainage channels shall finish not less than 5mm nor more than 10mm above the channel edge.

3.14.7 All compaction shall be complete and the pavement shall be brought to design profiles before spreading or placing sand filling in the joints.

SG 3.15 Filling Joints

3.15.1 As soon as practicable after bedding compaction, and in any case prior to termination of work on any day, dry sand for joint filling shall be spread over the pavement and the joints filled by brooming.

3.15.2 To ensure complete filling of the joints, both the filling sand and pavers shall be as dry as practicable when sand is spread and broomed into the joints.

3.15.3 The pavement shall then receive one or more passes of a plate compactor and the joints then refilled with sand, with the process then repeated sufficiently to ensure that the joints are completely filled.

SG 3.16 Protection of Work

3.16.1 Other than wheeled trolleys, forklifts and cluster-clamp vehicles, construction and other traffic shall not use the pavement until bedding compaction and joint filling operations have been completed.

SG 3.17 Opening to Traffic

3.17.1 As soon as practicable after the filling of joints, construction vehicles may use the pavement, and should be encouraged to traverse the greatest possible area of pavement to assist in the development of 'lock-up'.
3.17.2 Excess joint filling sand shall be removed prior to opening to traffic.
3.17.3 The pavement shall then be inspected by the Contractor at regular intervals up until the expiration of the Defects Liability Period to ensure that all joints remain completely filled.

SG 3.18 Tolerances

3.18.1 Where tolerances for individual components and associated dimensions are not specified on the Project Drawings, deviations from established lines, grades and dimensions in the completed work shall not exceed the values stated herein.
3.18.2 The dimensional tolerances as shown in Table S3.4

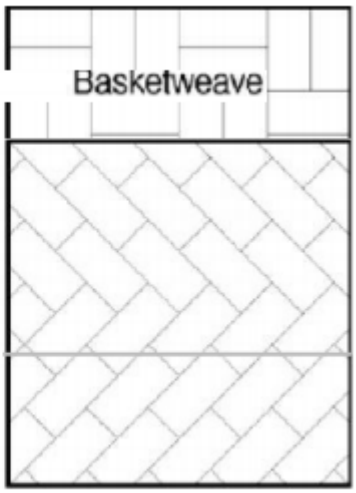
Table S3.4 Summary of Limits and Tolerances

Description	Limits/Tolerances
Base	Finished level of base for pavements to be within +10mm or -0mm of design levels.
	Finished level of base other than for road pavements, to be within +/10mm of design levels.
	Finished level of base other than for road pavements, to be within +/10mm of design levels
Segmental Paving Units (Joint Widths)	No more than 10% of joints along any 10 metre line of joints along a

	major axis of the laying pattern shall have widths outside the range 2 – 4mm.
Segmental Paving Units (Surface Level)	Finished surface level of pavers shall not vary from design levels by more than +/- 6mm for road pavements and +/- 8mm for other than road pavements.
	Finished surface of pavers shall not deviate from a 3m straight edge, laid in any direction, by more than 6mm for road pavements and 8mm for other road pavements.
	The abutting edges of two adjacent pavers shall not differ by more than 2mm.
	Finished surface level of pavers adjacent to surface drainage channels shall be no less than 5mm and no more than 10mm above the level of adjacent channel edge.

SG 3.19 Paver Laying Patterns

Stretcher



Zig Zag Running Bond

SG 4 Stormwater Drainage

General

SG 4.1 Scope

4.1.1 The specification details are all the requirements pertaining to the construction of stormwater drainage works.

4.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

SG 4.2 Reference Documents

4.2.1 Australian Standards

- 4.2.1.1 AS1597 Precast Reinforced Concrete Box Culverts
- 4.2.1.2 AS1650 Hot-Dipped Galvanised Coatings on Ferrous Articles
- 4.2.1.3 AS1761 Helical Lock-Seam Corrugated Steel Pipes
- 4.2.1.4 AS2338 Preferred Dimensions of Wrought Metal Products
- 4.2.1.5 AS2423 Galvanised Wire Fencing Products
- 4.2.1.6 AS3725 Loads on Buried Concrete Pipes
- 4.2.1.7 AS4058 Precast Concrete Pipes (pressure and non-pressure)
- 4.2.1.8 AS4159 Fibre-Reinforced Concrete Pipes and Fittings
- 4.2.1.9 AS5065 Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications

4.2.2 All Australian Standards referenced in this specification shall be the current edition.

4.2.3 Department of Main Roads

- 4.2.3.1 MRS 11.03 Drainage, Retaining Structures and Protective Treatments

Materials

SG 4.3 Steel Reinforced Concrete Pipes (RCP)

4.3.1 Pipes shall conform in all respect to AS 4058.

4.3.2 Pipes up to and including 600mm diameter can be rubber ring jointed or flush with manufacturer's external bands; pipes larger than 600mm diameter shall be flush jointed with manufacturer's external bands.

4.3.3 In locations where the pipes are to be laid in a subgrade of sand or influenced by saltwater, rubber ringed joints shall be used.

4.3.4 Pipes laid in areas influenced by saltwater intrusion or acid sulphate soils, or where any part of the pipe is below the Highest Astronomical Tide the pipe will have cover to reinforcement in accordance with the exposure classification requirements of AS 3600.

4.3.5 The class of pipe shall be as specified or shown on the drawings. Minimum of Class "2".

SG 4.4 Fibre Reinforced Concrete Pipes (FRC)

4.4.1 Pipes shall conform to the AS 4139. Pipes of the same diameter and class can be used in lieu of Steel Reinforced Concrete Pipes.

4.4.2 In locations where the pipes are to be laid in a subgrade of sand or influenced by saltwater, rubber ringed joints shall be used.

4.4.3 Where rubber ring joints are specified the "V" section rubber ring shall be used and are to be jointed using the manufacturer's lubricant.

SG 4.5 Reinforced Concrete Box Culverts (RCBC)

4.5.1 Box culverts shall be of the "Inverted U" type unless specified otherwise and shall conform in all respects to the current edition of AS 1597.

4.5.2 Box culverts laid in areas influenced by saltwater intrusion or acid sulphate soils, or where any part of the pipe is below the Highest Astronomical Tide the box culvert will have cover to reinforcement in accordance with the exposure classification requirements of AS 3600.

SG 4.7 Polypropylene Pipes

4.7.1 Pipes shall conform to the AS 5065. Pipes shall only be used within allotments with the prior approval of Council. “As Constructed” drawings shall clearly indicate location of polypropylene pipes. Polypropylene pipes shall not be used within road reserves.

SG 4.8 Bedding Materials

4.8.1 Concrete and Fibre Reinforced Concrete Pipes:

4.8.1.1 Bedding shall consist of clean coarse sand with 100% passing the 19mm AS Sieve and not more than 15% passing the 0.075mm AS Sieve.

4.8.2 Reinforced Concrete Box Culverts:

4.8.2.1 The bedding material to be used in conjunction with box culverts should conform to the grading specified in the Main Roads Standard Specification MRS11.03.

SG 4.9 Steel Wire Gabion and Mattress Protection Works

4.9.1 Steel wire gabions and mattresses shall be proprietary products manufactured from heavily galvanised hexagonally woven steel-wire mesh and filled with rock conforming to the material requirement specified in Main Roads Specification MRS 11.03.

SG 4.10 Concrete

4.10.1 The concrete and reinforcement used in the construction of gully pits, manholes, headwalls and aprons etc shall comply with Specification SG 7 CONCRETE WORKS.

SG 4.11 Manhole Covers and Frames

4.11.1 Cast iron covers and frames are to be supplied for all stormwater manholes and shall be manufactured and tested in accordance with AS 3996.

4.11.2 All openings shall conform to the details on Council's Standard Drawing

4.11.3 All covers shall have a raised stud pattern with the letters SW (65mm high) cast into the centre of the lid and "gatic" type lifting holes.

4.11.4 Minimum classes of manhole covers shall be as follows:

4.11.4.1 Within Residential Properties and Parks - Class B

4.11.4.2 Residential Road Reserves:

4.11.4.2.1 Up to collector street status - Class C

4.11.4.2.2 Trunk Collector or higher - Class D

4.11.4.3 Industrial, Commercial Road Reserves - Class D

SG 4.12 Grates and Frames

4.12.1 Grates and frames of gully pits are to be fabricated from grade 250 steel and shall comply with the requirements of AS 3996 They shall be constructed to the dimensions and details supplied on the Council's Standard Drawing and shall be Hot Dipped Galvanised to the requirements of AS 1650.

4.12.2 Grates for structures other than gully pits shall be bicycle safe, and of a classification applicable to its location in accordance with AS 3996.

SG 4.13 Floodgates

4.13.1 Floodgates shall be a proprietary product manufactured from non-corrosive material of a type specified on the approved Project Drawings.

SG 4.14 Backfill Material

4.14.1 Backfill material shall generally be selected fill material, not markedly different in character from the surrounding soil, free from large stones, lumps of clay, topsoil, tree roots and other rubbish. It shall have an even grading free of lumps retained on a 75mm sieve and free of stones retained on a 25mm sieve.

4.14.2 Stabilised Backfill material may need to be required when utilising Corrugated Aluminium Alloy Pipes. Where such materials are required, only approved mixes in accordance with the manufacturers recommendations shall be accepted.

Construction

SG 4.15 Setout

4.15.1 The alignment of the stormwater pipes and position of the gully pits, manholes and headwalls shall be as stated in the approved Project Drawings and set out from a datum line established by a Registered Surveyor. The datum line may be either the road centreline, property boundary, a pegged chainage offset line, or any alternative datum suitable for the purposes of accurately setting out the works.

4.15.2 The invert levels of the pipes shall be maintained in strict accordance with site bench marks and only approved and tested equipment shall be used to establish and maintain these levels.

SG 4.16 Clearing & Grubbing

4.16.1 All clearing and grubbing works shall be in accordance with Specification SG 1 EARTHWORKS.

4.16.2 Where stormwater lines pass through allotments any trees or obstructions not on the line of the pipes shall be preserved.

SG 4.17 Trenching

4.17.1 All trenching and foundation works necessary for the installation of stormwater drainage works, shall be in accordance with Specification SG 1 EARTHWORKS.

4.17.2 Trench or foundation excavation for stormwater drainage works shall be undertaken to the planned level for the bottom of the specified bedding or foundation level. All loose material shall be removed from the bottom of the trench.

4.17.3 The width of trenching excavation shall be in accordance with the Council Standard Drawings, the trench base and comply with all regulations of Workplace Health and Safety Act.

4.17.4 In undertaking trench excavation, the Contractor shall provide any shoring, sheet piling or other stabilisation of the sides necessary to comply with statutory requirements.

4.17.5 Where public utilities exist in the vicinity of stormwater drainage works the Contractor shall obtain the approval of the relevant authority / corporation to the method of excavation before commencing excavation.

SG 4.18 Diverting Water and Dewatering

4.18.1 During construction all care should be taken to ensure any water, which may interfere with the progress of the works, be diverted to keep the trenches and excavations free from water so as to prevent any damage to the works due to flooding or other causes.

4.18.2 The necessary pumping items shall be kept on hand to ensure the excavation is constantly dewatered during the progress of the works.

4.18.3 Discharge for dewatering pumps shall be directed to location approved by and to the satisfaction of Council.

4.18.4 Care shall be taken to ensure that discharge flows do not cause any flooding, erosion or environmental harm, where necessary appropriate measure shall be put in place to trap and dispose of entrained sediments.

4.18.5 In areas where acid sulphate soils are present, discharge flows shall be disposed of and/or treated in accordance with an approved acid sulphates soils management plan.

SG 4.19 Bedding

General

4.19.1 Pipe support and bedding shall be in accordance with AS 3725 for pipe support types shown on the approved Project Drawings. Where the pipe support type is not shown on the Drawings, the minimum pipe support type shall be HS2 within road reserves and H1 elsewhere.

4.19.2 The bedding and haunch zone material shall be placed and compacted in accordance with AS 3725, with care be taken around the Haunch zone area to avoid disturbing the position of the pipe. The surface of every pipe should have full and even contact with the bedding material.

4.19.3 In trenches with bad ground water conditions and/or unsuitable material the trench should be over excavated to allow a foundation layer of crushed rock material (min. depth 250mm) to be placed to provide an adequate foundation. A geofabric to engineering design should be placed for the full width of the trench and overlapped 450mm prior to placing the bedding material and laying the pipes in this instance.

Box Culverts

4.19.4 Bedding for precast and cast insitu base slabs shall be selected backfill to a compacted depth of 150mm laid to the line and level of the underside of the base slab. The bedding shall be finished to a smooth surface with a tolerance of ± 10mm in level and ± 50mm in line.

SG 4.20 Lay and Joint Pipes

Concrete and Fibre Reinforced Concrete Pipes

4.20.1 Pipe laying shall begin at the downstream end of the line with the socket or grooved end of the pipe facing upstream. When the pipes are laid, the barrel of each pipe shall be in contact with the bedding material throughout its full length.

4.20.2 When elliptical pipes with circular reinforcement or circular pipes with elliptical reinforcement are used, the pipes shall be laid in such a position that the manufacturer's marks, designating the "Top" or "Bottom" of the pipe shall not be more than 5 degrees from a vertical plane through the longitudinal axis of the pipe.

4.20.3 External joints shall be taped with the manufacturers supplied tape or rubber external sand bands upon final bedding and alignment.

4.20.4 Lifting holes in pipes shall be plugged with mortar, precast tapered concrete / plastic plugs, or other approved means prior to backfill material being placed.

4.20.5 Joints shall not be made under water. The trench must be de-watered to facilitate joint making and inspection. Precautions must be taken to prevent erosion of joint material by moving currents of water.

4.20.6 Drainage lines shall be constructed with a tolerance of ± 15mm in line or level over any section 30m in length (providing each pipe unit has a fall in the direction of flow) from the alignment and levels shown on the approved Project Drawings.

Reinforced Concrete Box Culverts

4.20.7 The base of the box culvert shall be laid true to line and grade before the crown units of the box culvert segments are laid.

4.20.8 All construction methods, tolerances and requirements for box culverts shall conform to the requirements detailed in Main Roads Standard Specification MRS 11.03.

SG 4.21 Backfill

Concrete & Reinforced Pipes

4.21.1 Compaction standards for backfill material shall conform to Table S4.1.

Table S4.1 Backfill Compaction

Location	Minimum Dry Density (Cohesive soils)	Minimum Density Index (Cohensionless soils)
Under Road embankments: **>0.3m below pavement subgrade** **<0.3m below pavement subgrade**	 95% Standard 98% Standard	 65% 80%
Elsewhere	95% Standard	65%

Note: Compaction requirements are with reference to the relevant Test Methods Contained in AS 1289.

4.21.2 For trench installations, mechanical compacters shall be used. Where impact tampers are used caution must be exercised not to allow a direct blow on the pipe. The material should be compacted at near optimum moisture content and should be brought up evenly in layers not exceeding 150mm on both sides of

the pipe up to 150mm over the pipe. It should not be bulldozed into the trench nor dropped directly on the pipe.

4.21.3 Heavy mechanical equipment must not be used for tamping of backfill or be permitted to run over pipelines at shallow depths except at prepared crossing places and where approved.

4.21.4 For trenches not contained within the road reserve the trench shall be refilled to natural surface level with fill material placed evenly in 150mm to 300mm layers, tamped thoroughly.

4.21.5 The backfilling should be completed as soon as possible after pipe laying, and before the pipeline is charged with water. This will avoid the risk of pipes floating if the trench becomes flooded.

SG 4.22 Drainage Structures

4.22.1 Gullies, manholes and field inlets shall be constructed to the form and dimensions shown on the plans and in accordance with Council's Standard Drawings. Where the ground is solid, back forms need not be used in the construction of drainage structures, the concrete being poured against the earth. Where this is done, the thickness of the wall of such gully or manhole shall be increased to a minimum of 50mm greater than the dimension shown on the plan.

4.22.2 The joints between drainage structures and pipes shall be made watertight using cement mortar. The mortar shall be used within one hour of mixing and shall not be retempered. The joints shall be finished to provide smooth surfaces, uniform with the inner surfaces of the structure.

4.22.3 Concrete benching shall be shaped as specified and shall have smooth, even surfaces and neat edges. Step irons shall be installed horizontal, vertically in line, and shall project uniformly from the walls, where the depth of the structure is greater than 1.5m.

4.22.4 Where step irons are not cast-in-place, they shall be epoxy mortared into drilled holes. The joints between the step irons and the walls shall be completely filled so that the step irons are held rigid and the joints are watertight.

4.22.5 Concrete top slabs in Manholes shall be joined to the walls using cement mortar or epoxy mortar. The opening in the top slab shall be closed with temporary covers, after which excavations shall be backfilled. Cast in situ concrete surrounds shall be constructed on the top slabs to encase the frames. Alternatively, precast concrete surrounds may be employed, using epoxy mortared joints. Only approved covers in accordance with this Specification shall be installed in the frames.

4.22.6 Temporary covers to Gullies and Manholes may remain in position and installation of the frames and surrounds deferred until pavement construction has reached a stage where the frames and surrounds can be positioned accurately. Where construction is in a staged format, the joint between each pour shall be suitably roughened to ensure an adequate bind and seal is achieved between the successive concrete pours.

4.22.7 Compaction of material surrounding drainage structures shall be in accordance with Table S4.1.

SG 4.23 Steel Wire Gabions and Mattress Protection

4.23.1 These proprietary products shall be assembled and installed in accordance with the Main Roads Standard Specification MRS 11.03.

SG 4.24 Headwalls, Wingwalls and Aprons

Cast Insitu

4.24.1 Where necessary, localised excavations shall be carried out to allow construction of cast insitu end structures.

4.24.2 Cast insitu endwalls, wingwalls and aprons, shall be constructed to the dimensions and other requirements shown on the approved Project Drawings and in accordance with Council's Standard Drawings.

4.24.3 Concrete work shall comply with Specification SG 7 CONCRETE WORKS. Construction of endwalls and wingwalls shall include the construction of integral cut-off walls, where required.

Precast

4.24.4 Where necessary, localised excavations shall be carried out to allow installation of precast concrete end structures.

4.24.5 End structures shall be laid on foundation bedding, which provides continuous even support to the structures. Foundation bedding material shall be compacted to the relevant standard specified below:

4.24.5.1 Cohesive material - to not less than 95% Standard Compaction. □ Non-cohesive material - to a density index of not less than 65.

4.24.5.2 The joints between end structures and culverts shall be filled with cement mortar. The joint areas shall be thoroughly cleaned and wetted just prior to filling. All points shall be finished smooth and uniform with the surfaces of the end structures.

4.24.6 Any holes and recesses provided in end structures to assist installation shall be neatly plugged or filled with cement mortar.

4.24.7 Mortared joints and filled holes and recesses shall be cured for a period of not less than 48 hours. Backfill operations against end structures shall not be carried out during this curing period.

SG 4.25 Floodgates

4.25.1 Floodgates can be sleeved over the end of the pipe, secured with stainless steel bands or fixed to with a flange to headwalls. Installation shall be in accordance with the manufacturers recommendations.

SG 4.26 Tolerances

4.26.1 Tolerances for the construction of Stormwater Drainage Works shall comply with Table S4.2.

Table 4.2 Construction Tolerances

Location	Tolerance
Invert Levels	+10mm -10mm
Surface Levels	+50mm - 50mm in Allotments +10mm - 10mm in Roadways
Structure Locations	Within 100mm of design in Allotments or Park Within 50mm of design longitudinally along roadway Within 10mm of design at right angles to road
Crest of Spillway and Detention Basins	Trimmed to +25mm - 10mm

SG 5 – Water Reticulation

General

SG 5.1 Scope

5.1.1 This specification details all matters pertaining to Water Supply Reticulation Construction.

5.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

5.1.3 Aspects of modification or clarification of the Water Supply Code of Australia WSA 03 – 2002 are detailed in Appendix A of Design Guideline – D6.

5.1.4 Aspects of modification or clarification of the Water Supply Code of Australia WSA 03 – 2002 – Water Supply Code of Australia – Standard Drawings are detailed in Appendix A of this document.

SG 5.2 Reference Documents

5.2.1 Australian Standards:

- 5.2.1.1 AS1289 Methods of Testing Soils for Engineering Purposes
- 5.2.1.2 AS1432 Copper Tubes for Plumbing, Gasfitting and Drainage Applications
- 5.2.1.3 AS/NZS1477 PVC Pipes and Fittings for Pressure Applications
- 5.2.1.4 AS1646 Elastomatic Seals for Waterworks Purposed
- 5.2.1.5 AS/NZS1906 Retroreflective Material and Devices for Road Traffic Control Purposes
- 5.2.1.6 AS2032 Code of Practice for Installation of PVC Pipe Systems
- 5.2.1.7 AS2033 Installation of Polyethylene Pipe Systems
- 5.2.1.8 AS2129 Flanges for Pipes, Valves and Fittings
- 5.2.1.9 AS/NZS2280 Ductile Iron Pressure Pipes and Fittings
- 5.2.1.10 AS2638 Sluice Values for Waterworks Purposes
- 5.2.1.11 AS3500 National Plumbing and Drainage Code
- 5.2.1.12 AS3952 Water Supply – DN80 Spring Hydrant Valve for General Purposes
- 5.2.1.13 AS/NZS4129 Fittings for Plyethylene (PE) Pipes for Pressure Applications
- 5.2.1.14 AS/NZS4130 Polyethylene (PE) Pipes for Pressure Applications
- 5.2.1.15 AS4441 Oriented PVC (PVC-O) Pipes for Pressure Applications
- 5.2.1.16 AS/NZS4765 Modified PVC (PVC-M) Pipe for Pressure Applications

5.2.2 Department of Main Roads

- 5.2.2.1 MRS 11.45 Pavement Marking

5.2.3 Water Services Association of Australia

5.2.4 WSA 03 – Water Supply Code of Australia

Materials

SG 5.3 Pipes General

5.3.1 All pipes used for water main reticulation shall be constructed from the following materials:
- 5.3.1.1 Polyvinylchloride (PVC)
- 5.3.1.2 Polyethylene (PE); or
- 5.3.1.3 Ductile Iron.

SG 5.4 Unplacticised PVC (PVC-U)

5.4.1 Unplasticised PVC (PVC-U) pipes shall be manufactured in accordance with AS/NZS 1477 by an Australian Standards quality endorsed company.

5.4.2 Modified PVC (PVC-M) pipes manufactured in accordance with AS/NZS 4765 by an Australian Standards quality endorsed company may be used as an alternative to PVC-U.

5.4.3 Oriented PVC (PVC-O) pipes manufactured in accordance with AS 4441 by an Australian Standards quality endorsed company may be used as an alternative to PVC-U

5.4.4 PVC pipes 100mm diameter and greater to be Class 16 rubber ring jointed (Ductile iron O.D compatible).

5.4.5 Rubber Rings shall be manufactured and tested in accordance with AS 1646. Jointing lubricant in accordance with the manufacturers' specification should be used to facilitate jointing.

SG 5.5 Polyethylene Pipe

5.5.1 Polyethylene pipe shall be manufactured in accordance with AS/NZS 4130 by an Australian Standards quality endorsed company.

5.5.2 PE pipes up to 50mm inside diameter to be Class 16

5.5.3 Fittings shall comply with AS/NZS 4129.

SG 5.6 Ductile Iron

5.6.1 Ductile Iron pipes shall be manufactured and cement lined in accordance with AS/NZS 2280 by an Australian Standards quality endorsed company.

5.6.2 Socketed pipes to be Class K9 suitable for the patented "Tyton" type rubber ring joint. Flanged pipes to be Class K12.

5.6.3 Flanges shall comply with AS 2129 Table C. Bolts and nuts for flanged joints shall be in accordance with AS 2129.

5.6.4 All pipes and fittings shall be wrapped in a loose polyethylene sleeving 0.25mm thick. Wrapping and taping shall be carried out in accordance with the pipe manufactures recommendations.

SG 5.7 Bedding Material

5.7.1 Bedding Material shall consist of a clean coarse sand free from organic matter, clay, shells and deleterious material with 100% passing the 6.7mm AS sieve and not more than 5% passing a 0.150mm AS sieve.

SG 5.8 Valves

5.8.1 All Valves shall be manufactured in accordance with AS 2638 by an Australian Standards quality endorsed company.

5.8.2 Valves of 80mm diameter and larger, are to be coated with a thermosetting epoxy powder to AS 2638 and AS 3952.

5.8.3 All 50mm diameter valves shall be DR brass construction with appropriate pressure rating or approved equivalent and certified by QAS to Standards Mark or Water Mark. All valves shall be fitted with bronze tee handles.

5.8.4 All valves 80mm and greater to be anti clockwise to close.

SG 5.9 Hydrants

5.9.1 Hydrants shall be the spring hydrant "Maxi Flow" 2000 type (DN80) manufactured in accordance with AS 3952 by an Australian Standards quality endorsed company. Hydrants are to be coated with a thermosetting epoxy powder to AS 2638 and AS 3952.

SG 5.10 Bends and Tees

5.10.1 All bends for mains of 80mm diameter or larger and all other associated fittings shall be constructed in accordance with AS/NZS 2280, and have flanged or spigot and socket type joints as specified on the approved Project Drawings. Where flanges are used, bolts shall be matched sets and conform to the following criteria:

5.10.2 In above ground uses, bolts shall be Hot Dipped Galvanised In below ground uses, bolts shall be Grade 316 Stainless Steel with nuts and washers Grade 304 stainless steel.

5.10.3 All bends, tees and miscellaneous fittings shall be factory nylon powder coated unless otherwise specified.

SG 5.11 Pavement Marking

5.11.1 The manufacture, supply and material requirements appropriate to the specification of pavement marking shall be in accordance with Main Roads Standard Specification "MRS11.45 Pavement Marking".

SG 5.12 Raised Retro Reflective Marking

5.12.1 Raised retroreflective pavement markers used to locate hydrants shall be blue bi directional markers.

5.12.2 The material requirements of the raised retroreflective pavement markers shall be in accordance with Main Roads Standard Specification "MRS11.45 Pavement Marking".

SG 5.13 Setout

5.13.1 The location and sizes of the mains and position of valves and hydrants shall be as stated on the approved Project Drawings.

5.13.2 Bends shall be positioned such that the correct alignment is maintained and remains within the allotted service corridor.

5.13.3 Where levels are nominated on the approved Project Drawings the Contractor shall ensure the main is laid within the given tolerances and the equipment used to level the main is approved and tested.

5.13.4 Alignment of the water main shall be 2.500m off the property boundary, with horizontal centreline deviations permissible provided the main remains entirely within the 450 mm wide footpath allocation.

5.13.5 Deflection of water mains is not allowed. Bends are to be used for change of direction.

5.13.6 Where a hydrant is placed at the end of a water main which will not be extended in the future, e.g., in cul-de-sac; the hydrant shall be installed with a hydrant bend located adjacent to the boundary of the last property serviced.

5.13.7 In cases where the main may be extended in the future, a hydrant tee and dead end shall be used, located as near as practicable (<0.5m) to the development boundary or nearest RP boundary.

5.13.8 The maximum spacing of hydrants shall be 80m with hydrants located at all crests, sags and ends of lines in cul-de-sacs.

5.13.9 Spring hydrants are to be oriented with bolts parallel to the water main.

SG 5.14 Clearing and Grubbing

5.14.1 All trenching and foundation works necessary for the installation of the pipeline or thrust blocks, shall be in accordance with Specification SG 1 EARTHWORKS.

5.14.2 The width of trenching excavation shall be in accordance with the Council's Standard Drawing at the trench base and comply with all regulations of Workplace Health and Safety Act.

5.14.3 In undertaking trench excavation, the Contractor shall provide any shoring, sheet piling or other stabilisation of the sides necessary to comply with statutory requirements.

5.14.4 Where public utilities exist in the vicinity of water main drainage works the Contractor shall obtain the approval of the relevant authority / corporation to the method of excavation before commencing excavation.

5.14.5 The safety of the public shall be considered at all times. Where necessary, fenced walkways and controlled vehicular crossways shall be provided across trenches to maintain access from carriageway to individual properties or within individual properties. All such installations shall be of adequate size and strength and satisfactorily illuminated.

5.14.6 In the event of any trenching being left open for longer than one week, the Contractor shall provide erosion control measures to ensure minimal soil disturbance and material loss off the site. Some or all of these measures shall be provided immediately upon the onset of rain with an open trench.

5.14.7 The Contractor shall leave a clear space of 600mm minimum between the edge of any excavation and the inner toe of spoil banks. No excavated materials shall be stacked against the walls of any building or fence without the written permission of the owner of such building or fence. Topsoil from excavations shall be kept separate and utilised to make good the surface after backfilling.

SG 5.15 Trenching

5.15.1 All trenching and foundation works necessary for the installation of the pipeline or thrust blocks, shall be in accordance with Specification SG 1 EARTHWORKS.

5.15.2 The width of trenching excavation shall be in accordance with the Council's Standard Drawing at the trench base and comply with all regulations of Workplace Health and Safety Act.

5.15.3 In undertaking trench excavation, the Contractor shall provide any shoring, sheet piling or other stabilisation of the sides necessary to comply with statutory requirements.

5.15.4 Where public utilities exist in the vicinity of water main drainage works the Contractor shall obtain the approval of the relevant authority / corporation to the method of excavation before commencing excavation.

5.15.5 The safety of the public shall be considered at all times. Where necessary, fenced walkways and controlled vehicular crossways shall be provided across trenches to maintain access from carriageway to individual properties or within individual properties. All such installations shall be of adequate size and strength and satisfactorily illuminated.

5.15.6 In the event of any trenching being left open for longer than one week, the Contractor shall provide erosion control measures to ensure minimal soil disturbance and material loss off the site. Some or all of these measures shall be provided immediately upon the onset of rain with an open trench.

5.15.7 The Contractor shall leave a clear space of 600mm minimum between the edge of any excavation and the inner toe of spoil banks. No excavated materials shall be stacked against the walls of any building or fence without the written permission of the owner of such building or fence. Topsoil from excavations shall be kept separate and utilised to make good the surface after backfilling.

SG 5.16 Cover

5.16.1 Unless noted otherwise on the approved Project Drawings the minimum depth of cover to be provided for mains shall be as follows:

5.16.1.1 For mains of 100mm and 150mm diameter: minimum 600mm - maximum 750mm, in a verge or roadway; measured from the top of pipe to the adjacent top of kerb.

5.16.1.2 For 225mm and 300mm diameter: minimum 700mm, maximum 850mm

5.16.1.3 For mains greater that 225 mm diameter, individual assessment dependent upon valve height shall be determined by the Engineer.

5.16.1.4 Where normal cover for mains is unable to be maintained due to the presence of existing services or other restricting factors ductile iron pipe, may be used, subject to the approval of the Engineer.

5.16.1.5 Main shall not be laid under stormwater, sewerage pipes or electricity conduits unless approved by the Engineer.

SG 5.17 Crossings

Major Road Crossings

5.17.1 Written approval from the Queensland Department of Transport is required if a main is to be constructed underneath or along a declared Main Road.

5.17.2 All road crossings shall have an enveloper pipe and the main shall be grouted in the enveloper pipe.

5.17.3 The design and construction of the enveloping conduit must be in accordance with Queensland Department of Transport's "Installation of Underground Conduits within the Boundaries of Declared Roads".

Crossings of Other Existing Roads and Streets

5.17.4 Unless otherwise approved in writing, all crossings of existing roads and streets shall be bored or jacked with no disturbance to the pavement, shoulders or kerb.

5.17.5 The Engineer may permit open trenching to streets below Collector, determined by the location, traffic conditions and age of the existing pavement.

5.17.6 The details of the crossing, pipe materials and grouting shall be submitted to Council for approval.

5.17.7 Crossings of other carriageways shall be trenched unless the Engineer specifies otherwise.

Railway Crossings

5.17.8 Written approval from the Queensland Rail is required if a main is to be constructed underneath a railway line. In such cases the crossing shall generally be designed and constructed in accordance with the requirements of Queensland Rail.

SG 5.18 Bedding

5.18.1 All pipes shall be uniformly bedded in order to ensure solid and uniform support for the full length of the barrel with bell holes formed to accommodate the sockets to ensure a minimum clearance of 20mm.

5.18.2 The depth of bedding shall be as detailed on Council's Standard Drawing with the bedding material complying with the "Bedding Material" section of this Specification.

SG 5.19 Laying and Jointing of Pipes

5.19.1 All contractors shall have undertaken a manufacturers pipe laying accreditation course.

5.19.2 All pipe lines shall be laid to such lines, offset, gradients and levels as shown on approved Project Drawings.

5.19.3 Care shall be taken to preserve uniform gradients and correct alignments. Bends shall be used to effect horizontal and vertical changes of direction.

5.19.4 The manufacturers' recommendations for maximum deflection at each joint shall be strictly adhered to, if approval is granted by Council to use deflections.

5.19.5 Jointing of pipes, valves and fittings is to be carried out to the manufactures recommendations and in accordance with Australian Standards where applicable.

5.19.6 For pipes with rubber ring joints, only the lubricant specified in writing by the manufacturer shall be applied in making the joint. When the joint is made, the witness mark shall at no point be more than 1mm from the end of the socket.

5.19.7 Before being laid, all pipes, fittings, valves, etc shall be cleaned and examined by the Contractor.

5.19.8 Approved plugs shall be used to prevent foreign matter entering sections of pipeline, which are left uncompleted overnight.

5.19.9 The Contractor shall take all necessary precautions to prevent flotation of pipes during laying, backfilling and initial testing. Any temporary supports shall be removed prior to completion of backfilling.

5.19.10 Pipes shall be cut as needed to suit closing lengths, to remove damaged pipe or fittings or to remove sockets if necessary when jointing a socketed fitting.

5.19.11 For field cuts, only an approved mechanical pipe cutter shall be used, except that uPVC pipes may be cut using a power saw or a fine toothed hand saw and mitre box.

5.19.12 Any pipes cut in the field shall have their ends prepared in accordance with the manufacturer's written instructions.

5.19.13 Where pipes are cut in the field, a witness mark shall be made on the pipe at the length specified by the manufacturer from the end of the pipe. Scoring of uPVC pipes shall not be permitted.

SG 5.20 Connection to Existing Mains

5.20.1 Ready tap, or equivalent, connection points shall be laid with the main within 300 mm of the side property boundaries.

5.20.2 The Ready tap connection point is to be installed with a valve on one side and a bung on the other.

SG 5.21 Fittings

5.21.1 The laying and jointing of mains shall include the fixing in position of all valves of any description, fire hydrants and all other fittings, which are necessary for the completion of the mains.

5.21.2 Joints to secure fittings to pipes shall be approved under Australian Standard AS1646.

5.21.3 All sluice valves, gate valves, air valves and hydrants shall be carefully placed in the final position so as to be the correct distance from the surface and installed in accordance with Council’s Standard Drawings. With air valves and hydrants, risers shall be installed where necessary and if required, trenches

shall be deepened and graded in the vicinity of all valves and hydrants in order to secure the correct depth below the surface.

5.21.4 Valves, hydrants and specials shall be thoroughly cleaned out prior to installation in main.

5.21.5 The spring hydrants shall be bolted to the flange of the hydrant junction so that the bolts of the hydrants are in line with the main, and the hydrant cover box fitted with its long axis along the centre line of the main. Hydrants must be protected during backfilling in such a manner as will prevent earth or grit from damaging the seating. Refer to Council's standard drawing.

5.21.6 Hydrants and valves shall be fully protected during laying and backfilling, on completion all glands shall be well screwed down, and all valves shall operate freely.

SG 5.22 Valve/Hydrant Markers

5.22.1 The position of all stop valve, scour valve, air valve and hydrants shall be indicated by a kerb marker plate, painted kerb marker or marker post and raised reflective pavement markers. The type of marker to be installed shall be as stated on the approved Project Drawings.

5.22.2 Painted symbols used to indicated hydrants shall be in accordance with Council's Standard Drawing.

5.22.3 Kerb marker plates used to indicate valve and hydrant locations shall be fixed to the kerb face it shall be in accordance with Council's Standard Drawing.

5.22.4 Kerb and channel shall be stamped or engraved, and posts with marker notice plates are to be located adjacent to each valve, hydrant, air valve and scour valve. The posts are to be located 0.3m on the kerbside of the property alignment unless otherwise directed by the Engineer.

5.22.5 Kerb stamping or engraving, and marker plates shall be marked "V", "H", "AV" and "S" indicating sluice valve, hydrant, air valve and scour valve respectively shall be installed on the posts.

5.22.6 In addition to painted kerb markers / marker posts, all hydrants shall have a road pavement marker to indicate the location of the hydrant. The road pavement marker shall be either a painted teardrop or blue bi directional raised retro reflective pavement marker as stated on the approved Project Drawings.

5.22.7 Where a painted teardrop is specified the teardrop shall be painted with a solid yellow enamel paint and be 630mm overall length with 200mm radius base and a 25mm radius tip. The teardrop shall be painted across the centreline of a two-lane road or in the middle of the near side lane of a multi laned road. The tapered end of the teardrop shall point towards the relevant hydrant

5.22.8 Where a blue bi-directional raised retro reflective pavement marker is specified it shall be fixed securely to the road pavement opposite the hydrant. On two lane roads, the marker is to be positioned on the road centreline. For multi-lane roads, it is to be positioned on the lane line between the first and second lane.

5.22.9 The installation requirements of and pavement makings and raised retroreflective pavement markers shall be in accordance with Main Roads Standard Specification "MRS11.45 Pavement Marking".

SG 5.23 Anchor Blocks

5.23.1 Where a main is installed at a grade of 1 in 6 or steeper, concrete anchor blocks shall be provided in accordance with Council's Standard Drawing

5.23.2 Concrete works shall comply with Specification SG 7 CONCRETE WORKS.

SG 5.24 THRUST BLOCKS

5.24.1 For vertical bends with an upward thrust additional concrete shall be placed so that the mass of concrete is greater than the thrust on the filling. Sufficient steel reinforcement shall be included to bend the weight of the block below the pipe centreline to the upper part of the block. These thrust blocks shall be designed to manufacturer's specifications.

5.24.2 Thrust blocks, sized in accordance with the requirements of the Manufactures specifications.

5.24.3 Concrete works shall comply with Specification SG 7 CONCRETE WORKS

SG 5.25 Water Service Connections

5.25.1 Connection points shall be laid within 300 mm of the side property boundaries and a maximum of 300mm inside the property boundary.

5.25.2 The connection point is to be installed in accordance with Council's Standard Drawings.

5.25.3 All services shall be turned on during the testing process.

5.25.4 Water service pipe riser material must be Copper (Northern Region) & Stainless Steel (Southern Region).

SG 5.26 Backfilling and Compaction

5.26.1 Material for the side support and overlay of the pipe shall comply with the pipe bedding material specification. The material shall be compacted in layers of not more than 150mm to 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289.

5.26.2 The remainder of the excavation shall be backfilled with excavated material. The backfill shall be compacted in layers of not more than 150mm thick to 95 per cent of the standard. maximum dry density of the material used when

determined in accordance with AS1289. Flooding of cohesive material shall not be permitted as a means of compacting backfill.

5.26.3 Backfilling and compaction shall be carried out without damaging the pipe or its external coating or wrapping or producing any movement of the pipe.

5.26.4 The edges of the trench shall be cut with a clean, straight line prior to excavation. The trench above the approved filling shall be backfilled with approved subgrade replacement material conforming to Table D3.2 Minimum Pavement Design Criteria, to a level 280 mm below the level of the existing pavement surface, 150 mm and 100 mm separate layers of 1.5% and 3.0% cement stabilised road base Type 2.1 and Type 2.3 shall be compacted over the excavated fill layer, both compacted to 95% relative dry density as determined by Test 5.1.1 of AS 1289 (Standard Compaction), and 30 mm of asphaltic concrete shall be used to compete the trench backfilling. The road shall be restored to a minimum standard stated above or equal to the original standard which ever is greater.

5.26.5 Backfill material down to a depth of 300mm below the underside of the pavement material shall be compacted to 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289, and backfill material below such depth shall be compacted to not less than 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289.

5.26.6 In cases other than those covered by the above clause backfilling above the level of 300mm above the top of the pipes in open trenches may be carried out by dumping from mechanical plant into the trench providing that no rock is placed in the trench until the pipes are covered by at least 300mm of soil backfill.

5.26.7 Compaction testing shall be carried out at a rate of 1 test for each 150 metres of trench backfilled or in the case where trenches are constructed under road pavements and road shoulders, 1 test for each 25 metres of trench backfilled.

SG 5.27 Restoration of Surfaces

5.27.1 Pavements, lawns and other improved areas shall be cleaned and left in the same order as they were at the commencement of the works. Lawns shall be restored with turf cut and set aside from the original surface and / or with imported turf.

5.27.2 All restored surfaces shall be maintained in the condition to which they are restored until the expiry of the Defects Liability Period applicable to those surfaces. Pavements shall be maintained with crushed metal, gravel or other suitable material allowing for consolidation and shall then be restored to a condition equivalent to that of the original pavement.

5.27.3 Immediately the backfilling of a trench excavated through a pavement has been completed, the pavement shall be temporarily restored. Where the trench crosses bitumen or concrete pavement, a pre-mixed asphaltic material shall be

used for such temporary restoration. Temporary restoration works shall be maintained by the Contractor until final restoration is carried out.

5.27.4 Final restoration of the pavement shall be carried out to restore the pavement and its subbase to no less than the original condition. Unless noted otherwise on the approved Project Drawings all trenches excavated through bitumen or concrete pavement shall be sawcut each side to facilitate a neat finish to the final restoration. Final restoration may include, if required, the removal of temporary restoration.

5.27.5 Backfill shall be placed sufficiently high to compensate for expected settlement and further backfilling shall be carried out or the original backfill trimmed at the end of the Defects Liability Period in order that the surface of the completed trench may then conform to the adjacent surface. Surplus material shall be removed and disposed of to areas arranged by the Contractor.

5.27.6 In locations where surplus material left in the vicinity of the trench would not be objectionable, the surplus material may be disposed by spreading neatly in the vicinity of the trench in such a way as to minimise future erosion of the backfill and adjacent ground surfaces. The Contractor shall maintain the backfill and adjacent ground until the end of the Defects Liability Period.

5.27.7 Where, within public or private property, the reasonable convenience of persons will require such, trenches to be levelled off at the time of backfilling. Any subsequent settlement shall be made good by the Contractor, as required by placing additional fill.

5.27.8 All tunnels shall be completely backfilled. The space between the outer surface of the pipes, internal lining and the fact of the tunnel excavation shall be backfilled with sand which shall be compacted by flooding. Sand used for backfilling shall comply with the grading requirements for bedding sand as hereinbefore specified.

5.27.9 The Superintendent may direct the Contractor to backfill the tunnel with Grade N20 concrete in lieu of sand.

SG 5.28 Testing of Lines

5.28.1 Hydrostatic pressure testing of all water mains shall be carried out prior to the acceptance of the works and witnessed by the consulting Engineer and a council officer.

5.28.2 The contractor shall have carried out a successful test prior to arranging a Council witness test.

5.28.3 Pressure testing shall not be carried out during wet weather unless otherwise approved by Council.

5.28.4 Before testing a pipeline section, it shall be cleaned and filled slowly with water, taking care that all air is expelled.

5.28.5 The minimum test pressure acceptable shall be 1200 KPa unless advised otherwise by the relevant Local Authority and shall be considered to be satisfactory if:

5.28.5.1 There is no failure of any thrust block, anchor block, pipe, fitting, valve, joint or any other pipeline component;
5.28.5.2 There is no visible leakage; and
5.28.5.3 There is no loss of pressure in the 24 hour test period outside of the parameters allowed for under AS2566.2, Constant Pressure Method.

5.28.6 The specified test pressure shall be maintained as long as required, while the whole section is examined, and in any case not less than 24 hours.

5.28.7 Any failure, defect, and / or visible leakage, which is detected during the pressure testing of the pipeline or during the Defects Liability Period shall be made good by the contractor and re-tested.

SG 5.29 Flushing

5.29.1 Upon completion of pressure testing, lines shall be adequately flushed and water samples taken for testing by a Council approved testing authority to the requirements of the National Health and Medical Research Council (NHMRC).

SG 5.30 Tolerances

5.24.1 Tolerances for the construction of water reticulation works shall comply with Table S5.1.

Table S5.1 Construction Tolerances

Description of Works	Tolerance
Alignment	On the allocated alignment (2500m off property boundary)
Hydrants, fittings	Within 0.3m of design relative to side property boundary
Water service connections / conduits	Extend 300mm behind back of kerb, be laid 100mm below pavement subgrade
Valves	Opposite the nearest RP boundary, spaced at 300m apart

SG 6 – Sewerage Reticulation

General

SG 6.1 Scope

6.1.1 This specification details all matters pertaining to Sewerage Reticulation Construction.

6.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

6.1.3 Aspects of modification or clarification of the codes are detailed in Appendix A of Design Guideline – D7

6.1.4 The requirements of this Manual will take precedence over the Water Services Association of Australia Codes

6.1.5 Aspects of medication or clarification of the codes Standard Drawings are detailed in Appendix H and Appendix I.

SG 6.2 Reference Documents

6.2.1 Australian Standards:

- 6.2.2 AS/NZS 1260 Unplasticised PVC (UPVC) Pipes and Fittings for Sewerage Applications
- 6.2.3 AS1289 Methods of Testing Soils for Engineering Purposes
- 6.2.4 AS1432 Copper Tubes for Plumbing, Gasfitting and Drainage Applications
- 6.2.5 AS/NZS1477 PVC Pipes and Fittings for Pressure Applications
- 6.2.6 AS1646 Elastomatic Seals for Waterworks Purposed
- 6.2.7 AS2032 Code of Practice for Installation of PVC Pipe Systems
- 6.2.8 AS2129 Flanges for Pipes, Valves and Fittings
- 6.2.9 AS/NZS2280 Ductile Iron Pressure Pipes and Fittings
- 6.2.10 AS3500 National Plumbing and Drainage Code
- 6.2.11 AS3996 Metal Access Covers, Road Grates and Frames
- 6.2.12 AS4198 Precast Concrete Access Chambers for Sewerage Applications
- 6.2.13 AS4441 Oriented PVC (PVC-O) Pipes for Pressure Applications
- 6.2.14 AS/NZS4765 Modified PVC (PVC-M) Pipe for Pressure Applications
- 6.2.15 AS5065 Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications.

6.2.2 QLD Government Legislation:

- 6.2.2.1 Sewerage and Water Supply Act

6.2.3 Water Services Association of Australia:
- 6.2.3.1 WSA 02 – Sewerage Code of Australia
- 6.2.3.2 WSA 04 – Sewerage Pumping Station Code of Australia

Materials

SG 6.3 Pipes General

6.3.1 All pipes used for sewer reticulation shall be constructed from the following materials:
- 6.3.1.1 Polyvinylchloride (PVC)
- 6.3.1.2 Ductile Iron.

SG 6.4 Unplasticised PVC (PVC-U)

6.4.1 Unplasticised PVC (PVC-U) pipes and fittings for gravity systems shall be manufactured in accordance with AS1260 suitable for rubber ring joints. Pipe classes shall be in accordance with the manufacturers' recommendation and shall be as shown on the approved Project Drawings.

6.4.2 Unplasticised PVC (PVC-U) pipes and fittings for rising mains and suction pipes shall be manufactured in accordance with AS/NZS 1477 minimum Class 12 suitable for rubber ring joints with a mauve coloured pigment.

6.4.3 Modified PVC (PVC-M) pipes manufactured in accordance with AS/NZS 4765 by an Australian Standards quality endorsed company may be used as an alternative to PVC-U.

6.4.4 Oriented PVC (PVC-O) pipes manufactured in accordance with AS 4441 by an Australian Standards quality endorsed company may be used as an alternative to PVC-U.

6.4.5 Rubber Rings shall be manufactured and tested in accordance with AS 1646. They shall be of natural rubber and only those impregnated with a Root Inhibitor shall be used.

6.4.6 All pressure mains 100m diameter and greater shall be D.I.O.D compatible.

SG 6.5 Ductile Iron

6.5.1 Ductile Iron pipes shall be manufactured and cement lined in accordance with AS 2280 by an Australian Standards quality endorsed company.

6.5.2 Socketed Pipes to be Class K9 suitable for the patented "Tyton" type rubber ring joint. Flanged Pipes to be Class K12.

6.5.3 Flanges shall comply with AS 2129 Table C. Bolts and nuts for flanged joints shall be in accordance with AS 2129

6.5.4 All pipes and fittings shall be wrapped in a mauve coloured loose polyethylene sleeving 0.25mm thick. Wrapping and taping shall be carried out in accordance with the pipe manufactures recommendations.

6.5.5 All bends for mains of 100mm diameter or larger and all other associated fittings shall be constructed in accordance with AS2280, and have flange or spigot and socket type joints as specified on the approved Project Drawings. Where flanges are used, bolts shall be matched sets and conform to the following criteria:

6.5.5.1 In above ground uses, bolts shall be Hot Dipped Galvanised

6.5.5.2 In below ground uses, bolts shall be Grade 316 Stainless Steel with nuts and washers Grade 304 stainless steel.

SG 6.6 Polypropylene Pipes

6.6.1 Pipes shall conform to the AS 5065. Pipes shall only be used with the prior approval of Council. “As Constructed” drawings shall clearly indicate location of polypropylene pipes.

SG 6.7 Bedding Materials

6.7.1 After the excavation has been completed, inspected and approved by the Superintendent, the foundation layer of bedding concrete or approved bedding material shall be placed. The minimum bedding depth shall be 100mm of approved material. Refer to Council’s standard drawings

6.7.2 Where directed, pipes shall be bedded on Grade N20 concrete cradle or encased in Grade N20 concrete surround or otherwise bedded in accordance with the drawings or such instructions as may be given by the Superintendent in writing.

6.7.3 Unless shown otherwise on the drawings, no pipes encased in concrete shall extend more than 150mm beyond the face of that concrete. Short pipes laid in sewers shall not exceed 600mm in length and short pipes laid in house connections shall not exceed 300mm in length.

6.7.4 Both approved bedding and approved filling or blanket course to 100mm above the crown of the pipe shall be compacted to 95% of the maximum density as determined by the Standard Compaction Test Department of Transport Q110A 1993.

6.7.5 The material used for bedding, surround and cover for pipes shall be sieved sand, 5mm pea gravel, or 5mm crushed rock free from dust and foreign material.

6.7.6 All junction pipes in a line of sewer shall be concrete bedded and encased with a minimum 150mm cover of Grade N20 concrete unless directed otherwise by the Superintendent.

6.7.7 Concrete blocks in Grade N20 concrete shall be built across the trenches where directed by the Superintendent.

6.7.8 Where passing through concrete, brickwork or masonry, pipes shall be cleaned and washed over with fresh cement grout and bedded on and surrounded with cement mortar at least 12mm clear thickness.

SG 6.8 Concrete

6.8.1 The concrete and reinforcement used in the construction of cast insitu manholes shall comply with Specification SG 7 CONCRETE WORKS.

SG 6.9 Precast Manholes

6.9.1 Precast manhole components shall comply with AS 4198.

SG 6.10 Manhole Covers

6.10.1 Manhole covers and frames shall be supplied for all sewer manholes shall be Cast Iron sealed (gastight) covers manufactured in accordance with AS 3996.

6.10.2 All openings shall conform to the details on Council's Standard Drawing

6.10.3 All covers shall have a raised stud pattern with the letters SEWER (65mm high) cast into the centre of the lid and "gatic" type lifting holes.

6.10.4 Unless noted otherwise on the approved Project Drawings the minimum class of manhole covers shall be Class C or D.

Construction

SG 6.11 Setout

6.11.1 The alignment and grade of sewer lines and position of manholes shall be stated on the approved Project Drawings.

6.11.2 The position of the centre of each manhole shall be pegged on the ground by a Registered Surveyor prior to the commencement of work.

6.11.3 Offset pegs shall be established prior to commencing construction of any line, at a convenient distance to remain clear of all works and remain intact for the duration of the work.

6.11.4 The levels of the sewers shall be maintained in strict accordance with bench marks and only approved and tested equipment shall be used to establish and maintain these levels in accordance with the design documents.

SG 6.12 Clearing & Grubbing

6.12.1 All clearing and grubbing works shall be in accordance with Specification SG 1 EARTHWORKS.

6.12.2 Where sewer lines pass through allotments any trees or obstructions not on the line of the pipes shall be preserved, Clearing and grubbing shall be carried out in accordance with Specification No. 3.1- Earthworks.

6.12.3 The Contractor shall be responsible for all damage to grass, cultivation, fences, building or stock, by fire, falling timber or other causes arising from his operations.

SG 6.13 Trenching

6.13.1 All trenching and foundation works necessary for the installation of the pipeline or thrust blocks, shall be in accordance with Specification SG 1 EARTHWORKS.

6.13.2 The width of trenching excavation shall be in accordance with the Council's Standard Drawing at the trench base and comply with all regulations of Workplace Health and Safety Act.

6.13.3 In undertaking trench excavation, the Contractor shall provide any shoring, sheet piling or other stabilisation of the sides necessary to comply with statutory requirements.

6.13.4 Where public utilities exist in the vicinity of sewer reticulation works the Contractor shall obtain the approval of the relevant authority / corporation to the method of excavation before commencing excavation.

6.13.5 In the event of any trenching being left open for longer than one week, the Contractor shall provide erosion control measures to ensure minimal soil disturbance and material loss off the site. Some or all of these measures shall be provided immediately upon the onset of rain with an open trench.

6.13.6 The Contractor shall leave a clear space of 600mm minimum between the edge of any excavation and the inner toe of spoil banks. No excavated materials shall be stacked against the walls of any building or fence without the written permission of the owner of such building or fence. Topsoil from excavations shall be kept separate and utilised to make good the surface after backfilling.

6.13.7 Where necessary the Contractor must arrange suitable traffic and pedestrian management.

SG 6.14 Crossings

6.14.1 Where a sewer main crosses a State Controlled Road, Railway line or creek, the affected work shall be carried out in accordance with the requirements of

the relevant Authority / Corporation. It shall be the Contractor's responsibility to complete written notification to the Authority / Corporation of the intention to carry out the work.

6.14.2 Where a sewer main crosses an existing road, the affected work shall be carried out in accordance with the requirements of Council. It shall be the Contractor's responsibility to notify Council of the intention to carry out the work.

6.14.3 Unless otherwise approved in writing, all crossing or existing roads and streets shall be bored or jacked with no disruption to the pavement, shoulder or kerb.

SG 6.15 Bedding

6.10.1 Bedding types shall be as detailed on Council's Standard Drawing with the bedding materials complying with the "Bedding Material" section of this Specification.

Type 1 Bedding

6.10.2 The bedding material shall be as specified and shall be placed and compacted for the full width of the trench to the level of the underside of the pipe.

6.10.3 An area of bedding adjacent to the position of the pipe collar should be removed to provide a minimum 20mm clearance to the collar while the remainder of the pipe is bedded evenly on the bedding material.

6.10.4 The remainder of the bedding material is then placed and carefully tamped to avoid disturbing the position of the pipe thus ensuring that the surface of every pipe is in full and even contact with the bedding material.

6.10.5 All bell holes shall be rammed prior to completion of the bedding operation. The bedding material shall be uniformly compacted so as to achieve the following standards:

6.10.5.1 Minimum dry density ratio 95% Standard (cohesive soils).

6.10.5.2 Minimum density index 65% (cohesionless soils)

6.10.6 Compaction requirements are with reference to the relevant Test Methods contained in AS1289.

Type 2 Bedding

6.10.7 Used in wet conditions particularly where the trench bottom requires stabilising the trench invert shall be over excavated to accommodate a "Crushed Rock Foundation" with a geotextile surround.

6.10.8 Water is to be removed from the excavation as work proceeds to allow for placement of the geotextile crushed rock layer. The crushed rock layer shall be laid in 100mm layers and compacted as required.

6.10.9 The geotextile shall surround the crushed rock layer and be overlapped minimum of 500mm.

6.10.10 The pipe bedding material shall placed and compacted over the crushed rock foundation as specified for Bedding Type 1.

Type 3 Bedding

6.10.11 Type 3 bedding incorporating designed piles that are driven by air or electric hammer on a heavy dolly.

6.10.12 Piles shall be driven to give a set in accordance with the design requirements and spaced accordingly as stated on the approved Project Drawings.

6.10.13 A 150 x 50 hardwood sleeper is placed on top of the pile with 150 x 50 hardwood planks spanning the sleepers.

6.10.14 A concrete cradle as detailed on the approved Project Drawings shall then be poured on the planks to support the pipes.

SG 6.16 Laying and Jointing of Pipes

6.16.1 All contractors shall have undertaken a manufacturers pipe laying accreditation course.

6.16.2 All pipelines shall be constructed of pipes of such sizes and laid true to such levels and grades as shown on the approved Project Drawings.

6.16.3 The lines, levels and grades of all lines shall be checked and all pipes found incorrect shall be removed and re-laid.

6.16.4 Trenches shall be kept free of water during pipe laying, and until completion of backfill.

6.16.5 Jointing of pipes, valves and fittings is to be carried out to the manufactures recommendations and in accordance with Australian Standards where applicable.

6.16.6 For pipes with rubber ring joints, only the lubricant specified in writing by the manufacturer shall be applied in making the joint. When the joint is made, the witness mark shall at no point be more than 1mm from the end of the socket.

6.16.7 Before being laid, all pipes, fittings, valves, etc shall be cleaned and examined by the Contractor.

6.16.8 Approved plugs shall be used to prevent foreign matter entering sections of pipeline, which are left uncompleted overnight.

6.16.9 The Contractor shall take all necessary precautions to prevent flotation of pipes during laying, backfilling and initial testing. Any temporary supports shall be removed prior to completion of backfilling.

6.16.10 Pipes may be cut as needed to suit closing lengths, to remove damaged pipe or fittings or to remove sockets if necessary when jointing a socketed fitting.

6.16.11 For field cuts, only an approved mechanical pipe cutter shall be used, except that uPVC pipes may be cut using a power saw or a fine toothed hand saw and mitre box.

6.16.12 Any pipes cut in the field shall have their ends prepared in accordance with the manufacturer's written instructions.

6.16.13 Where pipes are cut in the field, a witness mark shall be made on the pipe at the length specified by the manufacturer from the end of the pipe. Scoring of uPVC pipes shall not be permitted.

6.16.14 Gravity lines shall be constructed to the tolerances specified hereafter:
6.16.14.1 The maximum horizontal deviations to either side from the design axis of a pipeline shall be 100mm for all sizes of pipes.
6.16.14.2 The maximum vertical deviations from the design grade of pipelines of any diameter and grade, shall be + 5mm.
6.16.15 During the progress of the works the Contractor shall have at least two (2) days supply of tested and approved pipes, including junctions on the ground in advance of quantity fixed in position.

SG 6.17 Connections to Manholes

6.17.1 Pipelines shall be connected to manholes, structures or embedded concrete by means of 600mm long pipes such that two flexible joints are provided, the first joint being at the face of the structure. Refer to Council's Standard drawing
6.17.2 The position of the access chamber shall be as shown on the approved Project Drawings. The Contractor shall check the alignment prior to commencing construction and advice the design engineer of any obstructions (Structure, Flora, Services etc)
6.17.3 Allowable lateral deviations from the final design position of access chambers shall be in accordance with the tolerances for horizontal deviations of pipelines as specified. Longitudinal deviations from that position shall not exceed 300mm.

SG 6.18 Connection to Existing Infrastructure

6.18.1 Connection to existing live sewer mains and manholes shall be carried out in accordance with the requirements of Council. It shall be the Contractor's responsibility to notify Council of the intention to carry out and arrange for the timing of such works.
6.18.2 The upstream side of the existing manhole is to be plugged until all new sewer mains have been approved, tested and cleaned.

SG 6.19 Anchor Blocks

6.19.1 Concrete anchor blocks shall be provided in accordance with Council's Standard Drawing for 150 dia. lines laid at a grade of 1 in 6 or steeper and 225 dia. lines laid at 1 in 10 or steeper.
6.19.2 Concrete works shall comply with Specification SG 7 CONCRETE WORKS.

SG 6.20 House Connection Branches

6.20.1 House Connection Branches (HCB) to all properties shall be constructed in accordance with Council's Standard Drawing and to the types, locations, levels and dimensions stated on the approved Project Drawings.

6.20.2 Concrete surrounds shall be provided to all HCB's. All concrete works shall comply with Specification SG 7 CONCRETE WORKS.

6.20.3 Backfill around risers shall be sand compacted to the top of the socket or coupling, for the full width of trench and for a minimum distance of 500mm upstream and downstream of the riser.

6.20.4 The position of each riser, junction or end of a sideline shall be clearly marked by the Contractor on completion of backfilling, with a approved 13mm orange electrical conduit tied to the end of HCB and held in a vertical position during backfilling. The top end of the tape shall be left flush with ground level.

SG 6.21 Rising Mains

6.21.1 All works necessary for the installation of the rising mains including installation of thrust block and anchor blocks, shall be in accordance with Specification SG 5 WATER RETICULATION.

6.21.2 Air release valves and scour valves shall be installed where shown on the approved Project Drawings.

6.21.3 Unless otherwise noted on the approved Project Drawings, pipes for rising mains shall be laid on continuously rising grades from scour valve to air release valve, notwithstanding any minor irregularities in the ground surface.

6.21.4 Marking plates bearing the letters "AV" for air valves, "SV" for scour valves and "RM" at changes of direction and at such chainages that the location of the main is marked at least once each 200 metres.

6.21.5 Sewer rising main connections to discharge manholes are to be constructed in accordance with Council's Standard Drawings.

SG 6.22 Manholes

6.22.1 All concrete work associated with the construction of manholes shall comply with Specification SG 7 CONCRETE WORKS.

6.22.2 Manholes shall be constructed in accordance with Council's Standard Drawing, and to the types, locations, levels and dimensions stated on the approved Project Drawings.

6.22.3 Rendering of this invert and benching shall be in accordance with the Council's Standard Drawing.

6.22.4 Precast manholes are an acceptable alternative with precast base units for Inlet Type A manholes in accordance with Council's standard procedure for pre cast manholes.

6.22.5 Precast Manhole risers are acceptable for use with cast insitu manhole bases.

6.22.6 Precast riser units shall be jointed in accordance with the manufacturers' specifications utilising the recommended method and materials. Inlets into precast units shall be constructed in accordance with the details illustrated on Council's Standard Drawing.

6.22.7 The installation of all precast manhole components shall be in accordance with the manufacturers' recommended procedures, requirements and Council's standard installation procedure.

SG 6.23 Covers and Surrounds

6.23.1 Manhole covers shall be finished flush with the surface in roadways, footpaths and paved surfaces. Elsewhere, unless noted otherwise on the approved Project Drawings, covers shall be finished 50mm above the surface of the surrounding ground, in a manner designed to avoid as far as possible, the entry of surface water.

6.23.2 Manhole covers are to be located such that the position of the access opening is directly over the outlet pipe.

6.23.3 The installation of all precast manhole covers shall be in accordance with the manufacturers' recommended procedures and requirements.

SG 6.24 Backfill and Compaction

6.24.1 Material for the side support and overlay of the pipe shall comply with the pipe bedding material specification. The material shall be compacted in layers of not more than 150mm to 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289 Flooding of non-cohesive material shall be considered as an acceptable method of compacting bedding material.

6.24.2 The remainder of the excavation shall be backfilled with excavated material. The backfill shall be compacted in layers of not more than 150mm thick to 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289. Flooding of cohesive material shall not be permitted as a means of compacting backfill.

6.24.3 Backfilling and compaction shall be carried out without damaging the pipe or its external coating or wrapping or producing any movement of the pipe.

6.24.4 Where trenches are under constructed pavements or in other situations where required, the material used for backfilling shall be approved excavated material with linear shrinkage of the fines passing a 2.36mm sieve of not greater than 6 per cent. The Contractor may elect to use imported, select fill or sand for this purpose. The backfill shall be spread in layers not exceeding 300mm in loose depth at or near optimum moisture content and compacted using mechanical vibration equipment.

6.24.5 Backfill material down to a depth of 300mm below the underside of the pavement material shall be compacted to 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289, and backfill material below such depth shall be compacted to not less than 95 percent of the standard maximum dry density of the material used when determined in accordance with AS1289.

6.24.6 In cases other than those covered by the above clause backfilling above the level of 300mm above the top of the pipes in open trenches may be carried out by dumping from mechanical plant into the trench providing that no rock is placed in the trench until the pipes are covered by at least 300mm of soil backfill.

6.24.7 Compaction testing shall be carried out at a rate of 1 test for each 150 metres of trench backfilled or in the cast where trenches are constructed under road pavements and road shoulders, 1 test for each 25 metres of trench backfilled.

SG 6.25 Cleaning Sewers

6.25.1 Before the sewers, manholes and house drains are accepted they shall be cleaned to remove all clay, sand and other materials.

6.25.2 All water plus materials used in the flushing of the reticulation system shall under no circumstances be discharged into existing sewers downstream of construction. All lines shall be inspected after flushing and will not be accepted until they present a clear barrel, free from any obstruction.

SG 6.26 Test of Manholes

6.26.1 All manholes shall be subjected to hydrostatic or vacuum tests to prove their water tightness unless directed otherwise by the Local Authority.

6.26.2 For hydrostatic tests, all pipe openings out of the manhole shall be plugged and the manhole filled with water to the lowest point on the top of the manhole cover surround. The plugs shall be positioned in the pipes as near as practicable to the internal face of the access chamber. After allowing an interval for absorption, the manhole shall be refilled.

6.26.3 The test on the manhole will be considered satisfactory provided the level does not drop more than 25mm in twenty four (24) hours. The plug of the outlet shall be fitted with a suitable release for emptying the manhole on satisfactory completion of the test.

6.26.4 Manholes failing the test shall be repaired and the test repeated. The process of testing, repair of defects and retesting shall continue until a satisfactory test is obtained.

6.26.5 Where the ground water level is high, an infiltration test may also be required. This shall not take place until ten (10) days after the placing of concrete.

SG 6.27 Testing of Lines

6.27.1 All gravity lines shall be subject to air testing to prove their water tightness unless directed otherwise by the Local Authority.

6.27.2 Testing may be done progressively, a minimum of 24 hours notice shall be provided to Council before commencement of testing. Ensure that pipes are clean before any test is performed.

6.27.3 If any of the tests proved to be unsatisfactory, the contractor shall be required to detect and repair the fault and then re-test. The contractor shall continue to repair and re-test until a satisfactory test is obtained. Even if testing produces satisfactory test results, the contractor shall repair any pipeline or conduit in which there is a visible or detectable leak or blockage.

6.27.4 The contractor shall carry out a visual inspection to ensure that all sewer lines present a full clean bore.

Air Testing General

6.27.5 Air testing shall be either pressure testing or vacuum testing, as directed by the Local Authority. The tests shall include the house connection branches and inspection tee.

6.27.6 Air Testing (Pressure) - The sewer line to be tested shall be pressurised to the "Initial Pressure" shown in the Table S6.2 for a minimum of 3 minutes to stabilise the temperature.

Table S6.2 Pressure Air Testing – Initial Pressures

	Sewer depth range (metres)				
	0-1.5	1.5-3.0	3.0-4.5	4.5-6.0	Over 6.0
Initial Pressure (KPa)	30	35	40	45	50
Test start pressure (KPa)	25	30	35	40	45

6.27.7 After the 3 minute stabilisation period the pressure shall be dropped to the "Test Start Pressure" shown in the above table and the pressure gauge monitored for 5 minutes.

6.27.8 The sewer line under test shall be considered to have passed the test when the pressure does not fall by more than 5 KPa during the 5 minute period.

6.27.9 Air testing (Vacuum) - The sewer to be tested shall be drawn to a vacuum of 28 KPa and the vacuum gauge monitored for 5 minutes. The sewer under test shall be considered to have passed the test when the vacuum does not fall by more then 5 KPa during the 5 minute period.

Ovality Testing

6.27.10 All gravity sewer pipes shall be tested to determine any excessive pipe defection (Ovality) by using a proving tool.

6.27.11 Testing for ovality shall be carried out in accordance with Appendix G of WSA 02-2002 Sewerage Code of Australia

6.27.12 The proving tool shall be:
- 6.27.12.1 Fabricated from steel or aluminium alloy with pulling rings at each end and marked to indicate the nominal pipe size and the provers' outside diameter.
- 6.27.12.2 Rigid, non-adjustable, have an odd-number of legs (min 9) and an effective length of not less than its nominal diameter. The minimum diameter at any point along the length shall be as shown in Table G1 of WSA 02-2002 Sewerage Code of Australia.
- 6.27.12.3 The shape of the proving tool must be approved.

6.27.13 Sewer pipes that exhibit excessive ovality, by failing the maximum allowable deflection as shown above, shall be replaced and the re-laid section retested for ovality.

SG 6.28 Testing of Rising Mains

6.28.1 Hydrostatic pressure testing of all sewer rising mains shall be carried out prior to the acceptance of the works.

6.28.2 The contractor shall have carried out a successful test prior to arranging a Council witness test.

6.28.3 Pressure testing shall not be carried out during wet weather unless otherwise approved by Council.

6.28.4 Before testing a pipeline section, it shall be cleaned and filled slowly with water, taking care that all air is expelled. Purging of air from rising mains shall be promoted by opening air valves.

6.28.5 The hydrostatic test pressure which shall be applied to each section of the pipeline shall be such that at each point of the section the test head shall be equal to or greater than the design head specified or shown on the approved Project Drawings, but shall not exceed same by more than 20 per cent.

6.28.6 The pressure testing of a section shall be considered to be satisfactory if:
- 6.28.6.1 There is no failure of any thrust block, anchor block, pipe, fitting, valve, joint or any other pipeline component;
- 6.28.6.2 There is no visible leakage; and
- 6.28.6.3 There is no loss of pressure in the 15 minute test period

6.28.7 The specified test pressure shall be maintained as long as required, while the whole section is examined, and in any case not less than 15 minutes.

6.28.8 Any failure, defect, and / or visible leakage, which is detected during the pressure testing of the pipeline or during the Defects Liability Period shall be made good by the contractor.

SG 6.29 Restoration of Surfaces

6.29.1 Pavements, lawns and other improved areas shall be cleaned and left in the same order as they were at the commencement of the works. Lawns shall be

restored with turf cut and set aside from the original surface and / or with imported turf.

6.29.2 All restored surfaces shall be maintained in the condition to which they are restored until the expiry of the Defects Liability Period applicable to those surfaces. Pavements shall be maintained with crushed metal, gravel or other suitable material allowing for consolidation and shall then be restored to a condition equivalent to that of the original pavement.

6.29.3 Immediately the backfilling of a trench excavated through a pavement has been completed, the pavement shall be temporarily restored. Where the trench crosses bitumen or concrete pavement, a pre-mixed asphaltic material shall be used for such temporary restoration. Temporary restoration works shall be maintained by the Contractor until final restoration is carried out.

6.29.4 Final restoration of the pavement shall be carried out to restore the pavement and its subbase to no less than the original condition. Unless noted otherwise on the approved Project Drawings all trenches excavated through bitumen or concrete pavement shall be sawcut each side to facilitate a neat finish to the final restoration. Final restoration may include, if required, the removal of temporary restoration.

6.29.5 Backfill shall be placed sufficiently high to compensate for expected settlement and further backfilling shall be carried out or the original backfill trimmed at the end of the Defects Liability Period in order that the surface of the completed trench may then conform to the adjacent surface. Surplus material shall be removed and disposed of to areas arranged by the Contractor.

6.29.6 In locations where surplus material left in the vicinity of the trench would not be objectionable, the surplus material may be disposed by spreading neatly in the vicinity of the trench in such a way as to minimise future erosion of the backfill and adjacent ground surfaces. The Contractor shall maintain the backfill and adjacent ground until the end of the Defects Liability Period.

6.29.7 Where, within public or private property, the reasonable convenience of persons will require such, trenches to be levelled off at the time of backfilling. Any subsequent settlement shall be made good by the Contractor, as required by placing additional fill.

6.29.8 Where shown on the approved Project Drawings or where the Contractor elects to tunnel under paving, kerb and channel or other improved surfaces in lieu of trenching, backfilling shall be so carried out as to restore full support to those surfaces. The Contractor shall remain responsible for the repair of the improved surfaces, if subsequently damaged due to subsidence of the backfill, until the end of the Defects Liability Period.

SG 6.30 Tolerances

6.30.1 Tolerances for the construction of sewer reticulation works shall comply with Table S6.4.

Table S6.4 Construction Tolerances

Location	Tolerance
Invert Levels	+25mm - -25mm
Location of alignment and structures	Lateral deviation from line + 100mm Longitudinally along line + 300mm
Grade on pipe	Design grade not compromised

SG 7 – Concrete Works

General

SG 7.1 Scope

7.1.1 This specification details all matters pertaining to the supply, placement, compaction and finishing of Concrete Works.

7.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

SG 7.2 Reference Documents

7.2.1 Australian Standards

7.2.1.1 AS1012 Methods of Testing Concrete

7.2.1.2 AS1379 The Specification and Manufacture of Concrete

7.2.1.3 AS1478 Chemical Admixtures for Concrete

7.2.1.4 AS1553.1 Low Carbon Steel Electrodes for Manual Arc Welding of Carbon Steels and Carbon-Manganese Steels

7.2.1.5 AS1554.3 Welding of Reinforcing Steel
7.2.1.6 AS2203 Cored Steel Electrodes for Arc Welding
7.2.1.7 AS2717.1 Ferritic Steel Electrodes
7.2.1.8 AS3600 Concrete Structures
7.2.1.9 AS3610 Formwork for Concrete
7.2.1.10 AS3735 Concrete Structures for Retaining Liquids
7.2.1.11 AS3799 Liquid Membrane-forming Curing Compounds for Concrete
7.2.1.12 AS/NZS4671.2 Steel Reinforcing Bars for Concrete
7.2.1.13 AS/NZS4671.3 Steel Reinforcing Wire for Concrete
7.2.1.14 AS/NZS4671.4 Welding Wire Reinforcing Fabric for Concrete.

Materials

SG 7.3 Concrete – General

7.3.1 All concrete to be incorporated in the works shall be sourced from a Quality Assured Concrete supplier.
7.3.2 The production and delivery of ready-mixed concrete shall be in accordance with the requirements of AS 1379.
7.3.3 The quantity of concrete delivered in any truck shall not exceed the rated capacity of its agitator drum. The timing of deliveries shall be such as to ensure an essentially continuous placing operation.
7.3.4 Ready-mixed concrete shall be placed and compacted within 1 hour of charging the mixer for concrete temperatures up to 32°c and within 45 minutes of charging the mixer for concrete temperatures exceeding 32°c.
7.3.5 The Consulting Engineer's discretion where approved set-retarding admixtures are used. In this instance approved admixtures shall conform with the requirements of AS 1478 and shall be used in accordance with AS 1379. Calcium Chloride shall not be used as an admixture in concrete works.
7.3.6 A Manufacturer's Certificate in the form of a delivery docket in accordance with AS 1379 shall be supplied for each batch and shall be retained by the Contractor. Such certificates shall be held and maintained in the Contractors Quality records for the project. Further, the Contractor shall obtain a statement from the manufacturer qualifying the quality standard of the concrete in accordance with the requirements as specified herein.
7.3.7 The consistency and workability of concrete shall be such that it can be handled and transported without segregation and can be placed, worked and compacted into all corners, angles and narrow sections of forms, and around all reinforcement.
7.3.8 Concrete class shall be classed as Nx where x is the minimum 28-day compressive strength in megapascals.
7.3.9 For construction elements involving structural concrete construction activities, (eg. bridge slabs, bridge abutment footings etc.) the concrete class and slump shall be as detailed in the Project Documentation. The material quality

compliance testing in this instance shall involve on-site sampling and testing in accordance with Australian Standard AS 1012. The testing of the 200mm x 100mm diameter test cylinders shall be at a frequency not exceeding one sample of 2 cylinders for each 15m3 or part thereof placed in an essentially continuous manner with a minimum of two samples of 2 cylinders for each casting day.

7.3.10 All testing shall be undertaken by a NATA registered testing authority. 11.The class of concrete relative to each construction element shall be as shown in Table S7.1.

Table S7.1 Concrete Classes

Construction Element	Class[1]
Kerb/Kerb & Channel	N 25
Manholes (Sewer & Stormwater)[2]	N25 or N32 as shown on Standard Drawings
Gully Pits / Field Inlets[2]	N25 or N32 as shown on Standard Drawings
Headwalls/Wingwalls & Apron Slabs[2]	N 25
Pathways / Bikeways	N 25
Access Driveways	N 25
Edge Restraints for Segmental Pavers (On Road Pavements)	N 25
Edge Restraints for Segmental Pavers (On footpaths, bikeways and medians)	N 20
Stamped Concrete (where used in road pavement)	N 32
Stamped Concrete (where used as parking bay behind kerb or not subject to regular street traffic loadings)	N 25
Thrust Blocks	N 20
Concrete Surrounds for Sewerage House Connection Branches	N 20
Concrete Cradle for Sewer Bedding Type 3	N 15
General Concrete Works (Sign Post Bases, Bases for Post and Rail Fences etc.)	N 20
Notes: 1. **Tested in accordance with the relevant sections of AS 1012.** 2. **Where any part of the structure is located below RL 1.800 AHD,**	

	concrete to be in accordance with the appropriate exposure condition in AS3600

SG 7.4 No Fines Concrete

7.4.1 No fines concrete shall consist of cement, water and coarse aggregate. The quantity of cement used shall be as specified below. The nominal size of the aggregate for no-fines concrete shall conform with the grading limits specified in Table S7.2.

7.4.2 The water / cement ratio shall be within the range 0.5 to 0.6 by mass.

Table S7.2 No Fines Concrete – Grading Limits

AS Metric Sieve (mm)	Percentage Passing By Mass	
	Nom. Size 20mm	Nom. Size 10mm
26.5	100	-
19.0	85-100	-
13.2	0-10	100
9.5	0-5	85-100
4.75	0	0-10
2.36	0	0-2
Minimum Cement Content (kg/m^3)	210	250

SG 7.5 Lean Mix Concrete

7.5.1 Lean mix concrete shall consist of a graded sand and gravel aggregate of 40mm maximum size with the addition of 5% by mass of Portland Cement or 1 part Portland Cement to 19 parts of graded aggregate and sufficient water to ensure a slump of less than 12mm.

SG 7.6 Reinforcing Steel

7.6.1 All reinforcement shall comply with the following requirements where applicable:

7.6.1.1 Steel Reinforcing Bar - AS/NZS4671.2 Steel Reinforcing Bars for Concrete

7.6.1.2 Hard-draw Steel Reinforcing Bar - AS/NZS4671.3 Steel Reinforcing Wire for Concrete

7.6.1.3 Reinforcing Wire Fabric - AS/NZS4671.4 Welding Wire Reinforcing Fabric for Concrete

7.6.2 All reinforcement shall be sourced from and Quality Assured manufacturer of such products and the Contractor shall obtain a statement from the manufacturer qualifying the Quality Standard of the reinforcing steel in accordance with the above noted standards.

Construction

SG 7.7 Temperature Limits for Concrete Placement

7.7.1 No concrete shall be placed in the Works if:

7.7.1.1 The temperature of the concrete is less than 5°C or exceeds 30°C;

7.7.1.2 The ambient air temperature is likely to be greater than 45°C during placement or within two (2) hours subsequent to placement.

7.7.2 If the ambient air temperature measured at the point of placement is likely to exceed 30°C during placing and finishing operations, the Contractor shall take practical precautions, to ensure that the temperature of the concrete does not exceed the permitted maximum so that the concrete can be placed and finished without defects, otherwise it shall be rejected. Typical precautions include those listed below:

7.7.3 At the concrete manufacturing plan:

7.7.3.1 Shading aggregate stockpiles;

7.7.3.2 Painting water tanks white;

7.7.3.3 Insulating or burying delivery lines;

7.7.3.4 Adding crushed ice to replace mixing water (in part) or chilling the water;

7.7.3.5 Injection of liquid nitrogen into the mixer.

7.7.4 At the site:

7.7.5 Cooling the formwork by dampening with water sprays;

7.7.6 Shading the work areas;

7.7.7 Erecting wind breaks;

7.7.8 Minimising the time for placing and finishing;

7.7.9 Use of evaporation retarding curing oil.

7.7.5 Special attention shall be paid to providing early curing for hot weather concreting operations.

SG 7.8 Foundations

7.8.1 Foundations for concrete structures shall be prepared as specified on the Project Drawings.

7.8.2 Rock foundations shall be neatly excavated to form a bed for the concrete, and shall be thoroughly scraped and cleaned.

7.8.3 Soil foundation shall, as far as possible, be excavated neatly from the solid material to coincide with the under-surface of the concrete, or of the subbase material (where specified).

7.8.4 All soft, yielding or other unsuitable material shall be replaced with sound material and the subgrade shall be compacted to provide a minimum of 95 per cent standard compaction as determined by AS 1289.5.4.1 for standard compactive effort. If the subgrade is dry it shall be sprinkled with as much water as it will readily absorb, before the concrete is placed.

7.8.5 The surface shall then be checked for uniformity, line and level, and all irregularities shall be made good.

SG 7.9 Formwork and Falsework

7.9.1 All Formwork and Falsework shall conform to AS 3610 unless otherwise required by the specific Project Documentation.

7.9.2 All forms shall be built mortar tight and of sufficient rigidity to prevent distortion by the pressure of the concrete and other loads incident to the construction operations. Forms shall be constructed and maintained to prevent warping and the opening of joints due to shrinkage of the timber. The forms shall be substantial and unyielding and shall be so designed and set that the finished concrete will conform to the proper dimensions and within the tolerances specified herein. The design of the forms shall take into account the effect of vibration of the concrete as it is placed.

7.9.3 When forms are re-used, their original shape, strength, rigidity, mortar tightness and surface smoothness shall be maintained at all times. Material previously used in formwork must be cleaned off and oiled before re-use. Warped timber shall not be used.

7.9.4 Forms, which are unsatisfactory in any respect, shall not be re-used.

7.9.5 All timber shall be free from knotholes, loose knots, cracks, splits, warps and other defects, which would affect the strength of the structure or the appearance of exposed surfaces.

7.9.6 For narrow walls and columns where the bottom of the form is otherwise inaccessible, openings shall be provided so that they may be cleaned before placing the concrete, and for purposes of compaction and inspection.

7.9.7 All forms shall be treated with the lightest practical coating of release agent before the reinforcement is placed. Release agent shall not be placed on reinforcement or construction joints.

7.9.8 All forms shall be set and maintained to the line and level designated. Forms shall remain in place for periods, which shall be determined as specified herein. When forms appear to be unsatisfactory in any way, either before or during the placing of concrete, the work shall not proceed until the defects have been corrected.

7.9.9 Metal form ties shall be of an approved type, and if cast in, shall be of a type which permits removal of the end fittings to a depth of at least 30mm below the finished surface of the concrete. Ordinary wire ties shall not be used.

7.9.10 Form ties shall be located in a uniform symmetrical pattern relative to the finished surface. The cavities left when the end fittings of embedded ties are removed shall be as small as possible and shall be filled with cement mortar at the earliest possible time. The surface of such filled cavities shall be left smooth and uniform in colour.

7.9.11 Forms for plain exposed surfaces shall consist of plastic-coated plywood, waterproof plywood, timber lined with tempered hard-board or close-fitting unwarped metal forms. Unless otherwise specified, joints in the form sheeting for plain exposed concrete surfaces shall be either vertical or horizontal and spaced with a regular pattern.

7.9.12 Forms for surfaces not exposed to general view may consist of modular timber or metal panels. Timber forms shall be constructed and maintained in such a manner as to prevent warping and opening of joints due to shrinkage of the timber. The timber shall be free of any defects, which will affect the structure.

7.9.13 Forms shall be removed with care and without unnecessary hammering or wedging, and so as not to injure the concrete or disturb the remaining supports. Methods of form removal likely to cause overstressing of the concrete shall not be used.

SG 7.10 Reinforcing Steel

7.10.1 Reinforcement shall be free of kinks or other unwanted deformations, and shall be cut to length, and bent in accordance with the Project Drawings. Fabric reinforcement shipped in rolls shall be straightened into flat sheets before use.

7.10.2 The surface condition of reinforcement shall comply with the following requirements:

7.10.2.1 At the time concrete is placed reinforcement shall be free from mud, oil, grease and other non-metallic coatings and loose rust which would reduce the bond between the concrete and the reinforcement.

7.10.2.2 For the purpose of this Specification, rust shall not be deemed to be loose if on rubbing with the thumb it leaves only a stain thereon.

7.10.2.3 Nevertheless, a deformed bar complying with AS 1302, or a welded wire fabric complying with AS 1304, and having mill scale or rust or both shall be deemed to comply with this Specification if, after wire-brushing the cross-sectional dimensions, including height of deformations; and mass, are not less than the dimensions and mass required by the applicable Australian Standard.

7.10.2.4 Any reinforcement projecting from a previous concreting operation shall be cleaned free of adhering concrete or loose slurry prior to any further embedment.

7.10.2.5 Any reinforcement placed within 1km of the coastline shall be thoroughly washed with a high pressure fresh water jet immediately

prior to pouring concrete to remove any salts deposited during storage and placement.

7.10.2.6 Reinforcement which has been submerged by tidal or flood waters shall also be cleaned with a high pressure fresh water jet prior to pouring concrete.

7.10.3 Reinforcement shall be placed in position as shown on the Project Drawings. In the case of bar reinforcement, the bars shall be tied together by wiring each intersection using annealed wire not less than 1.25mm in diameter or by such other fastening devices as may be approved by the Designer, provided that, where the bar spacing is 300 mm or less, alternate intersections only need to be tied.

7.10.4 Clearance from forms shall be maintained by use of approved chairs. The shape of the chair shall be such that minimum obstruction is offered to the formation of the homogeneous concrete both within and around the chair. Tubular or cylindrical types shall not be used. Some bar chairs are suitable for soffit use only and should not be used against side forms. Bar chairs shall be sufficient structural strength to support the weight of reinforcement and workmen at temperatures experienced on site.

7.10.5 Metal chairs shall not be approved for any locations.

7.10.6 Precast mortar blocks shall not be used unless the blocks are manufactured from vibrated concrete of strength equivalent to that of the main concrete, and to a size and shape so as not to interfere with the structural integrity of the works. Such blocks shall have suitable fixing wires cast-in.

7.10.7 Layers of bars shall be separated by means of approved bar spacers. Stirrups and ligatures shall pass around the main reinforcement and shall be securely tied thereto.

7.10.8 Reinforcement shall be spliced by lapping or where permitted, by welding or by approved mechanical splices. Fabric reinforcement shall be lap spliced only.

7.10.9 The system of fixing shall be such as to form a rigid cage which maintains dimensional tolerances under loads experienced during placement of concrete. Welding of reinforcement to form a rigid cage shall comply with the following requirements:

7.10.9.1 Welding shall be in accordance with AS 1554.3. In particular tack welds shall not substantially reduce the cross-section of the reinforcing steel nor adversely affect its strength and shall have:

7.10.9.1.1 A throat thickness not less than 4 mm;

7.10.9.1.2 A length not less than the diameter of the smaller bar.

7.10.9.2 Welding shall not be carried out within 75 mm of any portion of a bar which has been bent or will be bent.

7.10.9.3 No more than one-third of the main reinforcement at any cross-section shall be so welded.

7.10.9.4 Hard drawn wire and fabric reinforcement shall not be welded or heated unless approved by the Engineer.

7.10.9.5 Welding electrodes that are to be used complying with AS 1553.1 or AS 2203 or AS 2717.1.

7.10.9.6 Splices shall be made by butt or by fillet welding. Butt welds shall be qualified complete penetration butt joints in accordance with AS 1554.3.

7.10.9.7 Suitability experienced and competent welding personnel shall be engaged to complete the works.

7.10.10 Splicing of reinforcement shall occur only in the locations shown on the Project Drawings. Where practical, splices in bar reinforcement shall be staggered.

7.10.11 The length of lap splices in bar reinforcement shall be as shown on the Project Drawings. All reinforcement shall be spliced in such a manner as to maintain specified clear cover to the surface of the concrete. Splicing of fabric reinforcement shall be achieved so that the two outermost transverse wires of one sheet of fabric overlap the outermost transverse wire of the sheet being lapped.

SG 7.11 Concrete Placement – General

7.11.1 The Contractor shall be solely responsible for placing and compacting the concrete in the forms to comply with this Specification and for achieving dense, sound concrete without voids and to the lines and levels shown on the Project Drawings.

7.11.2 When rain threatens or seepage exists in excavations, the Contractor shall have on site sufficient dewatering equipment and covers as applicable to prevent any additional water entering the concrete.

7.11.3 Concrete shall be placed in an essentially continuous manner between approved construction joints so as to avoid being placed against partially set concrete.

7.11.4 Any troughs and chutes used as aids in placing concrete shall be metal or metal lined and shall be arranged and used in a manner that does not cause segregation. The use of water to facilitate the movement of concrete along troughs or chutes is expressly prohibited, but all troughs and chutes shall be kept clean and free of coating of hardened concrete by flushing thoroughly with water, which shall be discharged well clear of concrete in place.

7.11.5 Troughs and chutes shall discharge into vertical downpipes at least 1 metre in length. Where steep slopes are required, the chutes shall be equipped with baffles or be in short lengths that reverse the direction of movement so that the concrete slides without segregation.

7.11.6 Pneumatic placers and concrete pump may be permitted for use subject to such equipment being arranged so that no vibrations will damage freshly placed concrete. The delivery end of the pipe shall terminate in a fitting of approved design, which shall prevent segregation of the concrete. After the completion of any concreting operations the equipment shall be thoroughly cleaned before re-use.

7.11.7 Concrete shall not be dropped from a height or in such a manner as will cause segregation or loss of material on the reinforcing steel or forms. When placing operations would involve dropping the concrete more than 2 metres it shall be

deposited through a sheet metal or other approve downpipe in such a way that the concrete does not segregate. As far as practicable, the pipes shall be kept full of concrete during placing and their lower ends shall be kept buried in the newly placed concrete. The depositing of a large quantity of concrete at any point with the intention of moving it along the forms, will not be permitted.

7.11.8 After initial set of the concrete, the forms shall not be jarred and no strain shall be placed on the ends of reinforcing bars which project.

SG 7.12 Concrete Placement – Under Water

7.12.1 Concrete shall not be placed under water unless specifically approved. The slump of the concrete to be placed underwater shall be between 150mm and 200mm.

7.12.2 Concrete shall not be placed in running water. Any pumping must cease and the water level must be constant where placement commences. The concrete shall be placed carefully in position by a tremie, a closed bottom-dump bucket or by other approved means. Concrete seals shall be placed in one continuous operation, the concrete shall not be disturbed after being deposited and the placing shall be regulated to continually maintain an approximately horizontal surface.

7.12.3 When a tremie is used it shall consist of a watertight tube and at no time shall concrete in the tube come in contact with water when it is being filled. The means of supporting the tremie shall be such as to permit free movement of the discharge end and to permit its being lowered rapidly when necessary to choke off or retard the flow of concrete. No water shall enter the tremie tube. The discharge end shall be completely submerged in concrete at all times and the tremie tube shall always be filled to a height to overcome the head of water.

7.12.4 When concrete is placed with a bottom-dump bucket, the bucket shall be lowered gradually and carefully until it rests upon the prepared foundation or upon concrete already placed. It shall then be raised slowly during the discharge travel so as to maintain as far as is practicable still water at the point of discharge and to avoid agitating the mixture. The concrete so placed shall not be disturbed.

SG 7.13 Compaction in Concrete Forms

7.13.1 Concrete during and immediately after depositing shall be thoroughly compacted. Concrete other than no fines concrete shall be compacted with high frequency internal vibrations as follows:

7.13.1.1 The vibrators shall be of an approved type and shall be capable of transmitting vibrations at a frequency not less than 150 Hz with an intensity which will visibly affect the concrete at a radius of 300mm.

7.13.1.2 The number of vibrators to be used by the Contractor shall be not less than one for each 4m^3 of concrete placed per hour, with a minimum of 2 vibrators to be provided at any time.

7.13.2 Vibrators shall be inserted vertically at successive positions not more than 450mm apart and in a manner, which ensures compaction of the concrete around the reinforcing steel and any other embedded fixtures, and into all parts of the forms.

7.13.3 Vibration shall continue at each position until air bubbles cease to emerge from the concrete. The vibrators shall then be withdrawn slowly so as to avoid leaving a "pocket". The vibration shall be of sufficient duration to thoroughly compact the concrete, but shall not be continued so as to cause segregation.

7.13.4 Care shall be taken to ensure that newly deposited concrete is vibrated into any fresh concrete adjacent to it to provide a homogeneous concrete mass.

7.13.5 Vibration shall not be applied either directly or through the reinforcement to any concrete, which has taken its initial set.

SG 7.14 Removal of Forms and Falsework

7.14.1 Unless otherwise specified, forms and falsework shall remain in position until the times stated below have elapsed after completion of concreting:

7.14.1.1 Non structural concrete - Until such time as the concrete has reached 50% of the characteristic 28-day strength or a period of 3 days, whichever is the lesser.

7.14.1.2 Structural Concrete - Soffits of slabs, headstock and diaphragms - Until such time as the concrete has reached 70% of the characteristic 28-day strength or 7 days, whichever is the lesser. For side forms on structural concrete - 3 days minimum.

7.14.2 Where the timing for the removal of forms is based on concrete strength as specified herein, the strength shall be proven by testing in accordance with AS 1012.

7.14.3 Forms shall be removed with care, without hammering and wedging, and in a manner, which will not injure the concrete or disturb the remaining supports. Centre Forms shall be lowered gradually and uniformly in such a manner as to avoid injurious stress in any part of the structure.

7.14.4 Hole formers such as pipes and bars shall be removed as soon as the concrete has hardened sufficiently for this to be done without damage to the concrete.

SG 7.15 Finishing of Exposed Surfaces

7.15.1 Unless otherwise specified in the Project Documentation, all surfaces of concrete exposed to view in the completed structure shall be finished in accordance with the following:

7.15.1.1 Kerb and channel, invert crossings, vehicle crossings and industrial crossings shall be finished with an approved steel finishing tool.

7.15.1.2 Footpaths, bikeways and pram ramps shall be finished with a wooden float and broomed.

7.15.1.3 Where a sample panel is supplied or specified associated with a particular project. The concrete finish shall be in accordance with the specified requirement.

7.15.2 All concrete surfaces shall be true and even, free from stone pockets, depressions or projections beyond the surface. All arises shall be sharp and true, and mouldings shall be evenly mitred or rounded. Care shall be exercised in removing forms to ensure this result.

7.15.3 Immediately after removal of forms from mass or reinforced concrete work, all rough places, holes and porous spots shall be repaired by removing defective work and filling with stiff cement mortar having the same proportions of cement and fine aggregate as used in the concrete, and shall be brought to an even surface with a wooden float.

7.15.4 Any tie wires or other fitments extending to outside surfaces, shall be cut back after removal of forms, to a depth of at least 40mm with sharp chisels or cutters. All cavities caused by removal of fitments or tie wires shall be wetted and carefully packed with cement mortar, as above.

7.15.5 The surfaces of bolt cavities, tie wire holes, and all defects in concrete shall be coated prior to the placing of mortar, grout, or fresh concrete, with an approved bonding agent, in lieu of wetting with water. The method of application of such agent and the conditions in which it is to be used shall generally be as laid down by the manufacturer.

SG 7.16 Weepholes

7.16.1 Drainage adjacent to weepholes shall be provided by either a layer of broken stone or river gravel consisting of clean, hard, durable particles graded from 50mm to 10mm such that:

7.16.1.1 The maximum particle dimension shall not exceed 50mm

7.16.1.2 No more than 5 per cent by mass shall pass the 9.5mm A.S. sieve. 2. The broken stone or river gravel, enclosed in a filter fabric suitable for drainage without scour, shall be continuous in the line of the weepholes, extend at least 300mm horizontally into the fill and extend at least 450mm vertically above the level of the weepholes.

7.16.2 Alternatively the Contractor may provide a synthetic membrane of equivalent drainage characteristics. It shall be stored and installed in accordance with Manufacturer's instructions.

SG 7.17 Joints

7.17.1 Where horizontal construction joints are found to be necessary in walls, or cast-in-situ drainage structures the joints may be made at the base of walls and at other locations in the walls where approved by the Consulting Engineer. In order to provide for bond between the new concrete and the concrete which has already set, the surface on which the new concrete is to be placed shall be thoroughly cleaned of loose material, foreign matter and laitance. The surface shall be roughened or keyed and saturated with water. After any excess water has been removed, the surface shall be thinly coated with a neat cement grout.

7.17.2 Where vertical expansion joints are shown on the approved Project Drawings in retaining walls or other walls and structures the expansion joints shall consist of jointing material of approved quality, and of thickness stated on the drawings, and a depth sufficient to fill the joint. The jointing material shall be neatly cut to fit the surface of the concrete.

7.17.3 Extruded or cast in place kerbing, shall have narrow transverse vertical grooves, 40mm deep and not more than 6mm wide, formed neatly in the surface of the freshly placed concrete to produce contraction joints for the control of cracking. The contraction joints shall be at intervals not exceeding 3 metres.

7.17.4 In footpaths, median toppings and driveways, unless otherwise shown on the approved Project Drawings, expansion joints, 10mm in width for the full depth of paving, shall be constructed at intervals not exceeding 16m and where the pavement abuts against gutters, pits and structures. Expansion joints shall have an approved preformed jointing material. In addition, narrow vertical grooves 20mm deep and not more than 6mm wide shall be formed at internals not exceeding 2m to induce contraction joints for the control of cracking.

7.17.5 All unreinforced paving shall be provided with narrow vertical grooves, 20mm deep and not more than 6mm wide to induce contraction joints for the control of cracking. The joints shall be formed in the freshly placed concrete in a neat regular pattern to form "slabs" no bigger than $2m^2$. The ratio of the longest side to the shortest side shall not exceed 1.6.

SG 7.18 Curing

7.18.1 The curing of unformed surfaces of concrete shall commence as soon as finishing operations are complete.

7.18.2 If forms are removed in less than 7 days, curing of the formed surface shall commence within two hours of stripping.

7.18.3 Curing shall continue for a period after placing the concrete of not less than:

7.18.3.1 Top surface of slabs - 14 days;

7.18.3.2 Other surfaces - 7 days.

7.18.4 Curing shall be effected by either Water or Membrane Curing.

7.18.5 Water curing shall comprise surfaces being kept moist for the period specified by continuous spraying, ponding, wet hessian or wet sand blankets.

7.18.6 Membrane curing shall be effected by application of a sprayed curing compound or by covering with polythene sheet.

7.18.7 Sprayed curing compounds shall be of a paraffin wax emulsion type formulated and tested by the manufacturer to conform to AS 3799. The compound shall be mixed if necessary and applied at the rate recommended by the manufacturer.

7.18.8 Resin and PVA based compounds shall not be used.

7.18.9 Polythene sheet shall be of sufficient strength to withstand wind and any imposed foot traffic. Torn or punctured sheeting shall not be used. Laps should be 300mm minimum and edges and laps shall be sealed by tape or held down by boards or reinforcing bars. Water shall be sprayed under the sheeting at edges and at laps on the day after placing concrete and at regular intervals to maintain moist conditions.

SG 7.19 Backfilling

7.19.1 Backfilling at barriers, paving, etc, and minor concrete works shall not commence until after the concrete has hardened and not earlier than three days after placing.

7.19.2 No filling shall be placed against retaining walls, headwalls or wingwalls within 21 days after placing of the concrete, unless the walls are effectively supported by struts or when the Contractor can demonstrate that 85 per cent of the design strength of the concrete has been achieved.

7.19.3 Selected backfill shall be placed against retaining walls and cast-in-place box culverts for a horizontal distance equal to one-third of the height of the wall. It shall consist of granular material, free from clay and stone larger than 50mm gauge. The Plasticity Index of this selected backfill material shall not be less than 2 or more than 12 when tested in accordance with AS 12893.3.1. The material shall be placed in layers not exceeding 150mm and shall be compacted to provide a relative compaction of not less than 98 per cent as determined by AS 1289.5.4.1 for standard compactive effort.

SG 7.20 Sprayed Concrete

7.20.1 The minimum depth of sprayed concrete to be applied shall be 75mm.

7.20.2 Sprayed concrete shall have a minimum 28-day compressive strength of 25 MPa.

7.20.3 Earth surfaces shall be graded, trimmed and compacted and shall be dampened prior to applying the sprayed concrete. The Contractor shall take any precautions necessary to prevent erosion when the sprayed concrete is applied.

7.20.4 Rock surfaces shall be cleaned of loose material, mud and other foreign matter that might prevent bonding of the sprayed concrete onto the rock surface. The rock surface shall be dampened prior to applying the sprayed concrete.

7.20.5 The Contractor shall remove free water and prevent the flow of water, which could adversely affect the quality of the sprayed concrete.

7.20.6 Application shall begin at the bottom of the area being sprayed and shall be built up making several passes of the nozzle over the working area. The nozzle shall be held so that the stream of material shall impinge as nearly as possible perpendicular to the surface being coated. The velocity of discharge from the nozzle, the distance of the nozzle from the surface and the amount of water in the mix shall be regulated so as to produce a dense coating with minimum rebound of the material and no sagging. Rebound material shall be removed after the initial set by air jet or other suitable means from the surface as work proceeds and disposed of.

7.20.7 Spraying shall be discontinued if wind causes separation of the nozzle stream.

7.20.8 Concrete shall not be sprayed in air temperatures less than 5°C.

7.20.9 Construction joints shall be kept to a minimum. A joint shall be formed by placing or trimming the sprayed concrete to an angle between 30° and 45° surface. The joint edge shall be cleaned and wetted by air-water jet before recommencing concrete spraying.

7.20.10 When spraying around reinforcement, concrete is to be sprayed behind the reinforcement before concrete is allowed to accumulate on the face of the reinforcement.

7.20.11 Adjoining surfaces not requiring sprayed concrete shall be protected from splash and spray rebound. Splash or rebound material on these adjoining surfaces shall be removed by air-water jet or other suitable means as work proceeds.

7.20.12 Curing shall commence within one hour of the application of sprayed concrete and may be by water or by colourless wax emulsion curing compound complying with AS 3799 and applied in accordance with manufacturer's specifications.

7.20.13 In water curing, the surface of the sprayed concrete shall be kept continuously wet for at least seven days.

SG 7.21 No Fines Concrete

7.21.1 Where no fines concrete is incorporated in the works it shall be rodded sufficiently only to ensure the form is completely filled. It shall be screeded to the required surface level without tamping or vibrating. No fines concrete shall be moist cured for at least four (4) days by covering with wet hessian, polythene sheet or other similar materials. The use of wet sand or any other material, which can enter the voids, will not be permitted for curing purposes.

SG 7.22 Tolerances

7.22.1 Where tolerances for individual components and associated dimensions are not specified on the Project Drawings, deviations from established lines, grades and dimensions in the completed work shall not exceed the values stated herein.

7.22.2 The dimensional tolerances as shown in Table S7.3 are to cover strength, durability and fit of prefabricated elements and cast-in-situ elements.

Table S7.3 Dimensional Tolerances

Description	Tolerance (mm)
Cross-sectional dimension of members and thickness of slabs	+ 10, - 3
Length of members, length and width of slabs: **- Up to 18m dimension** **- 18m or over dimension**	 ± 6 1mm for every 3m in length
Clear cover to reinforcement	+ 6, - 3
Fitments for prefabricated elements – girder anchorages (including dimensions between anchorages on adjacent piers), cored holes, handrail anchorages and other embedded items	± 5 max. 1mm for every 1m in length

7.22.3 Positional tolerances, as shown in Table S7.4 refer to the departure of any point, plane or component of a structure from its correct position within the layout of the structure as shown on the Project Drawings.

Table S7.4 Positional Tolerances

Description	Tolerance (mm)
Level of Footings	± 20
Level other than footings	± 5
Horizontal location, where tolerances on fit is not acceptable	± 25

7.22.4 Relative tolerances refer to departures from linearity or planarity in any part of the structure. Tolerances are measured as the departure of any point in a line or surface from the remainder of that line or surface.

7.22.5 Departure may be sudden (e.g. misfit at joint in formwork) or gradual (e.g. a wobble in the surface). Tolerance on gradual departure is the value calculated by multiplying the overall length of the line or surface under consideration by the factor given below in Table S7.5.

Table S7.5 Relative Tolerances

Description	Tolerance (mm)
Exposed edge – gradual departure	0.001
Exposed surface – gradual departure	0.004 (10mm max.)
Exposed surface – sudden departure	3 mm max

SG 8 Landscaping

General

SG 8.1 Scope

8.1.1 This specification details all requirements pertaining to Tree Planting, Grassing, Turfing, Hydromulching and Irrigation works associated with permanent and temporary revegetation works.

8.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

SG 8.2 Reference Documents

8.2.1 Australian Standards:
- 8.2.1.1 AS1432 Copper Tubes for Plumbing, Gasfitting and Drainage Applications
- 8.2.1.2 S/NZS1477 PVC Pipes and Fittings for Pressure Applications
- 8.2.1.3 AS2032 Code of Practice for Installation of PVC Pipe Systems
- 8.2.1.4 AS2507 The storage and Handling of Pesticides
- 8.2.1.5 AS2845 Water Supply – Back Flow Prevention Devices
- 8.2.1.6 AS3785 Solvent Cements and Priming Fluids for Use with UPVC Pipes and Fittings
- 8.2.1.7 AS4419 Soils for Landscaping and Garden Use
- 8.2.1.8 S4454 Composts, Soil Conditioners and Mulches

8.2.2 Queensland Legislation:
- 8.2.2.1 Queensland Land Protection Act (2002)

8.2.3 Whitsunday Regional Council:
- 8.2.3.1 Biosecurity Plan 2016-2020

Materials

SG 8.3 Grass Seeding

8.3.1 The grass seeding species mix shall consist of the following:
- 8.3.2 30% Cynodon Dactylon (green couch) – hulled
- 8.3.3 30% Cynodon Dactylon (green couch) - unhulled
- 8.3.4 30% Axonpus Affinis (carpet grass)
- 8.3.5 10% Tetila Rye (in dry season) or Japanese Millet (in wet season)

8.3.6 The accepted final mix shall be dependent upon local conditions, soil properties, and method of works.

SG 8.4 Turfing

8.4.1 Turf shall consist of 25mm depth of dense, well rooted, vigorous grass growth with 25mm depth of topsoil. It should be free from any material toxic to plant growth, declared weeds, seeds or roots including nut grass and oxalis. The soil attached to the turf shall be free from rubbish, sticks and other deleterious material.

8.4.2 The turf shall be supplied as rolls in long lengths of uniform width, not less than 300mm, and shall be in sound unbroken condition.

8.4.3 The moisture level in the cut turf should be kept relatively consistent so that it is not saturated or severely dried out when laying. Both of these situations can cause turf to fall apart during laying.

8.4.4 The type of grass turf to be used shall as stated on the approved Project Drawings, where not stated broad leaf buffalo shall be used for un-irrigated areas and couch for irrigated areas.

8.4.5 Acceptable species for this region are as follows:

- 8.4.5.1 Axonopus compresus (Broad leaf buffalo)
- 8.4.5.2 Digitaria didactyia (Blue Couch)
- 8.4.5.3 Cynodon dactylon (Bermuda Couch / Green Couch).

SG 8.5 Hydromulch

8.5.1 The hydromulching mixture shall consist of the following:

- 8.5.1.1 Mulch - Pulped Paper / Bagasse or Cane fibre
- 8.5.1.2 Fertiliser - Broad spectrum type CK55 or equivalent.
- 8.5.1.3 Seed - 33% Cynodon Dactylon (Green Couch) - hulled 33% Cynodon Dactylon (Green Couch) - unhulled 33% Axonopus Affinis (Carpet Grass)
- 8.5.1.4 Water - Water used to establish and maintain the grassing shall have a pH of between 5.0 and 8.0, a total soluble salts concentration less than 1000mg/l and contain no chemicals or compounds toxic to growth.
- 8.5.1.5 Binder/Tackifier - Binder is to be non-toxic, inert, water soluble and non-flammable, e.g. Curasol or equivalent. Tackifier is be a non-toxic and biodegradable e.g. Envirotack or equivalent.

SG 8.6 Plant Stock

8.6.1 All plant species shall be as detailed on the approved Project Drawings. There shall be no substitution of any species without Council approval.

8.6.2 All palms, trees, shrubs and groundcovers shall be true to name. The root system of each plant shall be conducive to successful transplantation, all specimens shall be free from pests and disease, especially Phytopthera, palm beetle, sooty mould and scale, and all containers shall be free from pernicious weeds.

8.6.3 All plants shall be grown in containers and shall comply with the following minimum size requirements:

- 8.6.3.1 Trees - 25 litre container for street tree planting,
- 8.6.3.2 Trees - 45 litre container for medians, tree guards, traffic islands and roundabouts,
- 8.6.3.3 Single stemmed palms - 45 litre container,
- 8.6.3.4 Clumping Palms - 45 litre container Shrubs - 200mm container,
- 8.6.3.5 Groundcovers – 140mm container.

8.6.4 Plants shall be watered before transportation to the planting site, and shall be delivered to the site in a covered container. During loading and unloading damage in handling shall be avoided.

8.6.5 Species identified in the following are prohibited from use:

- 8.6.5.1 Land Protection (Pest and Stock Route Management) Act 2002,
- 8.6.5.2 Land Protection (Pest and Stock Route Management) Regulation 2003
- 8.6.5.3 Species identified in the Local governments Pest Management Plans, and
- 8.6.5.4 Publication “Agricultural and Environmental Weeds – Far North Queensland” (Wet Tropics Management Authority and Department of Natural Resources and Mines & Energy)

SG 8.7 Soil Mix

8.7.1 A good quality landscaping soil mix shall be imported from an approved source to the planting site for backfilling the planting pits.

8.7.2 Specification for the landscaping soil mix are as follows:

- 8.7.2.1 It shall contain approximately 70% sandy loam and 30% composted or mature organic matter;
- 8.7.2.2 It shall be friable and not contain any clay;
- 8.7.2.3 The pH shall be between 5.5 and 7.0;
- 8.7.2.4 It shall be free from contaminants such as the seed of declared weeds, rocks sticks and salts;
- 8.7.2.5 It shall not contain any chemical fertilisers.

SG 8.8 Fertiliser

8.5.1 Fertiliser shall confirm to the requirements stated in Table S8.01.

Table 8.01 Fertiliser Types

Location	Chemical Type	Type of Application	NPK Analysis
Grass Seeding (Complete lawn fertiliser)	Inorganic	Surface broadcast	N 15 to 24 P 6 to 9
Turfing (Complete lawn fertiliser)	Inorganic	Surface broadcast	N 15 to 24 P 6 to 9
Tree Planting (Controlled release fertiliser)	Organic or inorganic	Fertiliser Tables (2 per tree)	N 15 to 25 P 3 to 9
Planting Beds (Controlled release fertiliser)	Organic or inorganic	Granular	N 18 to 25 P 3 to 7 K 9 to 18

SG 8.9 Irrigation Pipework

8.9.1 All below ground pipework shall be unplasticised Poly-vinyl Chloride (uPVC) unless otherwise approved. All pipes shall be Class 12 minimum with Class 18 fittings.

8.9.2 All above ground pipe work shall be copper tube (hard drawn) Type D manufactured in accordance with AS 1432 by an Australian Standards quality endorsed company.

Construction

SG 8.10 Grass Seeding

8.10.1 Prior to grass seeding all weeds shall be killed by spraying a suitable herbicide. Sprayed areas shall remain undisturbed for two weeks.

8.10.2 Prior to grass seeding the ground surface shall be lightly tyned to a depth of 100mm below finished surface levels (where slopes are less than 10%). All large stones, rubbish and other materials that may hinder germination shall be removed before topsoiling.

8.10.3 Parks may require additional topsoil to a depth of not less than 75mm and shall be lightly compacted and grassed if Council considers the in-situ topsoil of poor quality and is too rocky.

8.10.4 Grass seeding applied by drill seeding at the minimum rate of 50kg per hectare using the species mix specified.

8.10.5 Fertiliser should be applied following seeding at a minimum rate of 350kg per hectare, subject to specific site conditions, soil analysis and desired outcomes.

8.10.6 Seed and fertiliser should be applied at an even rate using a calibrated disc drill seeder followed by a chain and roller.

8.10.7 Disc's should cut approximately 12mm and create enough friable material for chains to cover the seed.

8.10.8 Where one pass fails to develop enough friable material a second pass should be made in a transverse direction.

8.10.9 Watering is the application of 10mm of water to the total area in not less than one hour and shall include any natural rainfall. The frequency of watering shall comply with the following minimum requirements:-

Table 8.02 Grass Seeding Water Requirements

Periods after Grassing	Watering(s)
Immediately	Once
Week 1	Twice / day during hot, dry or windy periods Once / day during cool / overcast periods
Week 2	Once / day
Weeks 3 & 4	Once every second day
Week 5 until necessary	Twice a week or as necessary to ensure 80% minimum strike rate

8.10.10 Acceptance shall be the achievement of a minimum vegetative cover of 80% of both the annual and perennial grass cover over the whole area. Grassed areas shall exhibit signs of healthy growth and shall be free of weeds, stones, sticks and other deleterious material. Maximum deviation from finished ground levels 50mm in any 2 metres.

SG 8.11 Turfing

8.11.1 Prior to turfing all weeds shall be killed by spraying a suitable herbicide. Sprayed areas shall remain undisturbed for two weeks.

8.11.2 Topsoil shall be uniformly applied to provide an average thickness of 50mm with a minimum compacted thickness of 25mm at any location and graded to even-running contours, so that no ponding or waterlogging occurs across the surface of the grassed area.

8.11.3 The prepared surface shall be watered within twenty four (24) hours prior to turfing at an application rate of 10mm of water in not less than 1 hour. Watering is to be carried out in such a way as not to cause any scouring or erosion.

8.11.4 After watering an approved lawn pesticide shall be applied at the rate specified by the supplier and in accordance with the Agricultural Chemicals Distribution Contract Act and Regulations.

8.11.5 Fertiliser should be applied prior to laying turf at a minimum rate of 350kg per hectare, subject to specific site conditions, soil analysis and desired outcomes.

8.11.6 Topsoil shall be raked before turf is laid. Turf shall be laid in straight lines with staggered cross joints on the general line of the contour of the slope. The gaps between adjacent sections of turf should not exceed 5mm.

8.11.7 A light top dressing shall be worked into the open joints between the turf and then the turf lightly rolled with one pass of a roller weighing about 80kg on a 1m width of roller. Alternative methods to rolling shall be used where slopes exceed 10%.

8.11.8 On steep slopes (exceeding 10%) turf may be held in position by softwood pegs or stakes, located at each end of the turf sections.

8.11.9 Watering is the application of 10mm of water to the total area in not less than one hour and shall include any natural rainfall. The frequency of watering shall comply with the requirements in table 8.03:-

Table 8.03 Turfed Watering Requirements

Periods after Grassing	Watering(s)
Immediately	Once
Week 1	Once every second day
Week 2, 3 & 4	Three times each week
Weeks 5 - 12	Twice a week

8.11.10 Acceptance shall be the achievement of an even green colour with a dense continuous sward over the whole area. Turf shall exhibit signs of healthy growth and shall be free of weeds, stones, sticks and other deleterious material. Maximum deviation from finished ground levels 50mm in any 2 metres.

SG 8.12 Hydromulching

8.12.1 Prior to hydromulching all weeds shall be killed by spraying a suitable herbicide. Sprayed areas shall remain undisturbed for two weeks.

8.12.2 Batter slopes less than 20% shall then be lightly tyned to a depth of 50mm to produce a loose surface and all large stones, rubbish and other materials that may hinder germination shall be removed before topsoiling.

8.12.3 Where batters have been stepped, the steps shall be loosely filled with topsoil. Elsewhere, topsoil shall be uniformly applied to provide an average thickness of 75mm with a minimum compacted thickness of 40mm at any location.

8.12.4 Dry surfaces shall be watered by a fine spray before the application of the hydromulch.

8.12.5 The slurry mixture of mulch, binder, fertiliser and seed is to be kept in a homogenously mixed state throughout the mulching operation.

8.12.6 During preparation of the hydromulch, a liquid form pesticide may be added to the storage tank, to facilitate surface application. Application rate should be in accordance with the manufacturer's recommendation.

8.12.7 Additional protective treatments (e.g. fibre matting, anionic bitumen emulsion etc) shall be as specified on the approved Project Drawings.

8.12.8 Hydromulch shall not be applied under the following weather conditions at the site:

8.12.8.1 when temperature is higher than 35°C

8.12.8.2 when winds exceed 15 km/hr;

8.12.8.3 where the surface is too wet or

8.12.8.4 during rain periods or when rain appears imminent.

8.12.9 The rate at which the mulch is applied is dependent on slope shall be in accordance with Table S8.02.

Table S8.02 Hydromulching Material and Application Rates (per 1000m)

Slope	<5%	5% - 12%	12% - 20%	20% - 50%	>50%
Pulped Paper	200kg	120kg	120kg	140kg	200kg
Bagasse (wet weight)	200kg	400kg	500kg	700kg	800kg
Cane Fibre (alternative to bagasse)	200kg	200kg	300kg	400kg	500kg
Fertiliser	50kg	50kg	50kg	50kg	50kg
Seed	5kg	5kg	5kg	5kg	5kg
Water	8000 litres	8000 litres	10,000 litres	12,000 litres	18,000 litres
Binder Curasol Envirotack	5 litres 3kg	5 litres 2kg	7.5 Litres 7.6 3kg	15 litres 5 kg	30 litres 5kg
Mulch Thickness	1-2mm	2-3mm	2-4mm	2-4mm	4-6mm

8.12.10 Watering is the application of 10mm of water to the total area in not less than one hour and shall include any natural rainfall. The frequency of watering shall comply with the following minimum requirements:-

Periods after Grassing	Watering(s)
Immediately	Once
Week 1	Twice / day during hot, dry or windy periods Once / day during cool / overcast periods

Week 2	Once / day
Weeks 3 & 4	Once every second day
Week 5 until necessary	Twice a week or as necessary to ensure 80% minimum strike rate

8.12.11 A follow up fertiliser treatment is to be applied to 4 – 6 weeks after germination has occurred. Fertilisation should be with a product that provides for the following elements: Nitrogen (N) 13%, Phosphorus (P) 4% and Potassium (K) 12%.

8.12.12 Acceptance shall be subject to the achievement of a minimum vegetative cover of 80% of both the annual and perennial grass cover over the whole area. Hydromulched areas shall exhibit signs of healthy growth and shall be free of weeds, stones, sticks and other deleterious material.

SG 8.13 Planting

8.13.1 Planting shall be carried out as soon after delivery to the site as possible. All containers, unless fully biodegradable, shall be removed at the latest point before planting.

8.13.2 All plants shall be obtained from a nursery located in an area having a similar climate to the site of the Works.

8.13.3 Shrub and ground cover planting to verges and traffic islands etc. shall be as detailed on the approved Project Drawings.

8.13.4 Prior to planting all weeds shall be killed by spraying a suitable herbicide. Sprayed areas shall remain undisturbed for two weeks.

8.13.5 Street trees shall be planted at the locations as shown on the approved Project Drawings.

8.13.6 During backfilling around the plants the soil shall be lightly firmed to ensure intimate contact with the roots, but with large material successive layers of soil will need to be firmed as backfilling proceeds.

8.13.7 Ensure the plants are held securely by the soil but not so that moisture penetration of the soil is restricted. After planting, damaged, dead, diseased or crossing branches shall be removed by pruning.

8.13.8 Plants should be watered directly after planting prior to spreading of mulch. The mulch shall be left just clear of the plant stem.

8.13.9 All trees shall be staked with three (3) 38 x 38 x 2400mm hardwood stake, extending into the ground to a depth of 500mm. Do not allow the stake to penetrate the root ball. Secure the tree to the stake with plastic multi-purpose chain ties. Refer Council's Standard Drawings.

8.13.10 Mulch shall be aged hardwood woodchip, stockpiled for a minimum of 6 weeks, or other mulch approved by Council, free from rocks, non-biodegradable and toxic material. In paved footpath planters it shall be installed to a depth of 75mm, in tree guards, traffic islands and mulched, mass planted garden beds within parkland and reserves to a depth of 150mm depth.

8.13.11 Peanut shell or forest litter mulch may be used in "natural" planting areas only, such as buffer planting or parkland planting. It should be installed to a minimum 150mm compacted depth, free from rocks, nut grass, and any other invasive weed.

8.13.12 Tea-tree mulch is prone to combustion and shall not be used unless permission is obtained from Council.

8.13.13 All plants shall be watered, immediately upon planting, and at the rate of 10 litres per plant every third day for the first twelve weeks.

8.13.14 Weed and grass growth in mulched areas shall be killed by treatment with herbicide in accordance with the manufacturer's instructions at monthly intervals during the construction period and contract maintenance period. Contact of the herbicide with the new plants shall be avoided and any damage repaired, or damaged plant material replaced.

8.13.15 Acceptance shall be subject to achieving the following criteria:

8.13.15.1 Plants, which do not meet the acceptance criteria, shall be replaced.

8.13.15.2 Replacement plants shall be of similar size and quality and of identical species and variety to the plant being replaced.

8.13.15.3 Plants shall exhibit signs of healthy growth,

8.13.15.4 Plants shall be well formed,

8.13.15.5 Plants shall be free from disease or insect pests,

8.13.15.6 Plants shall be free of physiological disease symptoms (yellowing, wilting etc),

8.13.15.7 Mulch shall be free from weeds, sticks, rubbish and other deleterious material.

Irrigation

SG 8.14 General

8.14.1 Application shall be made to Council for connection of irrigation systems to the water main. The Contractor shall arrange with the Council for the timing of the work. All works shall be carried out by the relevant Local Authority at the applicants cost.

8.14.2 The Applicant will be responsible for the payment of all water used during construction, testing, establishment and maintenance of the irrigation system and landscape works.

SG 8.15 Excavation

8.15.1 Do not excavate by machine within 500mm of existing underground services.
8.15.2 The standard width of trench for pipes shall be 150mm.
8.15.3 Unless noted otherwise on the approved Project Drawings or directed by Council all pipe work is to be installed with a minimum cover of 350mm.

SG 8.16 Laying of Pipes

8.16.1 All pipe work to be bedded in clean fill sand with a minimum cover of 50mm all round.
8.16.2 Special precautions are to be taken to exclude dirt, sand, grit or gravel from entering pipelines.
8.16.3 The open ends of pipes shall be plugged at the end of the day's work to prevent entry of water or mud.

SG 8.17 Pressure Testing

8.17.1 All work shall satisfy a test pressure of the nominated working pressure for a period of two (2) hours. The test shall be carried out during the coolest part of the day. The point at which the test pressure is measured shall be at the lowest point in the profile of that section of main under test.
8.17.2 All tests shall be carried out under the supervision and in the presence of the Council Inspector.
8.17.3 Any defects that arise during the tests shall be repaired in an approved manner. Any leak however small will be classed as a defect. All such repair work shall be similarly tested and approved before acceptance.
8.17.4 The Contractor shall give 48 hours notice to Council so that arrangements can be made for supervision of the testing.
8.17.5 The Contractor shall accept all risks and expenses incurred during testing and shall provide all labour together with all pumps, engines, pipes, temporary valve plugs, flanges and all other equipment as may be necessary to undertake testing

SG 8.18 Flushing

8.18.1 After pressure testing has been carried out the new pipework shall be flushed as thoroughly as possible with the available water pressure.

SG 8.19 Controllers

8.19.1 All Council landscaped areas, which require irrigation systems shall be controlled by electrically, operated solid state controller.

SG 8.20 Filtration

8.20.1 All irrigation systems shall be fitted with an approved flow strainer installed in a secure enclosure.

SG 8.21 Valves

8.21.1 Electrically actuated solenoid valves shall have flow control, manual bleed screw, 24 VAC solenoid, Buna N diaphragm, and be constructed of PVC and stainless steel. They shall be suitable for direct burial and have 150 psi maximum working pressure. They shall be pressure regulating solenoid valves.

8.21.2 Isolation valves shall be of bronze construction and of the BSP screwed gate type as approved by the engineer. They shall be installed on the supply side at every solenoid valve to enable isolating.

8.21.3 Protective valve boxes are to be provided for each solenoid valve. They shall be constructed of green high density polyethylene, be 450 x 300 x 300mm in dimension, and have a lockable lid with the word "Irrigation" clearly marked on it.

8.21.4 The wiring from the solenoid to the controller shall be laid in conduit and shall be of 250 volt grade and shall be installed to approved standards. The wiring shall be located with all pipework.

8.21.5 All solenoid valves shall be connected to controller by 0.05mm solid core wire and to have seven insulated cores within a common plastic protective shield. It shall be similar in all respects to RIS multi-core 7/0.5mm electrical control wire and shall be continuous between valve and controller, and valve to valve. An additional one metre length of cable shall be provided at each wire termination. Cable shall be sized for voltage drop not exceeding four (4) volts over total route length.

SG 8.22 Backflow Prevention Devices

8.22.1 All Council landscaped areas, which require irrigation systems, shall have a backflow prevention device installed. This device should comprise of a stand constructed fully from hard drawn copper pipe (Type D) and should have an inline strainer both before and after the backflow preventer. This should comply with AS 2845.

SG 8.23 Performance Test

8.23.1 On completion of the installation the system shall be tested in the presence of a Council Inspector.

8.23.2 The system shall be operated to demonstrate that all components function as required by the design.

8.23.3 The Contractor is responsible for making all necessary alterations to the system so that the performance is in accordance with the design specifications.

SG 8.24 Backfilling of Trenches

8.24.1 Trenches shall be backfilled with the excavated material. If the excavated material is considered unsuitable for backfilling by the Council Inspector, it shall be removed from the site and replaced with clean approved backfill material.

8.24.2 All trenches so backfilled shall be compacted and lightly raked to ensure that surface levels marry with adjacent surface levels, are free draining and free from mounds or depressions. All rocks or evidence or excavated subgrade shall be raked up and removed.

Form 1 - Statement of Compliance Operational Works Design

This form duly completed and signed by an authorised agent of the designer shall be submitted with the operational works application to Council approval.

Name of Development:

Location of Development:

Applicant:

Designer:

it is hereby certified that the calculations, drawings, specifications and related documents submitted herewith have been prepared, checked and amended in accordance with the requirements of the Whitsunday Regional Council Development Manual and that the completed works comply with the requirements therein, except as noted below.

Compliance with the requirements of the Operational Works Design Guidelines	Non-compliance - refer to non-compliance report/drawing number
Plan presentation	
Geotechnical requirements	
Geometric road design	
Pavements	
Structures/bridges	
Subsurface drainage	
Stormwater drainage	
Site regrading	
Erosion control and stormwater management	
Pest plant management	
Cycleways/pathways	
Landscaping	
Water source and disinfection/treatment infrastructure	
Water reticulation pump stations	
Sewer reticulation and pump stations	
Electrical reticulation and street lighting	
Public transport	
Associated documentation/specification	
Priced schedule of quantities	
Referral agency conditions	
Supporting information (AP 1.08)	
Other	

Designer: RPEQ No.

Signature: Date:

Form 2 – Security Lodgement Form
This sheet must be completed prior to the acceptance of any bond by Council.

Development Name:	
Stage:	
File No.:	
Applicant:	
Consultant:	
Purpose of Bond:	

Uncompleted Works Bond Assessment:

Estimated time to complete bond works (not greater than 90 days)	days
Current contract completion date	
Anticipated completion date	
Consulting engineers estimated value of uncompleted works	
Bond value (apply factor 1.50)	

Construction/defects liability bond assessment :

Consulting engineer's estimated value of completed works	
Construction/maintenance bond value (apply factor 0.05) (min $500)	

Council shall retain any interest accrued on cash monies paid to Council and held in trust by Council.

Consulting Engineer:

Signature:

RPEQ No.

Date:

Form 3 – Inspection Certificate for Witness/Hold Point

This certificate registers evidence that the works as noted herein have been inspected by the Council officer noted below and were found to be satisfactory.

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Contractor:	

Works being inspected/Tested/Witnessed:

Defaults/Corrective Action Required:

Defaults Corrected?	Y	N	N/A

Council Inspector Signature:

Name of Inspector:

Date of Inspection:

Form 4 – Works Acceptance Inspection Checklist

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Contractor:	

Item	Verification (Yes/No/N/A)	Comment
ALLOTMENT DRAINAGE The works have been finally inspected and:		
60. Concrete catch drains constructed in approved location and to a satisfactory standard;		
61. Field inlets constructed in approved location and to a satisfactory standard;		
62. Overland flow path constructed to correct profile;		
63. Pipework has been visually inspected and is satisfactory in terms of: a. alignment and grade; b. free of debris and siltation; c. no visual sign of trench subsidence; and d. outlets are satisfactory.		
64. Lots not provided with allotment drainage can be drained to the kerb and channel.		
STORMWATER DRAINAGE SYSTEM The works have been finally inspected and:		
65. Pipe layout is as per plan or approved amendments with respect to pipe size, levels and location.		

66. Pipework has been visually inspected and is satisfactory in terms of: a. alignment and grade; b. free of debris and siltation; c. lifting plug holes sealed; d. no visible sign of trench subsidence; and e. no damaged pipes.		
67. Gully pits and manholes have been constructed to the correct standards i.e.: a. Correct type of grate or cover; b. Lintels; c. side entry slots; d. benching (no water ponding) e. grates are satisfactorily sealed in frames; f. we poles provided to bedding material; g. no damaged structures; h. converter slabs/sections mortar bedded; i. correct drops through gullies/manholes; and j. all lids/grates finished to match surface level.		
68. All density tests to backfill are available and satisfactory.		
69. Material gradings are available for bedding material and are satisfactory;		
70. Outlets/inlet structures are satisfactorily constructed and are free from scour or siltation.		
71. All manhole and gully pit pipe connections are mortared flush with the walls and no pipe reinforcement is exposed.		
72. Open cut channels have been finally inspected and a satisfactory i.e.: a. Cut to design profiles; and		

b. lining of channel is to the required thickness and reinforcement, with appropriate weep holes.		
73. Overland flow, the works have been finally inspected an appropriate flow paths are provided and clear of obstruction.		
74. Outlets and outfalls have been constructed to control discharge flow in accordance with the plans.		
75. Subsoil drainage discharges to gullies or other approved point of discharge.		
76. All grousing requirements to channels, swales, outlets, inlets etc have been completed.		
77. CCTV inspection of stormwater pipes completed.		
WATER QUALITY The Works have been finally inspected and:		
78. Water quality structures have been constructed in accordance with approved engineering drawings;		
79. Structures are free of debris and sediment.		
EROSION AND SEDIMENT CONTROL The works have been finally inspected and:		
80. Control structures required until the site is stabilised in accordance with the contractor's ESCP are in place.		
81. Structures are free of debris and sediment.		
EARTHWORKS		

The Works have been finally inspected and:		
82. Toe of batters not on Council Road reserve except as approved.		
83. Retaining walls clear of Road reserve except as approved.		
84. Retaining walls constructed in accordance with drawings.		
85. Batter slopes constructed in accordance with drawings.		
86. Batter slopes stabilised against erosion.		
87. Interim drainage constructed in accordance with drawings.		
88. All areas disturbed by the works have been rehabilitated.		
89. Allotment levels are as per the design plans.		
90. Verge levels are as per the design plans.		
SEWER RETICULATION The Works have been finally inspected and:		
91. Pipe layout is as per the plan or approved amendments with respect to pipe size, levels, and location.		
92. Pipework has been visually inspected and is considered satisfactory, i.e.: a. Pipework flush with internal walls of manhole; b. alignment and grade; c. flexible joints; d. line flushed and cleaned; e. no visible sign of trench subsidence; f. a density test of backfill is available and satisfactory;		

g. CCTV survey results submitted and satisfactory.		
93. Manholes and maintenance shafts have been constructed to the correct standards, i.e.: a. Cast in situ; b. Benching; c. curvature satisfactory; d. no ponding; e. profile satisfactory; f. no weeps (free of infiltration); g. concrete work; h. no honey combing; i. covers; j. covers checked to be gas tight; k. correct type; l. imprint in accordance with standards; m. depth of cover surround; n. depth of top slab; o. location; p. relative to allotment boundaries; and q. 50 to 75 mm proud of finished surface level.		
94. Material gradings for bedding material are available and satisfactory.		
95. Pressure test results are available and satisfactory.		
96. Manhole hydrostatic test all satisfactory.		
97. Sewerage connection Private Works fees paid.		
98. On-site sewer report provided (if applicable).		
99. PUMP STATION - refer separate PS checklist.		
WATER RETICULATION The works have been finally inspected and:		

100. Pipe layout and services fixtures (valves and hydrants) are as per the plan or approved amendments with respect to pipe size and location.		
101. Pipework has been pressure tested in accordance with Council's requirements and test results are available and satisfactory.		
102. Pipework has been chlorinated in accordance with Council's requirements.		
103. There are no visible signs of trench subsidence for leaks.		
104. Valves and hydrants have been inspected and a satisfactory, i.e.; a. Location; b. setts and surrounds correctly installed to prevent ingress of soil, etc; c. mortar packing to boxes correctly completed; d. depth to top of hydrant or valve stem within limits; e. dust caps to hydrants; f. colour of marker plate correct; g. direction of flow indicated; h. marking plates correctly installed; and i. size of plate correct.		
105. Material gradings for bedding material are available and satisfactory.		
106. Water supply connection Private Works fees paid.		
107. PUMP STATION - refer separate checklist.		
ROAD PAVEMENTS The works have been finally inspected and:		

108. Plan layout and geometry of Road system is in accordance with the drawings.		
109. Finish levels at Crown and channel are at design levels.		
110. Cross falls are to the approved plan.		
111. AC is satisfactory with regards to finish and thickness.		
112. Joints in the seal (especially where various development stages apply) are flush.		
113. The sealed surface is free of blemishes.		
114. All compaction test, material quality (CBR), material grading, AC core tests are satisfactory and available.		
115. Ponding of stormwater does not occur.		
SEGMENTAL PAVERS (Where Constructed) The Works have been finally inspected and:		
116. All pavers have been correctly laid to pattern, within allowable tolerance, compacted, and the joints filled;		
117. Bedding sand for pavers drains to subsoil drainage.		
118. Pavers adjacent to concrete kerb and channel, edge restraints etc have been cut and laid in accordance with all relevant requirements.		

Form 5 – Registered Engineer's Certification of "As Constructed" Works

This certificate registers evidence that the locations, surface and invert levels of all works and infrastructure presented on the drawings noted below and in the digital ADAC data have been surveyed and meet the accuracy standards as defined within the WRC Development Manual.

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Contractor:	
Surveyor Name:	
Surveyor Firm:	

Drawings & Documents pertaining to the above:

Signed:

Date:

Form 6 – Registered Surveyor's Certification of "As Constructed" Works

This certificate registers evidence that the "As Constructed" drawings submitted herewith have been prepare, checked and amended in accordance with the requirements of the WRC Development Manual and that the completed works comply with the requirements therein.

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Consulting Firm:	
Surveyor Name:	
Surveyor Firm:	

Certification by Registered Surveyor (Consulting) attached: Yes / No

(Note: Certification is to be in accordance with the Development Manual).

Compliance with the manual Design Intent and Function not compromised by the "As Constructed" Works	**Compliance Yes/No**	**Non-Compliance refer to attached redesign of works to ensure satisfactory performance**
Earthworks		
Roadworks		
Stormwater Drainage		
• Flow System and Structures		
• Major Flow System and Structures		
Water Reticulation		
Sewerage Reticulation		
"As Constructed" Documentation		

Signed:

RPEQ No.

Date:

Appendix A – Inspection and Test Requirements

Elements of Work	Consulting Engineer's Responsibility	Council's Responsibility
Clearing and Grubbing		
Location	HOLD POINT upon completion of survey, inspect defined limits of clearing	WITNESS POINT Joint inspection of defined limits and tree removal if considered warranted.
Allotment Filling		
Quality of Material	Examine and assess all test results.	Visit site for random audit inspections if considered warranted.
	Examine and assess all test results.	Visit site for random audit inspections if considered warranted.
		Visit site for random audit inspections if considered warranted.
Subgrade		
Compaction	Routinely visit site. HOLD POINT Attend Ensure Earthworks are being carried out in accordance with condition of approval	Visit site for random audit inspections.
CBR Tests (if ordered)	Examine and assess all test results	Assess all test results.
Horizontal and vertical alignments	Routinely visit site. Examine and assess all test results and cross-section geometry	Visit site for random audit inspections. Assess all test results and cross-section geometry.
Profile	Routinely visit site. HOLD POINT Attend at completion	Visit site for random audit inspections. HOLD POINT joint inspections at completion
Embankments	Routinely visit site. HOLD POINT Attend at completion	Visit site for random audit inspections. HOLD POINT joint inspections at completion
Subgrade Replacement		
Material Quality	HOLD POINT Make sufficient routine visits to assess quality of materials. HOLD POINT Examine and assess all test results.	WITNESS POINT Visit site for random audit inspections if considered warranted.

Compaction for: a) For on site Material; and b) For graded Material	HOLD POINT Make sufficient routine visits to assess that operations will achieve a sound compacted layer. HOLD POINT Examine and assess all test results.	WITNESS POINT Visit site for random audit inspections if considered warranted.
Profile and Depth	HOLD POINT Examine and assess all test results.	WITNESS POINT Visit site for random audit inspections if considered warranted.
Sub-Base Layer		
Material Quality	Routinely visit site. Examine and assess all test results.	WITNESS POINT Visit site for random inspections if considered warranted.
Compaction	Routinely visit site. HOLD POINT attend during proof rolling. Examine and assess all test results.	WITNESS POINT Visit site for random inspections if considered warranted.
Profile and Depth	Routinely visit site. HOLD POINT Attend at completion of final preparation. Examine and assess all rest results and cross section geometry.	HOLD POINT Joint inspection on completion of final preparation.
Base Layer		
Material Quality	Routinely visit site.	Visit site for random audit inspections.
Compaction	Routinely visit site. HOLD POINT Attend during proof rolling. Examine and assess all test results and cross section geometry.	Visit site for random audit inspections.
Horizontal and Vertical alignment	Routinely Visit Site	Visit site for random audit inspections.
a) With no Kerb & channelling	Examine and assess all test results and cross section geometry.	

b) With Kerb & Channelling profile	Examine and assess all test results and cross section geometry.	
Profile	Routinely visit site	Visit site for random audit inspections
	HOLD POINT Attend at completion of final preparation.	HOLD POINT Joint inspection on completion of final preparation.
Surfacing		
Material Quality		WITNESS POINT Visit site for random inspections if considered warranted.
Compaction & Thickness		WITNESS POINT Visit site for random inspections if considered warranted.
Horizontal & Vertical alignments		WITNESS POINT Visit site for random inspections if considered warranted.
Profile	HOLD POINT Undertake a Pre-seal Inspection.	HOLD POINT Undertake a Pre-seal Inspection.
Sub-Soil Drains		
Pipe	Routine inspection of Contractor's Performance and progress of works.	Visit site for random audit inspections if considered warranted.
Filler Material	Routine inspection of Contractor's Performance and progress of works.	Visit site for random audit inspections if considered warranted.
Cleaning Joints and Markers	Routine inspection of Contractor's Performance and progress of works.	Visit site for random audit inspections if considered warranted.
Geofabric	Routine inspection of Contractor's Performance and progress of works.	Visit site for random audit inspections if considered warranted.
Kerb & Channel		
Material Quality	HOLD POINT Inspect foundations prior to kerb placement.	HOLD POINT Visit site for Inspection
Horizontal & Vertical Alignments	Inspect Completed Kerb Water Test where appropriate	HOLD POINT Visit site for Inspection
Road Crossing Conduits		
Location	Routine inspections of Contractor's Performance and Progress of Works	Visit site for random audit inspections if considered warranted.
Markers	Ensure Council Approval of all building/structures	Visit site for random audit inspections if considered warranted.
Building/Structures		
All	Ensure Council Approval of all building/structures	

Stormwater Drainage		
Location of Structures	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	
SL & IL at Structures	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	
Material Quality (Bedding, concrete, Pipes)	HOLD POINT Sufficient visits to assess compliance and to view progress and works. HOLD POINT Visual inspection prior to placement of structure/s after bedding sand.	WITNESS POINT Visit site for inspection prior to laying of pipe and bedding.
Manholes	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	
Drain Lines	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	
Backfilling	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	HOLD POINT Visit site for inspection prior to backfilling
"Cast Insitu" reinforced concrete work	HOLD POINT Inspect reinforcement and formwork prior to concrete pour.	HOLD POINT Inspect reinforcement and formwork prior to concrete pour.
Landscaping		
Grass Establishment	Routine inspections of Contractor's performance.	Visit site for check at defects liability inspection.
Tree Planting	Routine inspections of Contractor's performance. Confirm all affected areas are topsoiled, grassed and maintained.	
Irrigation a) Pipelines b) Pressure testing pipelines c) Performance Testing	WITNESS POINT Witness and approve pressure and performance test.	
Soil & Water Quality		
All	HOLD POINT Examine and approve contractors ESCP for compliance with ESCS. ESC Measures for works area are in place prior to works commencing on this section or stage.	WITNESS POINT Visit site for inspection if considered warranted.

	Randomly audit and inspect ESC measures for compliance with Contractor's ESCP.	
Sewerage Reticulation		
Location MH's & HC's	Routine inspections.	
IL at MH & HC's	Routine inspections and review of field information.	
Backfilling	Routine inspections of Contractor's performance.	WITNESS POINT Visual inspection after excavation prior to bedding.
SP Boundary Set Out	Routine inspections of Contractor's performance. Review of field measurements.	
Material Quality (Bedding, concrete pipes)	Assess all test results.	
Manholes, maintenance shafts & benching	Routine inspections.	
Hydrostatic testing of manholes	HOLD POINT Witness hydrostatic testing of manholes.	WITNES POINT Witness hydrostatic testing of manholes.
Pipelines	HOLD POINT Witness pressure test of lines	HOLD POINT Visual inspection after excavation prior to bedding.
Thrust/anchor blocks	HOLD POINT Visual site inspection of anchor/thrust blocks prior to concrete pour	WITNESS POINT Visual site inspection of anchor/thrust blocks prior to backfill.
Trunk infrastructure	HOLD POINT Pre-connection visual inspection of trunk lines.	HOLD POINT Pre-connection visual inspection of trunk lines.
Pump Stations & Valve Chambers		
Excavation	Routine inspections of Contractor's performance.	
Foundation inspection	WITNESS POINT Confirm water table level and founding condition. WITNESS POINT Inspection foundation prior to placing formwork/reinforcement.	WITNESS POINT Inspection foundation prior to placing formwork/reinforcement.
Base slab reinforcement, formwork and water stop.	HOLD POINT Inspect reinforcement prior to placing formwork/reinforcement	Visual inspection of reinforcement, water stop and formwork prior to concrete base pour.
Reinforcement and formwork	HOLD POINT Inspect reinforcement and formwork prior to concrete pour.	Visual inspections of reinforcement and formwork prior to concrete pour. WITNESS POINT Visual inspection of concrete prior to stripping of framework.

Materials Testing	Assess all test results	WITNESS POINT Review materials testing.
Hydrostatic Testing	HOLD POINT hydrostatic testing	HOLD POINT hydrostatic testing.
Electrical and SCADA equipment	WITNESS POINT Review switchboard test certification, Inspect installation.	WITNESS POINT Review certification of switchboards prior to delivery to site. WITNESS POINT Review certification of telemetry (SCADA) prior to delivery to site.
Lifting Chain	WITNESS POINT Review certification of lifting chain.	WITNESS POINT Review certification of lifting chain.
Pump testing and Station Commissioning	HOLD POINT Witness pressure and draw down testing of pumps. HOLD POINT Inspection against commissioning checklist.	HOLD POINT Witness pressure and draw down testing of pumps. HOLD POINT Inspection against commissioning checklist.
Water Reticulation		
Location	Routine inspections of Contractor's performance. Review of field measurements.	
SP Boundary Set Out	Routine inspections of Contractor's performance. Review of field measurements	
Valves, hydrants, scours, bends	Routine inspections of Contractor's performance. Review of field measurements	
Depth	Routine inspections of Contractor's performance. Review of field measurements	
Material Quality (bedding, concrete, pipes) Pipelines	Assess all test results. HOLD POINT Visual inspection after excavation prior to bedding. HOLD POINT Witness pressure test of lines. HOLD POINT Witness chlorine swabbing of lines – pre-amalgamation DSC area. WITNESS POINT Disinfection/flush of pipeline.	HOLD POINT Visual inspection after excavation prior to bedding. HOLD POINT Witness pressure test of lines. WITNESS POINT Disinfection/flush of pipeline.
Thurst/anchor blocks	HOLD POINT Visual site inspection of anchor/thurst blocks prior to concrete pour.	HOLD POINT Visual site inspection of anchor/thrust blocks prior to concrete pour.

Backfilling	Routine inspections of Contractor's performance. HOLD POINT Visual site inspection prior to backfill.	Visual inspection of lines prior to backfill. WITNESS POINT Visual site inspection prior to backfill.
Prior to acceptance of works for "Defects Liability Period"	Forward As Constructed submission to Council with Registered Surveyor's and Consulting Engineer's certification attached.	Council to accept and conduct Audit checks of As Constructed Drawings and advise any requirements.
	Finalise all other Documentation in accordance with Construction Procedures.	Council Inspector to accompany Consulting Engineer and Contractor and to advise any requirements.
	Complete "Defects Liability" Inspection Checklist prior to joint inspection with Council.	When completed advise in writing of acceptance of works for commencement of "Defects Liability Period".
During "Defects Liability Period"	Consulting Engineer to confirm all minor omissions and defects have received suitable attention and to examine and approve site prior or asking for "Final Acceptance of works" Inspection.	Council to advise Consulting Engineer of any defects.
Prior to Final Acceptance of works	Consulting Engineer to accompany Council Inspector and to note any requirements.	Council Inspector to accompany Consulting Engineer and Contractor and to advise any requirements.
		When completed advise in writing of final acceptance of works.

TEST REQUIREMENTS

Construction Activity	Verification Requirement		Minimum Test Frequency	Specification Requirement	Minimum No. of Tests
	Description	Test Required			
SEWER MAIN CONSTRUCTION					
Embedment	Compaction	WSA02-2014 19			
Trench Fill	Compaction	WSA02-2014 20.1			
Gravity Pipes	Air Pressure and Vacuum	Table S6.2, Operational Works Specification S6 “Sewerage Reticulation”, WRC Development Manual			
	Deflection	WSA02-2014 20.1.4			
	CCTV Inspection	WSA02-2014 22.7			
Manholes	Vacuum or Hydrostatic	Clause S6.26, Operational Works Specification S6 “Sewerage Reticulation”, WRC Development Manual			
SEWER PUMP STATION CONSTRUCTION					
Embedment	Compaction	WSA04-2005 36.3			
Backfilling	Compaction	WSA04-2005 36.3			
Switchboards	Electrical Testing	WSA04-2005 36.9			
WATER MAIN CONSTRUCTION					
Embedment	Compaction	WSA03-2011 16			
Trench Fill	Compaction	WSA03-2011 17.1			
Pipes	Pressure	Clause S5.28, Operational Works Specification S5 “Water Reticulation”, WRC Development Manual			
Disinfection	Bacteriological	WSA03-2011 20			
STORMWATER DRAINAGE CONSTRUCTION					
Excavation	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/50m²	95% SRDD	1
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD		n/a

Construction Activity	Verification Requirement			Minimum Test Frequency	Specification Requirement	Minimum No. of Tests
	Description	Test Required				
STORMWATER DRAINAGE CONSTRUCTION (cont'd)						
Bedding/Haunch (RCP, RCBC or similar)	Material Quality	Grading	Q103A or AS 1289.3.6.1	1/material type	Table 19.2.6, MTRS04	n/a
		Linear Shrinkage	Q106 or AS 1289.3.4.1			
	Compaction (Cohesive)	RDD	Q111A/B/C or AS 1289.5.4.1	Under trafficable area 1/side/50m Elsewhere 1/side/100m	Table S4.1, Operational Works Specification S4 "Stormwater Drainage", WRC Development Manual	2
		MDD	Q110A or Q132A	1/material type		n/a
	Compaction (Cohesionless)	Density Index	Q132B or AS 1289.5.6.1	Under trafficable area 1/side/50m Elsewhere 1/side/100m		2
		Min/Max Dry Density	AS 1289.5.1.1 or AS 1289.5.5.1	1/material type		n/a
Backfill (RCP, RCBC or similar)	Material Quality	Grading	Q103A or AS 1289.3.6.1	1/material type	Table 19.2.3, MRTS04	n/a
		Linear Shrinkage	Q106 or AS 1289.3.4.1			
	Compaction (Design Trench Width $\leq$ 4m)	RDD	Q111A/B/C or AS 1289.5.4.1 or	Under trafficable area 1/300mm lift/50m	Table S4.1, Operational Works Specification S4 "Stormwater Drainage",	1 (between structures)

			AS 1289.5.7.1	Elsewhere 1/900mm lift/100m	WRC Development Manual	
		MDD	Q110A or AS 1289.5.1.1 or	1/material type		n/a
			AS 1289.5.7.1	1/RDD		

Construction Activity	Verification Requirement			Minimum Test Frequency	Specification Requirement	Minimum No. of Tests
	Description	Test Required				
STORMWATER DRAINAGE CONSTRUCTION (cont'd)						
Backfill (RCP, RCBC or similar) (cont'd)	Compaction (Design Trench Width > 4m)	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	Under trafficable area 1/300mm lift/200m^2 Elsewhere 1/900mm lift/400m^2		1 (between structures)
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/material type 1/RDD		n/a
Backfill (In-Place Structures other than RCP, RCBC or similar)	Material Quality	Grading	Q103A or AS 1289.3.6.1	1/material type	100% < 50mm	n/a
		Plasticity index	Q105 or AS 1289.3.3.1		2 ≤ IP ≤ 12	
	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	2/500mm lift	Table S4.1, Operational Works Specification S4 "Stormwater Drainage", WRC Development Manual	2
		MDD	Q110A or AS 1289.5.1.1 or	1/material type		n/a
			AS 1289.5.7.1	1/RDD		
Backfill (Stabilised Sand)	Material Quality	Stabilised sand shall comprise sand meeting the requirements of Table 19 MRS11.04 in an intimate mixture of 12 parts sand and 1 part of either Type GP or GB cement			Table 19.2.5, MRTS04	n/a

Bedding/Haunch/Backfill/Overlay (Buried Metal Corrugated Structures)	Material Quality	All materials shall be in accordance with the manufacturer's recommendations. Evidence of these recommendations and subsequent compliance shall be incorporated with the Contractor's quality records.			As per manufacturer's recommendations.	
	Installation	Installation shall be in accordance with the manufacturer's recommendations. Evidence of these recommendations and subsequent compliance shall be incorporated with the Contractor's quality records			As per manufacturer's recommendations.	
Construction Activity	**Verification Requirement**			**Minimum Test Frequency**	**Specification Requirement**	**Minimum No. of Tests**
	Description		**Test Required**			
STORMWATER DRAINAGE CONSTRUCTION (cont'd)						
Stormwater Drainage System	CCTV Inspection	Appendix A, Operational Works Specification S4 "Stormwater Drainage", WRC Development Manual				
ROAD CONSTRUCTION						
Ground Surface Treatment	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/2500m²	>0.3m below pavement subgrade - 95% SRDD	3
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD	<0.3m below pavement subgrade - 97% SRDD	n/a
Embankment (Road)	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/200mm lift/2500m² or 1/500m³	>0.3m below pavement subgrade - 95% SRDD	3
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD	<0.3m below pavement subgrade - 97% SRDD	n/a
Embankment (Concentrated Operations –	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or	1/200mm lift/500m² or	>0.3m below pavement subgrade - 95% SRDD	3

Gullies etc)			AS 1289.5.7.1	1/100m³	<0.3m below pavement subgrade - 97% SRDD	
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD		n/a

Construction Activity	Verification Requirement			Minimum Test Frequency	Specification Requirement	Minimum No. of Tests
	Description	Test Required				
ROAD CONSTRUCTION (cont'd)						
Subgrade (General)	Material Quality	CBR	Q113C (soaked)	Representative each material and 1 test per 500m carriageway or part thereof	97% MDD 100% OMC	n/a
	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/1000m²	97% SRDD	3
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD		n/a
Subgrade (Turnouts and Entrances)	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/100m²	97% SRDD	1
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD		n/a
Pavement Layers (General)	Material Quality	All materials shall be sourced from a Quality Assured material supplier and the results of the manufacturer's testing to assure quality of the product shall be incorporated with the Contractor's quality records			MRTS05 Section 7.2 "Type 2 Unbound Material"	
	Compaction	RDD	Q111A/B/C or	1/500m²	100% SRDD	4
			Q112 or	2/500m²		8

			AS 1289.5.4.1	1/500m² (2/500m² if using AS1289.5.8.1)		4 (8)
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.4.2	1/material type/5000m² as required		n/a

Construction Activity	Verification Requirement		Minimum Test Frequency	Specification Requirement	Minimum No. of Tests
	Description	Test Required			
ROAD CONSTRUCTION (cont'd)					
Pavement Layers (Turnouts and Entrances)	Compaction	RDD	Q111A/B/C or	1/100m²	100% SRDD	1
			Q112 or	2/100m²		
			AS 1289.5.4.1	1/100m² (2/100m² if using AS1289.5.8.1)		
		MDD	Q110A or AS 1289.5.1.1 or	1/material type		n/a
			AS 1289.5.4.2	as required		
Structural Concrete	Compressive Strength		AS 1012.1 AS 1012.3.1 AS 1012.8.1 AS 1012.9 AS 1012.12.1	1 sample of 2 cylinders for each 15m³ or part thereof placed in an essentially continuous manner	Table S7.1, "Concrete Classes", WRC Development Manual	1 sample per casting day

Table 19.2.3 - Select Backfill Properties

MRTS04

AS SIEVE SIZE (mm)	Percent (by mass) Passing Sieve	
	Gravel *	Loam
37.5	100	100
9.5	60 – 85	100
2.36	25 - 70	70 – 100
0.425	10 – 40	10 – 40
0.075	3 - 30	3 - 30
Other Properties Linear Shrinkage	8 maximum	6 maximum

* Material of size greater than 2.36mm shall be stone

Table 19.2.5 - Sand Properties

MRTS04

Property	Natural Sand	Blended and Manufactured Sand
Percent passing 6.7mm AS sieve	100	100
Percent passing 0.075mm AS sieve (maximum)	5	20
Plasticity Index (maximum)	5	10

Table 19.2.6 – Grading Limits for Bedding Material

MRTS04

AS SIEVE SIZE (mm)	% Passing By Mass
19	100
2.36	30 – 100
0.425	15 – 70
0.075	Mar-30
Other Properties Linear Shrinkage	6 maximum

ADDENDUM TO WATER

SUPPLY CODE OF AUSTRALIA

WSA 03-2002

2.1 SYSTEM PLANNING PROCESS

2.1.1 Extending on Existing Water Supply Scheme

Where a water supply network simulation model exists Council shall assess the impacts of the proposed development on the existing water supply system. The assessment shall be based on the details of the system extension provided by the Consulting Engineer.

2.2 DEMANDS

Refer to Section DG 5.7 – Design Criteria of this Manual for the water supply demand requirements to be adopted in design.

2.4.3 Operating Pressures

Refer to Section DG 5.7 – Design Criteria of this Manual for operating pressure parameters to be adopted in design.

2.6 PUMPING STATIONS

2.6(c) Standby Arrangements:

Council requires standby pump units to be provided. The standby capacity shall be as directed by Council.

The power supply to pumping stations shall have 50% spare capacity for future upgrading and be electrically configured such that the pumping station can operate from an emergency generator supply at times of power failure (thus, a provision of space in the switchboard for a manual ATS change over panel is required).

2.7 SERVICE RESERVOIRS

Refer to Section DG 5.7 – Design Criteria of this Manual for storage parameters.

2.10 CONCEPT PLAN

Refer to Section AP 1.28 – Water Reticulation Concept Plan of this Manual for requirements for a Concept Plan.

3.2.3 Empirical sizing of reticulation mains

Table 3.1 is not to be used for sizing of reticulation mains. Refer to Section DG 5.7 – Design Criteria of this Manual for population and design flow requirements.

3.2.5.3 Hydraulic Roughness Valves

Refer to Section DG 5.7 – Design Criteria of this Manual for roughness values to be used in design.
The Hazen-Williams formula is to be used for head loss calculations.

3.7.2 Minimum pressure class

The minimum class for pipe and fittings shall be PN 16.

3.8 PIPELINE MATERIALS

Pipes used for water mains shall comply with the following table.

Nominal Size DN	Type of Pipe	Class of Pipe
63, 90	MDPE	Series 1 PE100 – SDR11 MIN PN 12
100 150, 200, 250, 300	PVC, PVC-M & PVC-O	Series 2 MIN PN12
100, 150, 200, 250, 300	Ductile Iron	PN20, K9 & K12

4.1.1 Design Tolerances

Horizontal alignment shall be referenced to the MGA co-ordinate system.

4.3 LOCATION OF WATER MAINS

4.3.1 General

The location and alignment of water mains shall generally be in accordance with Council's Standard Drawing.

4.4 SHARED TRENCHING

Shared trenching shall not be specified without prior approval of Council.

4.6 RIDER MAINS

Rider mains are not permitted.

4.7 CONNECTION OF NEW MAINS TO EXISTING MAINS

The connection of new water reticulation to Councils existing system is to be at the Developer's expense.
Council staff shall undertake all connections to Council's water infrastructure. The Contractor shall not carry out the connection unless Council gives special approval in exceptional circumstances.

4.8.3 Permanent ends of water mains

Dead Ends to water mains should be avoided. However, should Dead Ends be unavoidable, the following facilities shall be constructed to facilitate scouring of the lines;

- For mains 100m diameter or greater a hydrant shall be positioned at the end of the line.

4.10.7 Deviation of mains around structures

Deviation of mains around other structures shall only be permitted as a fully flanged offset complete with 1.200m tail pieces.

6.7 SWABBING POINTS

Swabbing points shall be provided where specified by Council.

6.8.3 Hydrant types

Hydrants shall be the spring hydrant "Maxi Flow" 2000 type (DN80) manufactured in accordance with AS 3952 by an Australian Standards quality endorsed company.

Hydrants are to be coated with a thermosetting epoxy powder to AS 2638 and AS 3952.

6.8.7 Hydrant Spacing

The maximum spacing between hydrants shall be 80 metres.

7.3 RECORDING OF WORK AS-CONSTRUCTED INFORMATION

As constructed information shall conform to Section CP 1.21 – Operational Works Construction Procedures of the WSC Development Manual.

11.5.4.2 Traffic Management

Traffic management shall be in accordance with the requirements of the authority responsible for the roads where construction activities are carried out.

15.2.3 Bending Pipe

Bending of pipes is not permitted.

ADDENDUM TO SEWERAGE CODE OF AUSTRALIA WSA 02-2002

2.3.1 Loading per Serviced Property

Refer to Section DG 6.8 - Design Criteria of this Manual.

2.3.2 Assessment of future loads

Refer to Section DG 6.8 - Design Criteria of this Manual.

3.1 DESIGN FLOW ESTIMATION

Refer to Section DG 6.8 - Design Criteria of this Manual.

3.2 DESIGN FLOW ESTIMATION METHOD

Refer to Section DG 6.8 – Design Criteria of this Manual.

4.2.5 Easements

Refer to Section DG 6.12 – Dedication of Land, Easements and Permits to Enter of this Manual.

4.3.7 Horizontal Curves in Sewers

Horizontal curves in sewers are not permitted.

4.5.3 Minimum Air Space for Ventilation

Refer to Section DG 6.8 – Design Criteria of this Manual.

4.5.4 Minimum pipe sizes for maintenance purposes

Refer to Section DG 6.13 – Property Connections in this Manual.

4.5.7 Minimum Grades for Self Cleansing

Refer to Section DG 6.8 – Design Criteria of this Manual.

4.6.5 Minimum Depth of Sewer Connection Point

The sewer shall be deep enough to drain the entire lot except where a private pump station is approved on the lot.

4.6.7 Vertical Curves

Vertical curves are not permitted.

4.6.8 Compound Curves

Compound curves are not permitted.

5.2 LIMITS OF CONNECTION TO SEWERS

Add: connections into manholes will be permitted at end of lines only, elsewhere connections are required in line only.

5.3 METHODS OF PROPERTY CONNECTION

The methods of property connection shall be as per Council's Standard Drawing
.

5.5 NUMBER OF PROPERTY CONNECTIONS

5.5.2 Multiple Occupancy Lots

An application shall be made at design stage for determination of servicing method.

5.6 LOCATION OF CONNECTION POINTS

5.6.1 Undeveloped lots

Property connections should generally be located at the lowest corner of the allotment between 0.5 and 1.5m upstream of the allotment boundary or manhole.

Where a sewer main lies within an adjoining allotment, the property connection is to extend a distance of 1.0m into the allotment. For battle-axe allotments with the property connection located within the access, the property connection shall extend along the access to a point 1.0m within the main part of the allotment or, where a sealed driveway is required for the full length of the hatchet 'handle' then 1m past the extents of the driveway to allow a suitable future point of connection. Where a sewer is contained within a stormwater drainage easement, then the property connection should extend a minimum of 1m past the easement boundary and into the lot it is serving. All property connections should be finished a minimum of 1m clear of any infrastructure.

5.7 Y – PROPERTY CONNECTIONS

Y-property connections are not permitted.

6. MAINTENANCE STRUCTURES

Table 6.1

The use of horizontal and vertical bends is not permitted.
The use of Maintenance shafts shall be by conditional approval only.
The use of terminal maintenance shafts is not permitted.

6.3.2 Maintenance Structure Spacing – Reticulation Sewers

The maximum distance between any two consecutive maintenance structures shall be 90m.

6.6.3 Design Parameters for MHs

External drops are not permitted for use with precast manholes.

6.6.4 Property Connections in MHs

Property connections must not be connected into maintenance holes.

6.6.8 Ladders Step Irons and Landings

Ladders, step irons and landings are not required.

6.7 MAINTENANCE SHAFTS

6.7.1 General

The use of maintenance shafts is permitted, subject to approval in reticulation sewers subject to the design parameters detailed in this Manual and WSA 02-2002.

6.7.2 Design Parameters for MSs and TMSs

The following design parameters apply to maintenance shafts and terminal maintenance shafts in addition to or instead of those detailed in WSA 02-2002.

- Sizing and installation of maintenance shafts to generally comply with the manufacturers recommendations.
- Maintenance shafts shall be graded to the intersection point of the sewer main and maintenance shaft coupling/bend/fitting.
- Maintenance shafts may be used on 100mm, 150mm and 225mm diameter sewer mains and house connection branches only.
- Maintenance shafts shall be used to a maximum depth of 3.0m.
- Maintenance shafts must be supported on a concrete cradle/surround.
- Testing of maintenance shafts shall generally be carried out in conjunction with the testing of the sewer main.
- Property connection branch inspection tees shall be 200mm clear of the centre of the Maintenance Shaft.
- Property connections must not be made into maintenance shafts.
- Maintenance shafts must be provided with a 600mm dia Ductile Iron Class B cover located within a precast surround. The trench bedding material shall extend below the shaft inspection opening surround.
- A maximum of five (5) Maintenance Shafts will be permitted between two conventional maintenance holes with a total length of sewer of not more than 250m between maintenance holes.
- Maintenance Shafts shall be located with a maximum spacing of 50 metres to an adjoining structure.

Maintenance shafts are not permitted in the following locations:

- As the receiving manhole at a pumping/lift station;
- As a discharge manhole for a rising main;
- Within roadway central medians, roundabouts or within kerb and channel;
- As the connection structure for future development stages;
- In an area zoned Industrial, Commercial, or Multi-unit.

7.2 WATER SEALS, BOUNDARY TRAPS AND WATER – SEALED MH'S

Water seals are not required.

7.3 GAS CHECK MH'S

Gas check MH's are not required.

7.4 VERTICAL AND NEAR VERTICAL SEWERS

Prior approval must be obtained from Council for the use of vertical or near vertical sewers.

7.7 VORTEX INLETS AND WATER CUSHIONS

Prior approval must be obtained from Council for the use of water inlets and water cushions.

7.8 INVERTED SYPHONS

The use of inverted syphons is not permitted.

7.10 FLOW MEASURING DEVICES

Flow measuring devices are not required to be installed. Not withstanding this provision shall be made in the design of the valve chamber to allow the future installation of an electromagnetic flowmeter.

7.11 WET WEATHER STORAGE

Prior approval must be obtained from Council for using wet weather storage as a means of reducing downstream infrastructure.

Appendix D
Standard Conditions for Water Supply Above RL50

WATER SUPPLY

1. The water supply system shall be designed in accordance with Water Resources Commission Guidelines and amendments, Council's Development Manual, Council's Standard Drawings, and to the requirements of the Council's Water Supply and Sewerage Engineer. Similarly, adherence to Acts, Regulations, relevant standards and Council's ByLaws is required.

RESERVOIRS

2. The reservoir is to be reinforced concrete cast insitu with a concrete roof, as per Whitsunday Regional Council, Standard Drawings and notes, fully secured and to the full satisfaction of Council's Water and Sewerage Engineer.
3. The land on which the reservoir is constructed and sufficient surrounding land, 4 meters minimum, shall be dedicated to Council at no cost to Council.
4. A 240v power supply shall be provided to the reservoir site.
5. A suitable sealed access and turning area shall be constructed and dedicated to Council at no cost to Council, in accordance with Council's Development Manual.
6. The access road to the reservoir is not to be utilised as a common access. Land in which the access road is situated is to be dedicated to Council at no cost to Council.
7. The gradient of the access road is not to exceed 20%.
8. Storm water layout with details of overflow / scour / underdrainage flow path is to be identified.
9. Security fence details are to be provided.

PUMP STATION BUILDING

10. The reservoir is to be reinforced concrete cast insitu with a concrete roof, as per Whitsunday Regional Council, Standard Drawings and notes, fully secured and to the full satisfaction of Council's Water and Sewerage Engineer.
11. The land on which the pump station is constructed and sufficient surrounding land, 3 meters minimum, shall be dedicated to Council at no cost to Council.
12. The finished floor level of the pump station should be self draining and no less than 200mm above the surrounding finished ground level.
13. Should be situated at a suitable RL AHD so that the return gravity system does not exceed to maximum head recommended by the Water Resources Commission Guidelines.
14. Provision is to be made within the building, opening to external, for a suitable sized room to house the disinfection equipment and storage tank. The room shall be independent of all mechanical and electrical equipment.
15. Pump control room is to be fitted with sufficient ventilation to allow air flow within the room.
16. A suitable sealed access and hard standing area shall be provides and constructed as per Council's Development Manual.
17. Security fence details are to be provided.
18. Building to be sized to house the following but not limited to:
    a. Duty / Stand-by pump arrangement.
    b. Electromagnetic type flow metering. (ie. Kent or combined Instruments).
    c. Control cabinet and switching equipment as per council's standard specifications.

d. Telemetry connected and commissioned to be fully compatible with Councils existing telemetry control system.
e. Low pressure safety cut out switch on the suction side of the pumping system, shall be installed in a manner so that it can be isolated from the main and release the pressure to text the suitability without having to close down the water supply to the pumps.
f. Room to house the disinfection equipment.

PUMPS

19. For calculating the duty head of the pump please note that the BWL of the Cannonvale reservoir is at RL 72.
20. Duty / Stand-by pump arrangement is to be provided. They must be able to run in parallel if required.
21. Pumps must be fitted with mechanical seals.
22. Reflux valves shall be on the discharge side of the pump.
23. Valving is to be provided so each pump can be isolated and removed if necessary should the case arise.
24. Vacuum and pressure gauges are to be fitted.
25. Pumps and system should be protected against water hammer.
26. All pumping equipment is to be new.

POWER TO THE SITE

27. All power used up until the project is placed on maintenance shall be the developer's responsibility. At On Maintenance the developer shall have the Ergon account transfer to Council.

PIPEWORK

28. All appropriately sized pipe work into / out of the pump station and pipe work associated with the pump connections shall be DLCL and fully flanged.
29. A dedicated rising main, appropriated sized, of K9 DICL shall link the pump station to the reservoir.
30. All gravity mains, appropriately sized, may be uPVC Class 16.
31. Water mains are to be installed on the topside of the road, in natural ground, where possible.
32. Horizontal separation of the rising main and the gravity main shall be maintained at 300mm.
33. Any under-boring of main roads shall utilise 6mm steel for the sleeve as a minimum or as their approval.
34. Long section of the main on the suction side of the pumps shall be submitted, to ensure air locks can not affect the performance of the pumps.

DISINFECTION

35. Disinfection facilities (sodium hypochlorite) to be provided should include but not limited to:
    a. Adequate sized room to house all equipment to comply with WHS regulations.

b. Adequate sized storage tank complete with an approved measuring device
c. Pumping equipment with adequate pumping capacity to maintain a chlorine residual in the reticulation system to the satisfaction of Council.
d. Bunding details, pump out pit (300 x 300 x 200mm deep) and the method of sealing all of the concrete works and walls are to be provided
e. The retractable injection quell shall be installed external to the building and suitably protected from damage.
f. The injection point is to be installed on the discharge side of the pumps.
g. Provide an approved safety shower / eye wash basin in a secured area, external to the building.
h. Provide a 20mm hose tap in a secured area.

CONSULTATION

36. It is essential that the applicant's water supply consultant discuss in full the system with Council's Water and Sewerage Engineer prior to and during the design phase.
37. An Elpro approved installation contractor is to be used for the telemetry system.

Appendix E
Addendum to
Gravity Sewerage Code of Australia
WSA 02-2014

Gravity Sewerage Code Section Reference	WRC Requirement
2.4.1 Loading per serviced lot	Refer Section DG 7.8 of this Manual
2.4.2 Estimating future catchment loads	Refer Section DG 7.8 of this Manual
3.2 Design Flow Estimation	Refer Section DG 7.8 of this Manual
3.3 Design Flow Estimation method	Refer Section DG 7.8 of this Manual
5.2.8 Easements	Refer Section DG 7.12 of this Manual
5.3.8 Horizontal curves in sewers	Horizontal curves in sewers are not permitted
5.5.3 Minimum air space	Refer Section DG 7.8 of this Manual
5.5.4 Minimum pipe sizes for maintenance purposes	Refer Section DG 7.13 of this Manual
5.5.7 Minimum grades for self cleansing	Refer Section DG 7.8 of this Manual
5.6.5 Minimum depth of sewer connection point	The sewer shall be deep enough to drain the entire lot except where a private pump station is approved on the lot.
5.6.7 Vertical curves	Vertical curves are not permitted
5.6.8 Compound curves	Compound curves are not permitted
6.2 Limits of connection to sewers	Add: connections into manholes will be permitted at end of lines only, elsewhere connections are required in line only
6.3 Methods of Property Connection	The methods of property connection shall be as per Council's Standard Drawing No S-0030.
6.4.2 Multiple Occupancy Lots	An application shall be made at design stage for determination of servicing method
6.5.2 Vacant Lots	Replace with: Property connections should generally be located at the lowest corner of the allotment between 0.5 and 1.5m upstream of the allotment boundary or manhole. Where a sewer main lies within an adjoining allotment, the property connection is to extend a distance of 1.0m into the allotment. For battle-axe allotments with the property connection located within the access, the property connection shall extend along the access to a point 1.0m within the main part of

	the allotment or, where a sealed driveway is required for the full length of the hatchet 'handle' then 1m past the extents of the driveway to allow a suitable future point of connection. Where a sewer is contained within a stormwater drainage easement, then the property connection should extend a minimum of 1m past the easement boundary and into the lot it is serving. All property connections should be finished a minimum of 1m clear of any infrastructure.
6.6.2 'Type 7 spur' or "Y" property connection sewers	Y property connections are not permitted.
Table 7.1 Maintenance Structures	The Use of horizontal and vertical bends is not permitted.
7.3.2 Maintenance Structure Spacing – Reticulation Sewers	The maximum distance between any two consecutive maintenance structures shall be 90m
7.6.2 Types of Manhole Construction	Approved PE manholes may be used as a standard manhole for a pumping/lift station or as a discharge manhole for a pressure (rising) main. PE manholes are not permitted in the following locations: - Within roadway central medians, roundabouts or within kerb & channel; - As the connection structure for future development stages; and / or - In an area zoned Industrial or Commercial.
7.6.3 Design Parameters for Manholes	Internal drops are not permitted for use with precast or any other manholes unless otherwise approved by Council.
7.6.4 Property Connections in Manholes	Property connections must not be connected into maintenance holes except at end of line.
7.6.9 Ladders Step Irons and Landings	Ladders, step irons and landings are not required.

Appendix F
Addendum to
Sewerage Pumping Station Code of Australia

Part 3 – Construction

Sewerage Pumping Station Code Section reference	WRC requirement
25.1 Pump Lifting Chains	- Lifting chains shall be fitted to each pump and shall be in accordance with AS 2321; - Eyebolts shall be in accordance with AS 2317 – galvanised; - Shackles in accordance with AS 2741 – galvanised; - Lifting eyes in accordance with AS 3776 – galvanised; - Lifting chain to be grade L – galvanised; - The lifting chain for pumps less than 1 tonne shall be 10mm link as a uniform standard; - Lifting chain for pumps weighing greater than 1 tonne shall be sized accordingly; - Provide a suitable bracket and hook in an out of the way location for hanging the chain; and - For checking and chain replacement, each pump station shall have an easily visible plaque mounted adjacent to the wet well stating length and weight of chain and the weight of the pump to which it is attached.
25.2 Brackets	- Provide stainless steel brackets for mounting of floats; and - Provide stainless steel brackets for fastening the level sensor stilling well.

Appendix G
Addendum to the
Vacuum Sewerage Code of Australia WSA 06-2008

Vacuum Sewerage Code Section reference	WRC requirement
5.3.1 General	Remove references to PVC-U and PVC-M – use PE pipe only
6.6.3 Generator Types	Add the following: In larger stations (>20 l/s), Liquid ring vacuum generators shall not be used. Oil filled vacuum generators are required. For stations < 20 l/s, dry run vacuum generators are preferred.
6.6.9 Air Handling Pipe Material	Any pipe within the Vacuum Station designated for the handling of air or air sewage / water mixture shall be Stainless Steel 316L with wall thickness designed for the application.
6.10 Noise	Add the following: - In addition to noise environmental regulations to be met, the noise level in residential areas, measured as the Adjusted Maximum sound pressure level LA10adj, 10mins shall not be greater than the background noise level plus 3 dB(A) at the boundary of vacuum station lot; - In Industrial or Commercial areas it shall not be greater than the background noise level plus 8 dB(A). It will likely be necessary to provide sound attenuation construction within the building, sound rated doors and mufflers on pipes leading to the exterior of the building in order to meet requirements.; and - The developer shall perform noise studies before and after commissioning to demonstrate that requirements have been met.
6.11.2 Biofilters	Add the following: - The odour control bed shall be roofed; and - The odour control bed shall have fitted over it an automatic sprinkler system with moisture control, to ensure that

	the bed operates at an operator selectable moisture content
8.3 Alarms (Table 8.1)	Add the following: - Vacuum Generator HIGH TEMPERATURE. Provide a high temperature sensor for each of the Vacuum Generators which will both alarm and shut down the unit in the event of the temperature rising to a manufacturer recommended maximum set point.
16.1 Services	Add the following: - Tool Kit and Special Tools, as follows: Provide a tool kit with the station containing a range of tools which will allow the operator to perform the duties required to operate and maintain the system. Provide also any specialized tools required for the same purpose.
16.2 Vacuum Station Fixtures	Add the following: - Provide a vacuum testing station on the workbench utilising the station vacuum in order to test valves and vacuum equipment after repair. Pipe and valve the test station appropriately.
26.2 Switchboard Installation (Clause 25.6.4.4 Cubicle Labels)	Add the following: - Ensure pump labels match with the labelling of the pumps on the floor
28.3 Installation of Pumping and Vacuum Generator Units (Clause 28.3.3 Unit Numbers)	Add the following: - Ensure that Unit numbers match with the labelling numbers on the switchboard.
Part 4 Standard Drawings	Chamber series of drawings, VAC 1200, VAC 1201, VAC 1202, VAC 1203, VAC 1204 and VAC 1205: - Remove references to brickwork risers in the construction of the collection chambers. Brickwork is not permitted; and - To the vacuum layout series of drawings, VAC 1300 and VAC 1301, add the following: provide an appropriately sized suction line (minimum DN 200), from the Vacuum

	Vessel to the outside of the building for a sucker truck connection. The suction line shall be valved outside the building to permit the draining of the Vacuum Vessel without the operator of the suction truck having to enter the building.

Construction Specification

Sewage Pumping Station

Supplement to the
WSAA Sewage Pumping Station
Code of Australia (WSA 04-2005
Version 2.1)

Revision 2
August 2018

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Preface

The construction of sewage pumping stations and associated infrastructure must comply with the Water Services Association of Australia publication 'WSA 04-2005 Version 2.1 – Sewage Pumping Station Code of Australia' (the 'Code') except where the Code is amended by this document.

The following amendments, additions, deletions and alterations apply to and form part of the Code. Section and Clause numbers refer to those in the Code.

The standard drawings contained in the Code do not apply. Refer to the Whitsunday Regional Council standard drawings.

Ultimately, this document will include amendments, additions, deletions and alterations to Part 1 'Planning and Design' of the Code so as to form a complete supplement to the Code.

At this time the amendments, additions, deletions and alterations to Part 1 'Planning and Design' of the Code are included in the Whitsunday Regional Council this Appendix.

Glossary of Terms, Abbreviations and References

REFERENCED DOCUMENTS

(Add the following)

The latest edition of all referenced documents, including all amendments and supplements, are to be used.

The following documents are referred to in this Code:

- Queensland Development Code:
  MP1.4 – Building over or near relevant infrastructure

- Council Standard Drawings;

- WSAA Codes of Practice:
  WSA 02-2002 – Sewerage Code of Australia;
  WSA 04-2005 – Sewage Pumping Station Code of Australia; and
  WSA 101-2008 – Industry Standard for Submersible Pumps for Sewage Pumping Stations.

- Australian Standards; and

- Other Documents:
  'Planning Guidelines for Water Supply and Sewerage' (Department of Environment and Resource management, April 2010).

Part 1: Construction

1 GENERAL

1.1 Scope

(Add the following)

Any inconsistency or ambiguity between the various documents comprising this Specification shall be resolved by the adoption of those documents in the following order of precedence;

- Statutory Legislation;
- This Specification;
- Whitsunday Regional Council Standard Drawings;
- Whitsunday Regional Council Development Manual;
- Sewerage Code of Australia (WSA 04-2005 Version 2.1); and
- Australian Standards.

The work must comply with relevant Statutory Legislation, Codes of Practice, Australian Standards and Council's local laws, policies, guidelines and specifications.

This Specification applies in the construction of the various elements of a sewage pumping station system and a sewer rising main system which include, but are not limited to:

- sewage pumping stations of capacity up to and including 200litres / second;
- pressure mains of a size up to and including DN375;
- maintenance structures; and
- standard appurtenances.

Construction of gravity sewers and associated gravity maintenance structures shall be in accordance with the requirements of WSA 02-2002 'Sewerage Code of Australia' and Council's Development Manual.

1.2 Interpretation

(Add the following)

Asset Creation means any or all aspects of the planning, design, construction, supervision of construction, testing and commissioning and eventual handover of sewerage infrastructure to Whitsunday Regional Council.

Contractor means a person, corporation, company, business or other legal entity bound under law to execute work under a contract or agreement. Contractor also means 'Constructor'.

Council means Whitsunday Regional Council and the Whitsunday Water & Waste business unit of Whitsunday Regional Council.

Designer means a Professional Engineer who is qualified in Queensland (currently met by a person being registered as a Registered Professional Engineer Queensland (RPEQ) and is competent to perform the engineering works required for the Asset Creation process on behalf of a Developer.

Developer means the person who has submitted a planning application for the provision of infrastructure under the Asset Creation process or for the utilisation of existing sewerage infrastructure.

HOLD POINT means a point beyond which work may not proceed without authorisation, and sign-off, by the Superintendent's representative and / or Whitsunday Regional Council's representative. Release of a hold point may also be subject to an inspection of works by the Superintendent's representative and / or Whitsunday Regional Council's representative.

IDAS means the Integrated Development Application System under the Sustainable Planning Act (SPA).

Maintenance Structure means manhole, maintenance hole, pressure main discharge chamber, receiving access chamber or non-entry maintenance chamber.

MONITOR means intermittent surveillance of any stage of the work in progress by the Superintendent and / or the Superintendent's Representative and / or the principal's representative and / or Whitsunday Regional Council's representative.

SELF INSPECT means the progressive verification of the quality, and/or adherence to construction specifications, by the constructor/service provider and Principal Constructor (Contractor) performing the work. Confirmation of completion of *Self Inspect* requirements shall be by constructor checklist sign-off.

Surveyor means a person, registered as a Surveyor (minimum Class – 'individual') with the Surveyors Board of Queensland under the Surveyors Act of Queensland, who is competent to perform the surveying work required of the works described in this document and the documents referenced herein.

Sewer Reticulation means sewer pipe work less than DN375 to which property connections are permissible.

SCA means Switch-gear and Control-gear Assembly and includes main switchboard, main distribution board, distribution board, control board, electrical kiosk, electrical panel, control panel or similar enclosure.

SPA means the Queensland Sustainable Planning Act 2009.

The Code means the Sewage Pumping Station Code of Australia (WSA 04-2005 Version 2.1) published by the Water Supply Association of Australia (WSAA).

Trunk Mains means pipe work equal to or greater than or equal to DN225 or rising mains with a dimeter of greater than to or DN150 in diameter and to which property connections are not permissible or generally not present.

WITNESS POINT means a point beyond which work may not proceed without the Contractor notifying the Superintendent's representative and / or Whitsunday Regional Council's representative in order to provide the Superintendent's representative and / or Whitsunday Regional Council's representative with the opportunity to witness, and sign-off, an inspection or test an aspect of the work. The Superintendent's

representative and / or Whitsunday Regional Council's representative, at their discretion, may authorise the inspection or test or aspect of the work to proceed without the Superintendent's representative and / or Whitsunday Regional Council's representative witnessing, and signing off, the inspection or test or aspect of the work.

WRC means the Whitsunday Regional Council.

2 QUALITY

2.1 Quality Assurance

2.1.1 Quality Management System

(Add the following)

Prior to works commencing the Contractor must submit to Council and / or the Superintendent evidence of third party certification of their quality system. The Superintendent shall submit all certification evidence to Council prior to works commencing.

Submission of certification evidence to the Superintendent constitutes a **HOLD POINT**. Release of the Hold Point, is subject to Council's and / or the Superintendent's review and confirmation of the certification, is required prior to works commencing.

2.1.2 Inspection and Test Plans

(Add the following)

Whitsunday Regional Council and / or the Superintendent may at their discretion instruct the Constructor to add additional Hold or Witness Points.

The Contractor's ITP must include, at least, all the details contained within Section CP1 of Council's Development Manual.

2.1.3 Quality Audits

(Add the following)

Witness Points and Hold Points are specified within this document and referred documents for works described within this document and referred documents.

It is the Constructors / Contractors responsibility to advise the Superintendent and / or Council of the anticipated or planned occurrence of any construction process / aspect or Inspection activity / aspect for which there is an associated Witness Point or Hold Point.

2.2 Personnel Qualifications

(Add the following)

All concrete and excavation work, including tunneling, must be performed and supervised by appropriately-qualified and / or appropriately-accredited personnel.

In particular Leading Hands, Supervisors and CCTV Operators must hold Statements of Attainment for Units of Competence (from either the Water Industry National Training Package NWP07, the Civil Construction Training Package RII09 or a training organisation's training course / package acceptable to Council) pertaining to the particular tasks or work that they are engaged in.

Prior to the commencement of any work, Leading Hand, Supervisor and CCTV Operator qualifications must be submitted to the Superintendent. The Superintendent shall then submit all qualification / accreditation documentation to Council for Council review.

Submission of all qualification / accreditation documentation to the Council and/or the Superintendent constitutes a **HOLD POINT**. The Superintendents review and acceptance of the nominated personnel to perform their nominated duties constitutes release of the Hold Point. Works must not commence until the Hold Point is released.

3 GENERAL CONSTRUCTION

3.1 General

(Add the following)

The Contractor must provide all necessary plant, equipment, labour, and materials required to satisfy the intent and / or requirements of this specification.

The Contractor must comply with the requirements of all relevant Authorities including, but not limited to, having regard for stormwater management, dewatering effects / impacts, silt control, noise abatement, proximity to existing buildings and the amenity of adjacent property owners.

All works are to be constructed to the tolerances set out under the relevant sections of Council's Development Manual.

3.2 Customer Focus

3.2.1 Resolution of Complaints

(Add the following)

All customer enquiries and complaints must be documented including time, date, contact details for the complainant and summary of the complaint and forwarded immediately to the Superintendent for forwarding onto Council for discussion.

It shall be the Superintendent's responsibility to ensure complaints are appropriately actioned with any change to the works scope, methodology etc approved by Council in advance.

3.3 Protection of People, Property and Environment

3.3.1 Safety of People

(Add the following)

The Contractor must comply with relevant Statutory and OH&S requirements when cutting and disposing of asbestos-cement pipes and materials.

3.3.2 Protection of Other Services

(Add the following)

Prior to works commencing, the Contractor must locate all existing utilities and services and protect them from damage and interference.

Where it is necessary to relocate or alter any existing utility or service, the Contractor must make all necessary arrangements with, and comply with, the requirements of the relevant authorities.

Further to notification requirements, the Contractor must immediately repair damage to any existing utility or service to the satisfaction of the utility or service owner, the Council and the Superintendent.

The Contractor is responsible for all costs associated with rectification of the utility or service regardless of the accuracy of any prior location information provided by the Superintendent, Council, the utility service owner or its agent.

All costs associated with the location, protection, and repair of all services must be borne by the Contractor.

3.3.3 Disused / Redundant Sewers and Pressure Mains

(Add the following)

Existing maintenance structures that are no longer required must be removed.
Where the Project Drawings or Specification do not identify actions to be taken for disused or redundant sewers and pressure mains, the Superintendent is to be notified immediately. The Superintendent will then seek an instruction from Council as to their preferred treatment (e.g. removed, grout filled etc)

3.3.4 Private and Public Properties

(Add the following)

Excavated materials must not be stockpiled against any fence or the walls of any building.

3.4 Affected Party Notifications

(Add the following)

For all notifications the period of notice must be 5 (five) working days.

4 PRODUCTS, MATERIALS AND EQUIPMENT

4.1 Authorised Products and Materials

(Add the following)

4.1.1 Pressure Pipe-work and Pipe Fittings

(This clause 20.1.1 is a new clause)

Requirements for pressure pipe-work and pipe fittings are as follows:

- Polyvinyl Chloride (PVC) Pipe and Fittings, PVC pressure pipe must be:
  - PVC-M or PVC-O;
  - Series 2 (compatible with ductile iron (DI) pipe);
  - Rubber ring (elastomeric seal) jointed;
  - Class PN16 (minimum;
  - Cream in colour for sewerage applications (neither lighter RAL 080 90 20, nor darker than RAL 075 80 20) or Lilac in colour for recycled water application in accordance with AS1477 and WSAA PS211; and
  - Compliant with AS1260 Parts 1 – 5 (pipes and fittings.

Pipes and fittings must be handled, transported and stored as per the manufacturer's guidelines and AS/NZS 2566.

Further to the requirements of AS2032 “Installation of PVC pipe systems” all PVC pipes installed to operate in direct sunlight must be painted (primer coat and double top coat) with a light coloured water-based acrylic paint.

- Ductile Iron (DI) Pipe and Fittings shall be:
  - rubber ring (elastomeric seal) jointed or flanged;
  - PE sleeved (Colour – Cream);
  - Cement mortar (type SR cement) lined or epoxy lined; and
  - Class PN35; and
  - Compliant with AS 2280 and shall be class K9, rubber ring joined, for spigot and socketed pipes, and class K12 for pipes with one or both ends flanged.

- Flanges shall be:
  - to Figures B5 & B6 of AS 4087, as appropriate; and
  - Provided with Grade 316 SS bolts and Grade 304 SS nuts and washers applied with thread anti-seize or oil based lubricant.

Pipe and fittings are to be handled, transported and stored as per manufacturer’s guidelines.

All DI pipes below ground shall be provided with polyethylene sleeving for the full length in accordance with AS 3690.

Pipes and fittings cast into concrete must be treated, cleaned and prepared (including power- tool cleaned) in accordance with AS 1627.2 ‘Metal finishing – Preparation and pretreatment of surfaces Part 2: Power tool cleaning’.

PVC pipework shall not be socketed directly into DI fittings.

- Polyethylene (PE) Pipe and Fittings:
  - electro-fusion, butt-fusion or compression joined;
  - a minimum of class PN16;
  - of either PE80B or PE100 polymer material; and
  - Colour coded to suit the application in accordance with WSA 01.

  Fittings shall be:
  - (for fittings ≤ DN110mm) - PE in accordance with AS4129; and
  - (for fittings > DN110mm) - DI in accordance with AS2280; and coated internally & externally with PE in accordance with AS4129.

Pipe must be of the required internal diameter shown in the design drawings.

Pipes and fittings are to be handled, transported and stored as per manufacturer’s guidelines.

- Steel Pipe and Fittings must only be used with Council approval on a project specific basis. If approved, Steel pipe and fittings shall be:
  - ring jointed, flanged or welded;
  - Fusion bonded polyethylene (FBPE, e.g. Sintakote) or epoxy coated;
  - rubber SR type cement or epoxy lined; and
  - Minimum wall thickness the greater of 6mm or diameter/120.

Flanges shall be:
- To Figures B7, B8 & B9 of AS 4087, as appropriate; and
- Provided with Grade 316 SS bolts and Grade 304 SS nuts and washers.

Steel pipe must be provided with cathodic protection where specified.

Pipe and fittings are to be handled, transported and stored as per manufacturer's guidelines.

- ABS Pipe and Fittings

ABS pipe and fittings shall be:
- Solvent welded; and
- Minimum class PN16 pressure.

Joining of pipe shall be in accordance with the manufacturer's instructions.

Pipes and fittings are to be handled, transported and stored as per manufacturer's guidelines.

- Copper Pipe and Fittings

Copper pipe and fittings shall be:
- manufactured in accordance with AS 1432;
- in the range of DN6 to DN200 for Type A or Type B;
- insulated from ferrous mains; and
- in compliance with AS3500 'Plumbing and drainage Part 2: Sanitary plumbing and drainage'.

Fittings shall:
- comply with AS 3688 'Water supply – Metallic fittings and end connectors';
- be de-zincification resistant; and
- if capillary fittings, have silver brazed joints or solder insert capillary joints.

4.1.2 Valves

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(This clause 20.1.2 is a new clause)

Requirements for valves are as follows:

- General Valve Requirements

All valves are to be anti-clockwise close type.

Flange connections for valves must comply with AS4087 'Metallic flanges for waterworks purposes' (or AS2129 'Flanges for pipes, valves and fittings' where appropriate) and have a minimum pressure rating PN16. Bolts must be Grade SS316. Nuts and washers must be Grade SS304.

All sewer valves are to be fitted with a red top / handle.
All ferrous alloy (cast iron, spheroidal graphite cast iron, plain carbon and alloy steel) valves must have protective epoxy coatings.

Oil valves and repack valve glands if directed by the Superintendent.

- Knife Gate Valves shall be:
  - Flanged unless noted otherwise on the Drawings.

- Unless specified in the project drawings or directed by the Superintendent otherwise, Air Valves shall be:
  - a minimum size of DN80mm;
  - provided with an isolating sluice valve; and
  - Tyco/Pentair (Council nominated make).
- Sluice Valves shall be:
  - Provided to each pump connection pipe work in the valve pit;
  - Flanged unless shown otherwise on the Drawings; and
  - Resilient seated.
  -
- Non-return Valves shall be:
  - provided to each discharge pipe in the valve pit; and
  - Resilient seated -Tyco/Pentair swing-flex check valves (Council nominated make).

- Ball Valves shall be:
  - Flanged unless noted otherwise on the Drawings.

- Butterfly Valves shall be:
  - only used with prior approval of Council; and
  - If approved, flanged, unless noted otherwise on the Drawings.

- Scour Valves shall be:
  - Sluice valves; and
  - Have assemblies as noted on the Drawings.

4.1.3 Electrically operated actuators

(This clause 20.1.3 is a new clause)

Requirements for electrically operated actuators are as follows:

- General

  Electrically operated actuators shall:
  - be selected to be interchangeable with existing actuators where works augment existing sewerage infrastructure; and
  - be selected subject to Council approval.

- Electrical properties

  Electrically operated actuators shall:
  - be 3 phase with a rated voltage of 415V 50Hz;
  - be suitable for operation over a phase voltage range of 400V to 440 V; and
  - have phase rotation protection integral with 3 phase actuators.
- Installation

  Electrically operated actuators shall:

- be suitable for indoor and outdoor installation;
- be within IP56 (minimum, to AS 60529) enclosures, including all auxiliary enclosures;
- have all electrical connections, controls, and the like, accessible from platforms or walkways;
- be fitted with limit switches and torque switches appropriately adjusted;
- be fitted with 240 V ac anti-condensation heaters;
- be fitted with a Grade 316 SS nameplate, in accordance with AS 1359; and
- be fitted with a local mechanical position indicator.

- Penstocks and Valves

  Electrically operated actuators for penstocks and valves shall:
  - be specifically designed for penstock or valve actuator service;
  - have Class F winding insulation;
  - have a rated speed and rotation direction (in conjunction with the gear reduction unit used) to suit the operational requirements of the penstock or valve;
  - deliver a penstock operation time (fully closed to fully open and vice versa) within the range of 2 to 3 minutes;
  - deliver a valve operation time (fully closed to fully open and vice versa) within the range of 4 to 6 minutes;
  - be mounted directly on the valve or penstock capstan so that all forces are confined to the valve or penstock;
  - be supplied with design verified maximum opening and closing torque calculations (supplier prepared) for presentation to Council; and
  - be sized for non-overload operation under the design verified maximum opening and closing torque loadings.

It shall be the Contractor's responsibility to determine the rated output (kW) of the motor, in conjunction with the gear reduction unit used, to suit the operational requirements of the respective penstock or valve.

- Manual override hand wheels
  - Electrically operated actuators shall be fitted with a manual override hand wheel:
  - located not more than 1000 mm, or less than 700 mm, above the operating floor level;
  - between 500mm and 600 mm in diameter (and minimum clearance 150 mm for penstocks);
  - of a diameter which shall require a force of no more than 130 Newtons at the rim to operate the penstock or valve from fully open to fully closed under all operating conditions. Where this cannot be achieved due to the limit on the hand wheel diameter;
  - or a gear reduction unit where a force of no more than 130 Newtons at the rim to operate the penstock or valve from fully open to fully closed under all operating conditions cannot be achieved;
  - that rotates clockwise to close the valve;
  - clearly marked with the words "OPEN" and “CLOSE” and arrows in the appropriate directions; and
  - having rims machined to a smooth finish.

- Control

Electrically operated actuators shall be fitted with integral open and close contactors (Contactors for modulating duty actuators shall be solid state type):

- be fitted with local open / close / emergency stop control pushbuttons;
- be fitted with Local / Remote control selector switch;
- be fitted with all ancillary equipment such as control transformers, relays and other components as required;
- be supplied with an integral reversing DOL starter and associated control equipment;
- shall be able to be controlled either locally manually or remotely (for valves and penstocks);
- be fitted with the integral OPEN / CLOSE push buttons, a padlock able LOCAL / REMOTE rotary selector switch, and an emergency stop push button;
- stop the valve or penstock, regardless of selector switch position, following activation of the emergency stop push button;
- be fitted with open, close and stop interposing relays which shall enable the actuators to be opened and closed by the control system when remote is selected;
- be provided with voltage free contacts for remote connection of monitoring signals including, Open and close status, Actuator available (i.e. voltage present and remote selected) and Actuator fault – e.g. over torque, motor overload/over temperature fault;
- be suitable for remote operation from the PLC;
- be fitted with a position signal transmitter with an isolated 4 to 20 mA output suitable for connection to the PLC (where specified); and
- be fitted with temperature sensing devices which shall be embedded in the motor phase windings and shall be arranged to prevent motor overload. Non-modulating actuators shall be rated for 60 starts (reversals) per hour.

4.1.4 Preferred Equipment

(This clause 20.1.4 is a new clause)

Unless noted otherwise on the Drawings, the Contractor shall select components from the preferred equipment list included under Council's *Construction Specification: Sewage Pumping Station Electrical Switchboards.*

4.2 Rejected Products and Materials

(Add the following)

Pipes, fittings or materials, including coatings and linings, that are damaged or defective beyond the manufacturer's described damage / defect limits, or those limits defined in the relevant Australian Standard, must not be used.

Damage or defect includes, but is not limited to, delamination, scratching, distortion, chipping, thinning, deflection and cracking.

4.3 Pumps

(Add the following)

In addition to the requirements of WSA 101 'Industry standard for submersible pumps for sewage pumping stations', pumps shall:

- be submersible type and either Grundfos or Flygt (other makes of pump may be considered by Council);
- be capable of operating at the required duty point for the application;
- be capable of operating near optimal efficiency within the range of operating conditions;
- be capable of continuous operation;
- possess non-overloading characteristics beyond the duty point close to zero head;
- possess starting characteristics acceptable to the electricity supply company and the Council;
- possess a minimum of four (4) poles unless approved otherwise by Council;
- be either soft starter or VSD (Variable Speed Drive) as required by the process and shall not be DOL starting unless approved to be by Ergon Energy;
- experience a maximum of 12 (twelve) starts per hour; and
- include an option for the Operator to select whether the duty / standby changeover occurs on a 'per operation' or per 24-hour basis.

Where electronic starters are used the disturbance to the electrical supply system shall not exceed limits set down in TR IEC 61000.3.6 '*Electromagnetic compatibility (EMC)- Limits - Assessment of emission limits for the connection of distorting installations to MV, HV and EHV power systems*' and TR IEC 61000.3.7 '*Electromagnetic compatibility (EMC) - Limits - Assessment of emission limits for the connection of fluctuating installations to MV, HV and EHV power systems*'.

Radio interference external to the electronic starters shall not exceed limits set down in AS CISPR 11 '*Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement*'. A suitable R.F.I. filter shall be provided to ensure compliance with AS CISPR 11.

The level of total harmonic distortions at the point of common coupling (PCC) must be limited to planning levels as set by the Electricity Supply Authority. Appropriate harmonic filters shall be provided on each VSD unit to comply with the Electricity Supply Authority requirements.

4.4 Transportation, Handling and Storage of Products and Materials

(Add the following)

Notwithstanding manufacturer's guidance advice, PVC, non-black PE and GRP pipes and fittings must be fully protected from sunlight at all times during handling and storage using a breathable shrouding material such as hessian. Black plastic must not be used to protect or shade pipes and fittings under any circumstances.

4.5 Fasteners

(Add the following)

Option 2 applies.

Nuts and bolts shall comply with AS 1111.1 '*ISO metric hexagon bolts and screws - Product Grade C - Bolts' and AS 1112.3 'ISO metric hexagon nuts - Product Grade C'*, 150 metric series.

Washers shall be fitted beneath all bolt heads and all nuts.

Washers shall comply with AS 1237.1 '*Plain washers for metric bolts, screws and nuts for general purposes - General plan'* and AS 1237.2 '*Plain washers for metric bolts, screws and nuts for general purposes – Tolerances*'.

Stainless steel for nuts, bolts and washers shall conform to AS 4673 '*Cold formed stainless steel structures*', ISO 3506-1 '*Mechanical properties of corrosion-resistant stainless steel fasteners – Part 1 Bolts, screws & studs*' and ISO 3506-2 '*Mechanical properties of corrosion-resistant stainless steel fasteners – Part 2 Nuts*' and be minimum grade 316 SS for bolts and minimum grade 304 SS for nuts and washers.

4.6 Works Inspection and Testing

4.6.1 Switchboards

(Amend Cl 20.9.1 (o) to the following)

Check that the duty and standby pumps alternate their duty upon each operation and upon a 24-hour cycle.

(Add the following)

Electrical switchboards and control panels must be tested in Australia. Switchboards must be type tested by a NATA accredited testing facility in accordance with AS3439.1. Type test certificates must be provided to Council.

The performance of works testing of switchboards in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect the works testing is required. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the works testing is required.

4.6.2 Pumps

(Add the following)

The performance of works testing of pumps in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect the works testing is required. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the works testing is required.

4.6.3 Motors

(Add the following)

The performance of works testing of motors in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect the works testing is required. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the works testing is required.

4.6.4 Definitions

(This clause 20.9.4 is a new clause)

'Works Inspection' means an inspection at the manufacturer's factory or facility during the manufacture of equipment to be supplied. The Contractor is to carry out works inspections to ensure that manufacturing is in accordance with specification requirements.

'Works Testing' means testing at the manufacturer's factory or facility by the Contractor, their suppliers or their subcontractors, prior to completion of the works.

The Contractors Inspection and Test Plan (ITP) must note all works inspections and works tests. The Contract Programme must provide for all inspections and tests required.

4.6.5 Works Testing – In General

(This clause 20.9.5 is a new clause)

Works testing of pumps, motors, flow measuring equipment, SCA's, mechanical equipment, electrical switchboards and control panels is required.

Certified test reports and test certificates must be submitted to the Superintendent. The Superintendent shall submit all reports and certificates to Council.

Measuring instruments, including flow meters, shall be tested and calibrated by a NATA accredited testing facility. Test certificates shall be provided to the Superintendent.

4.6.6 Switchgear and Controlgear Assembly (SCA)

(This clause 20.9.6 is a new clause)

4.6.7 Works Inspections

The performance of works inspections of each SCA in the presence of the Superintendent constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect the works is to be exercised. If exercised, the Superintendent's presence during inspections, and satisfactory inspection results, is required prior to the release of the Witness Point.

The performance of works inspections of each SCA in the presence of Council constitutes a **HOLD POINT**. Council's inspection of the works, and satisfactory inspection results, is required prior to the release of the Hold Point.

Works inspections shall consist of:

1. First Inspection – Metalwork finished;
2. Second Inspection – Metalwork finished and painted;
3. Third Inspection – All electrical equipment installed; and
4. Final Inspection.

The Contractor shall notify the Superintendent at least seven (7) working days before each inspection is required. The Superintendent shall notify Council at least five (5) working days before each inspection is required.

Inspections, other than the final inspection, are intended to maintain construction standards and are not intended, unless otherwise arranged, as functional tests. SCA manufacture shall not cease during these inspections.

The Contractor shall provide inspection reports to the Superintendent.

Any work carried out by the Contractor beyond, or in excess of, the work necessary for the final inspection is at the Contractor's risk. If a Council inspection is requested before work has reached a stage where the inspection is warranted, the cost to Council of the premature inspection may be recovered from the Developer or deducted from the Contract sum.

4.6.8 Works Testing

The performance of works testing on each SCA in the presence of the Superintendent constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to attend works testing is to be exercised. If exercised, the Superintendent's presence during works testing, and satisfactory works testing results, is required prior to the release of the Witness Point.

The performance of works testing on each SCA in the presence of Council constitutes a **HOLD POINT**. Council's presence during works testing, and satisfactory works testing results, is required prior to the release of the hold point.

Works testing on each SCA shall include, but not be limited to:

- Visual inspection, equipment mounting and wiring termination checks;
- Insulation tests before and after power (high pot) tests, including each phase to earth, each phase to neutral, between phases using a minimum of 1000 V megger;
- Power tests (high pot) with AC voltage of 2.5 kV;
- Operational test of all protective devices; and
    - Simulated functional tests for all drives and electrical equipment in manual mode and in automatic mode where applicable

Testing must comply with the requirements of AS3439.1 and be performed during the final inspection in the presence of a Council representative.

4.6.9 Test Certificates

Following completion of all tests the Contractor shall submit to the Council a full set of test certificates for each SCA.

4.6.10 *Mechanical Equipment*

(This clause 20.10.1 is a new clause)

4.6.11 Works Inspections

The performance of works inspections of mechanical equipment in the presence of the Superintendent constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect the works is to be exercised. If exercised, the Superintendent's presence during inspections, and satisfactory inspection results, is required prior to the release of the Witness Point.

Works inspections shall consist of:

1. First Inspection – Metalwork finished;
2. Second Inspection – Metalwork finished and painted;
3. Third Inspection – Fully assembled equipment; and
4. Final Inspection.

Inspections, other than the final inspection, are intended to maintain construction standards. The Contractor shall provide inspection reports to the Superintendent.

4.6.12 Works Testing

The performance of works testing on mechanical equipment in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect the works testing is to be exercised. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the works testing is to be exercised. If exercised, the Superintendent's and Council's presence during works testing, and satisfactory works testing results, is required prior to the release of the Witness Point.
Testing at the factory for materials and of major items of equipment supplied by the Contractor under this contract must be carried out on the following as a minimum:

- Pumps with motor sizes greater than 11 kW must be works tested at the supplier's factory in accordance with AS2417 (Rotodynamic Pumps – Hydraulic performance acceptance tests – Grades 1 and 2); and
- as nominated in the Tender Document for all other mechanical equipment.

4.6.13 Test Certificates

Following completion of all tests the Contractor must submit to the Superintendent a full set of test certificates for each item of mechanical equipment.

4.6.14 Valves

(This clause 20.10.2 is a new clause)

4.6.15 General

The performance of works testing of valves in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect

the works testing is to be exercised. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the works testing is to be exercised. If exercised, the Superintendent's and Council's presence during works testing, and satisfactory works testing results, is required prior to the release of the Witness Point.

4.6.16 Works Testing of Knife Gate Valves

Knife Gate valves shall be works tested in accordance with the manufacture's specification and the enclosed Pre-commissioning check sheets (Refer Appendix A).

4.6.17 Works Testing of Air Valves

Air valves shall be works tested in accordance with the manufacture's specification and the enclosed Pre-commissioning check sheets (Refer Appendix A).

4.6.18 Works Testing of Gate Valves and Non-Return Valves

The following works testing shall be performed:

- Test 1 — Body Test

  The valve shall be blanked off at both ends and a body test pressure of 1.5 times the valve rated pressure shall be applied for 5 minutes with the plug in the partially open position. No leakage shall be visible;

- Test 2A — Plug or Gate Test

  The valve shall be blanked off at the upstream flange only, and a test pressure of 1.5 times the valve rated pressure shall be applied for 5 minutes with the valve in the closed position. There shall be no visual evidence of structural damage to the plug or of leakage through the plug itself;

- Test 2B

  While the valve is set up in the Test 2a position a test pressure equal to the working pressure specified shall be applied and the valve shall be partially opened to prove that the rim force required on the hand wheel does not exceed 180N; and

- Test 3 — Seat Test

  The valve shall be blanked off at the downstream flange and a test pressure equal to the valve rated pressure shall be applied for 5 minutes with the valve in the closed position. No leakage past the valve seat shall be observed when the test is made. All tests shall simulate a valve in a terminal position held rigidly at one end only. In this condition, the valve shall be blanked off in such a manner that the axial hydraulic force is not externally restrained. This simulates a valve in a fully differential pressure situation held rigidly at one end only.

4.7 Concrete Works

(Add the following)

Classes of concrete used for the construction of the works must be as detailed in Table 4.7.1.

Application	Grade	Minimum Cement Content (kg/m3)	Maximum W/C ratio	Maximum Flyash Content (%)
Blinding concrete, mass concrete	N15	-	-	-
Surface footpaths & driveways	N25	-	-	-
Unreinforced thrust blocks, anchor blocks, bulkheads & concrete encasement - all environments	N25	-	-	-
Reinforced thrust blocks, anchor blocks, bulkheads & concrete encasement - all environments	N32	-	-	-
Maintenance holes & benching – all environments	S40 (SR Cement)	380	0.50	20
Valve chambers & flow-meter pits – non-aggressive* environments	N32	-	-	-
Valve chambers & flow-meter pits - aggressive* soil and groundwater environments	S40 (SR Cement)	380	0.50	-
Underground pumping station wells - all environments.	S40 (SR Cement)	380	0.45	-

Table 4.7.1 – Concrete Properties

Cover to reinforcement for water retaining structures must comply with the requirements of AS3735 'Concrete structures retaining fluids'.

Cover to reinforcement for structures other than water retaining structures must comply with the requirements of the relevant Exposure Classifications within AS3600 'Concrete structures' but must not be less than that required for C1 in aggressive environments and B1 elsewhere.

Concrete surfaces exposed to aggressive environments must be provided with a protective coating. The protective coating applied must be in addition to the concrete cover requirements.

All concrete work shall be supervised by a person (the Supervisor) experienced in all aspects of concrete construction. Refer to Section 18.2 for details of requirements.

The Superintendent will inspect all formwork, reinforcement and pour location for each concrete construction (including thrust blocks, property connection branches, MH

bases, concrete structures etc.) prior to placement of any concrete. The Contractor shall be in attendance when the Superintendent inspects the work prior to concrete placement.

All formwork, reinforcement, reinforcement supports, block-outs, excavations and preparations, and the like, must be in place, and the Superintendent notified, at least one full working day before concrete is scheduled to be placed in any section of the work.

Inspection of the works by the Superintendent prior to concrete placement constitutes a **HOLD POINT**. Release of the Hold Point by signoff by the Superintendent following inspection is required prior to concrete placement at each concrete construction.

Inspection of the works by Council prior to concrete placement constitutes a **WITNESS POINT**. Council shall advise at the time of notification by the Superintendent whether the option to inspect is to be exercised. If exercised, release of the Witness Point, by signoff by the Council, is required prior to concrete placement at each concrete construction.

5 ELECTRICAL WORKS

5.1 Scope of Work

(Add the following)

- Where provision of standby diesel generator connection facilities is only required (supply of generator by others), supply and install an external weather-proof and vandal-proof socket inlet, or a junction box, as described above;
- Negotiations with the Electricity Supply Authority. The Contractor must complete and submit all relevant application forms, attain all relevant approvals and pay all relevant fees;
- Supply and installation of electrical switchboard;
- Supply and installation of all instrumentation and field mounted control equipment;
- Supply, installation and termination of all cabling;
- Supply and installation of all junction boxes, conduits, cable trays, cable ladders and fittings;
- Liaison with Council;
- Any other work as required in the project specification; and
- Supply and installation of Lighting and Surge Protection as specified in the Technical Specification. (The Designer shall have assessed the need for lightning protection for the site in compliance with the requirements of AS1768 “Lightning Protection’).

Surge protection earth cable shall be of a size as recommended by the manufacturer and as a minimum must comprise stranded 16 (sixteen) mm² cable. Surge protection earth cable shall be green / yellow PVC insulated cable installed such that it is segregated from all other cables in as direct a path as possible, no sharp bends are permitted to be installed in the surge protection cabling.

Surge protection devices must be provided as follows:

- Inside each Main SCA or Switchboard / Panel / Distribution Board across incoming electricity supply;
- Across electricity supply to all instrumentation loops mounted outside in the field;
- On all signal lines run to and from outside. Instrument surge diverters must be provided on both ends of each loop; and
- On all data and cable communication lines.

5.2 Consumer Mains

5.3.1 Mains Requirements

(Add the following)

A minimum site power factor of 0.9 must be provided. The prospective fault level of each electrical installation shall be as nominated by Electricity Supply Authority but in any case the minimum fault level shall be as follows:

- Not less than 15kA for one (1) second for the Main Switchboards rated 100 amp or less; and
- Not be less than 25kA for one (1) second for the Main Switchboards rated over

100 amp.

If Variable Speed Drives (VSD) drives are used the level of total harmonics distortion (THD) at the point of common coupling (PCC) must be as required by the Electricity Supply Authority.

Consumer mains with a cross section greater than 120 mm^2 shall consist of single core XLPE/PVC cables laid in trefoil configuration.

The current carrying capacity of consumer mains shall be at least 1.3 x maximum demand.

Consumer mains shall be sized to ensure the voltage drop at the incoming terminals of the switchboard does not exceed 2.5% under 1.3 x maximum demand conditions.

Electricity supply metering must be provided as required by the Electricity Supply Authority.

5.3 Earthing

5.3.1 General

(Add the following)

The primary electricity supply must be a 3-phase 415 V 50 Hz MEN system with sufficient capacity to accommodate the pumping station full load and meet the electricity supply company's starting requirements (as per WSA 04 Section 7.2.3 'Primary supply').

Earthing rods must be copper clad stainless steel, 16mm (minimum) in diameter and 3m (minimum) in length. Each earthing cable must be provided with a PVC sleeve. Bare earthing conductors must not be used. All earthing cable connections to earthing rods must be by means of approved earthing clamps.

An earth inspection pit shall be provided at each rod. Each pit must be marked for easy identification.

5.4 Switchboard Installation

5.4.1 General

(Add the following)

Where a permanent standby diesel generator is required to be provided on site, the main switchboard shall be fitted with an Automatic Transfer Switch (ATS) to facilitate an automatic transfer between the electricity grid and the generator supply. Where provision of standby diesel generator connection facilities is only required the changeover switch shall be manual switch. For details of ATS refer to Council's Preferred Equipment List and Standard Specification Sewage Pumping Station Electrical Switchboards.

5.5 Installation of Level Sensors

5.5.1 Wet-well level sensor probes

(Add the following)

Install one (1) continuous level measuring device in each wet well. The output of each level measuring device shall be a 4-20 mA signal and shall be an input to the pump station controller.

Install two (2) float switches for the HH level alarm and HHH level alarm in each pump station.

For continuous level measuring device details and float switch details refer to Council Construction Specification: Sewage Pumping Station Electrical Switchboards.

6 MECHANICAL INSTALLATION OF PUMPS, VALVES AND FITTINGS

6.1 General

(Add the following)

Valves shall be installed such that:

- Operation of valves may be performed manually without the need for tools. Valves shall be capable of opening against full unbalanced head, and closing against full flow, smoothly and without vibration or cavitation. The maximum effort required at the hand wheel under load shall not exceed 135 N;
- Valves and their actuators are easily accessible for maintenance purposes and are capable of being removed from their location in a pipeline without obstruction by the pipeline or other equipment; and
- Hand wheels shall be clearly marked with the words OPEN and SHUT and adjacent arrows to indicate the direction of rotation to which each operation refers.

Valves must be compatible with pipe work to ensure that proper sealing is achieved between pipe flanges and valve flanges. Concrete lining in pipe work must not be chipped away or reduced to provide clearance from the working parts of valves.

Valves must be located to avoid conflict with property accesses, telecommunications service pits, electrical service pits and any other street side furniture.

6.2 Flanged Joints

(Add the following)

Bolts on all flanges will protrude no more than 10mm past the nut when tightened.

Apply sufficient anti-seize / anti-galling material to the threads of all stainless steel fasteners. The material shall be Polytetrafluroethylene (PTFE) (either tape to AS 1272, dipped or sprayed) or molybdenum disulphide.

Flanges must comply with AS4087 ‘Metallic flanges for waterworks purposes’ (or AS2129 ‘Flanges for pipes, valves and fittings’ where appropriate).

6.3 Gauges and Recorders

6.3.1 Pressure Gauges

(Add the following)

The dry well pipework pressure gauge must comply with AS 1349 and have minimum gauge face diameter of 50mm.

Steel and ductile iron pipes of DN150 and larger shall have gauges and fittings screwed into the pipe wall. In steel and ductile iron pipe work less than DN150mm, gauges and fittings shall be screwed into a tapping band. Tapping bands shall be used on pipes other than steel or ductile iron.

The pressure gauge range for single or parallel pumps duty shall be 0 to 1.7 times the closed valve head of the pumps.

6.3.2 Electromagnetic Flowmeters and Flow Switches

(This clause 24.4.3 is a new clause)

Provide an electromagnetic flow meter housed within the pumping station or in a separate dedicated concrete structure. House the flowmeter converter in the pump station electrical switchboard and provide an input into the site telemetry system. For the flowmeter details refer to refer to Council's Preferred Equipment List.

Provide each pump with an IFM Effector flow switch. For details refer to refer to Council's Preferred Equipment List.

25 Pump Lifting Chains

(Add the following)

Sewerage Pumping Station Code Section reference	WRC requirement
25.1 Pump Lifting Chains	- Lifting chains shall be fitted to each pump and shall be in accordance with AS 2321; - Eyebolts shall be in accordance with AS 2317 – stainless steel; - Shackles in accordance with AS 2741 – stainless steel; - Lifting eyes in accordance with AS 3776 – stainless steel; - Lifting chain to be grade L – stainless steel; - The lifting chain for pumps less than 1 tonne shall be 10mm link as a uniform standard; - Lifting chain for pumps weighing greater than 1 tonne shall be sized accordingly; - Provide a suitable bracket and hook in an out of the way location for hanging the chain; and

	- For checking and chain replacement, each pump station shall have an easily visible plaque mounted adjacent to the wet well stating length and weight of chain and the weight of the pump to which it is attached.
25.2 Brackets	- Provide stainless steel brackets for mounting of floats; and - Provide stainless steel brackets for fastening the level sensor stilling well.

7 ACCESS ROAD AND HARDSTAND AREAS

7.1 General

(Add the following)

As a minimum, all Access Roads shall be sealed with a two (2) coat bitumen seal in accordance with Section 26.4 of the Code, or Council's Standard Rural Access Driveway drawing R-0035 as appropriate. The Designer shall give consideration to vehicle access to Pump Stations during periods of prolonged wet weather when determining the finished RL and provision drainage for the Access Road.

8 EXCAVATION

8.1 Safety

(Add the following)

Excavation work must be in accordance with the Safe Work Australia publication 'Excavation Work – Code of Practice'. All instances of the word 'should' in the Code must be read as 'must'.
Safety barriers must be installed along the edges of open excavations and fenced pedestrian and vehicular accesses installed across trenches to maintain access to properties at all times. All installations must be adequately illuminated.

8.2 Limits of Excavation

(Add the following)

A horizontal distance of 600mm (minimum) must be maintained between the top edge of any excavation and the adjacent toe of any excavated material or stockpile.

The minimum clear trench width (extending from the trench floor to a height of 150mm above the top of the pipe) must be as detailed in Table 8.2.

Nominal Pipe Size (DN)	Minimum Trench Width(mm)

100	600
150	600
200	600
225	800
250	800
300	900
375	900
400	900
450	1000
500	1200
525	1200
600	1200

Table 8.2 – Minimum Trench Widths

Where trench shoring is used, the clear trench width is measured between the internal faces of the trench shoring.

8.3 Support of Excavations

(Add the following)

Personnel engaged in work associated with excavation support must be competent and qualified in compliance with all statutory obligations.

All excavation support must be designed by an RPEQ (Registered Professional Engineer Queensland) qualified engineer.

Temporary excavation support must be left in place where its removal may endanger structures in the vicinity of the excavation.

Steel excavation shoring and lining must comply with AS4744.1 ‘Steel Shoring and Trench Lining – Design’.

8.4 Foundations and Foundation Stabilization

(Add the following)

Where foundation material shows any signs of movement, groundwater ingress or any other possible instability, and such instability cannot be controlled by conventional means, the foundation material must be assessed by the Designer for adequacy of structural support. If the Designers assessment recommends remedial works the remedial works must be detailed in writing by the Designer.

8.5 Surplus Excavated Material

(Add the following)

Excess spoil must be removed from the site and disposed of off-site at an approved location.

Refer to Clause 19.5.3. If acid sulphate soils are identified treatment and management measures must be implemented in accordance with the Queensland State Planning Policy 2/02 Guideline 'Acid Sulfate Soils'.

9 BEDDING FOR PIPES, BENDS, WET-WELLS AND MAINTENANCE STRUCTURES

9.1 Trench Floor Preparation

(Add the following)

Trench shall also mean the excavation for wet-well and maintenance structure construction.

Inspection of trenches by the Superintendent following completion of excavation constitutes a **HOLD POINT**. Release of the Hold Point, via signoff by the Superintendent, is required prior to commencement of pipe bedding, laying and jointing.

Inspection of trenches by Council following completion of excavation constitutes a **WITNESS POINT**. Council shall advise at the time of notification by the Superintendent whether the option to inspect is to be exercised. If exercised, release of the Witness Point, by signoff by the Council, is required prior to commencement of pipe bedding, laying and jointing.

9.2 Bedding Materials

Refer to WRC Standard Drawings and others referring to 'bedding material'.

Bedding Material must be sand as defined in WSAA Product Specification WSA PS – 350 'Compaction Sand for Pipe Embedment'. Grade B must apply (as per AS2566.2 'Buried Flexible Pipelines – Part 2: Installation', Appendix G, Table G3).

Other than where shown on Council Standard Drawings, Coarse Bedding Material may only be used if specifically approved by Council.

Coarse Bedding Material must be:

- A 10mm, 7mm or 5mm processed naturally occurring single-size aggregate compliant with WSAA Product Specification WSA PS-351 “Processed Aggregates for Pipe Embedment” and as defined in Table 351.1. (Processed naturally occurring means ‘not crushed”), or; and
- A 14mm processed naturally occurring graded aggregate compliant with WSAA Product Specification WSA PS-351 “Processed Aggregates for Pipe Embedment” and as defined in Table 351.1. (Processed naturally occurring means “not crushed).

‘Crusher Dust’ (a waste product from the crushing process), whether further processed or not, is not permitted for use as Bedding Material or Coarse Bedding Material.

9.3 Placement of Bedding

(Add the following)

Refer to Standard Drawing S-0090.

9.4 Bedding for Concrete Structures

(Add the following)

Bedding material for concrete structures shall be as per bedding material for maintenance holes.

9.5 Bedding for Maintenance Shafts and Variable Bends

Maintenance shafts, terminal maintenance shafts, inspection openings and variable bends as defined in WSA 04-2005 ‘Sewage Pumping Station Code of Australia’ are not permitted for use by Whitsunday Regional Council.

10 PIPE LAYING AND JOINTING

10.1 Installation of Pipes

10.1.1 General

(Add the following)

Refer to Standard Drawings for minimum cover to the top of a pressure main.

Less depth of cover than that noted or referred to in this clause may be permitted subject to provision of adequate pipe protection and approval by Council.

10.1.2 Cleaning, inspection and joint preparation

(Add the following)

Joints must be made such that the witness mark must, at no point, be more than 1mm from the end of the socket.

Pipes, fittings, valves, and materials must be cleaned and examined jointly by the Contractor and the Superintendent prior to laying. Each pipe length must be suspended in a sling to facilitate a full inspection should the Superintendent instruct.

Inspection of pipes, fittings, valves, and materials by the Superintendent prior to laying constitutes a **WITNESS POINT**. The Superintendent shall advise, at the time of notification by the Contractor, whether the option to inspect is to be exercised. Release of the Witness Point via signoff by the Superintendent is required.

A mechanical pipe cutter must be used for cutting pipes other than PVC and PE in the field. PVC and PE pipes may be cut in the field using a power saw or a fine toothed hand saw and mitre box. Ends of field-cut pipes must be prepared in accordance with the manufacturer's instructions, or as directed by the Superintendent.

Witness marks must be made on field-cut pipes using a felt-tip marking pen at a position from the end of the pipe as specified by the manufacturer. Witness marks must not be scored into the pipe.

Metallic pipes cut surfaces must be treated with protective coatings and linings equivalent to that on the pipe or appurtenance that has been cut.

GRP pipe cut surfaces must be treated with a resin in accordance with the manufacturer's guidelines.

10.1.3 Laying

(Add the following)

All laid and jointed pipes, including completed HCB's prior to concreting, must be inspected by the Superintendent prior to the commencement of trench backfilling (placement of embedment material above top of bedding). This action constitutes a **HOLD POINT**. The Superintendent's approval of the laid and jointed pipes is required prior to the release of the Hold Point. Backfill must not be placed until release of the hold point.

Inspection by Council of all laid and jointed pipes, including completed HCB's prior to concreting, prior to commencement of trench backfilling (placement of remaining embedment material above top of bedding) constitutes a **WITNESS POINT**. Council shall advise at the time of notification by the Superintendent whether the option to inspect is to be exercised. If exercised, release of the Witness Point, by signoff by the Council, is required prior to backfilling commencing.

Where PVC pipes are to be joined to ductile iron pipes, the joints must be made by inserting a PVC spigot into a ductile iron socket. Ductile iron spigots must not be joined to PVC sockets. Alternatively, multi-fit mechanical couplings or flanged adaptor couplings may be used to join pipes of different materials.

10.2 Horizontal and Vertical Deflection of Gravity and Pressure Mains

10.2.1 General

(Add the following)

Horizontal and vertical deflection of gravity sewers (including horizontal, vertical and compound curves) is not permitted.

10.2.2 Methods of Deflection

(Add the following)

Horizontal and vertical deflection of gravity sewers (including horizontal, vertical and compound curves) is not permitted.

10.3 Horizontal and Vertical Separation of Crossing Pipelines

(Add the following)

Refer to Table 3.1 of WSA 04-2005-2.1 *Sewage Pumping Station Code of Australia Part 1: Planning & Design* for minimum offsets between pressure mains and underground services.

10.4 Flotation Control

(Add the following)

Flotation of pipes during laying, backfilling and testing must be prevented. Pipes that float or move must be removed and the pipeline re-constructed. Pipes that are removed must only be reused in the pipeline reconstruction provided they are undamaged and are inspected and accepted by the Superintendent for re-use.

Temporary supports and restraints must be removed prior to completion of backfilling.

10.5 Thrust and Anchor Blocks and Restrained Joints for Pressure Mains

(Add the following)

Council consent is required for the use and type of restrained joints, as an alternative to thrust blocks, in congested service corridors and under urgent commissioning conditions.

Provide temporary anchorages adequate to restrain the pipe when under hydrostatic test. Provide all other temporary anchorages and supports as required during construction.

10.6 Marking Tapes

10.6.1 Detectable Marking Tape

All rising main construction must include placement of detectable marking tape.

Detectable marking tape must be laid along the line of sewer rising mains and non-metallic mains at a depth of least 300mm, and no more than 500mm, from finished surface level.

10.7 Bored Pipes under Roads, Driveways and Elsewhere

(Add the following)

References to ‘pipeline’ in this Clause 38.8 amendment shall also be read as ‘sewer rising main’. Refer to the following Standard Drawings.

Unless directed otherwise, encasing pipe must extend to a minimum of 1.0m behind

back-of-kerb on each side of road carriageways.

Pipelines must be fitted with pipe supports and the pipeline centrally located within the encasing pipe.

DICL pipeline enclosed within the encasing pipe need not be sleeved in accordance with Clause 38.8 (amended).

Where a pipeline crosses a state-government controlled road, a watercourse or any landform, feature or structure under the control or jurisdiction of any Authority or Owner (the 'Authority'), works must comply with the requirements of that Authority. The Contractor must provide written notification to the Authority of the intention to carry out the work and pay any applicable fees. The Contractor must then obtain the written authorisation to perform the work from the Authority prior to works commencing.

A copy of the Authorities written authorisation must be supplied to the Superintendent. Submission of a copy of the written authorisation to the Superintendent constitutes a **HOLD POINT**. Release of the Hold Point, by signoff by the Superintendent, following submission of the written authorisation is required prior to works commencing.

Submission, by the Superintendent, of a copy of the Authorities written authorisation to Council constitutes a **WITNESS POINT**. Council shall advise at the time of notification by the Superintendent whether the option to review the written authorisation is to be exercised. If exercised, release of the Witness Point, by signoff by the Council, is required prior to works commencing.

Installation of pipeline by open trenching installation methods is not permitted over those pipeline lengths designated for installation by trenchless installation methods.

Work Method Statements for trenchless pipeline installations must be submitted to the Superintendent and must address the following matters:

- General description of method and operation sequence;
- Size, invert depth and location of temporary access / work pits required;
- Use of specialist subcontractors; and
- Specialist equipment to be used.

Submission of Work Method Statements to the Superintendent constitutes a **HOLD POINT**. Release of the Hold Point, by signoff by the Superintendent, following the review of Work Method Statements and confirmation of their adequacy by the Superintendent is required prior to works commencing.

10.8 Corrosion Protection of Cast Iron

(Add the following)

All pipes and fittings must be sleeved with polyethylene film, adhesive tape (PVC), straps and buckles that comply with AS3680 'Polyethylene sleeving for ductile iron piping'.

Sleeving must be installed in compliance with the requirements of AS3681 'Application of polyethylene sleeving for ductile iron piping' and the pipe/fitting manufacturer's instructions. Where requirements conflict AS3681 shall take precedence.

10.9 Location Markers

(Add the following)

Refer to Standard Drawings '*Hydrant and Valve Installation*'.

Where no kerb, or kerb and channel, is located within 6m of sewer rising main (SRM) valves install marker stakes adjacent to SRM valves and at all other locations noted on the design drawings. SRM marker stakes shall be as detailed on Standard Drawing W-0060 and marked with red lettering 'SRM' on a white background. Valve covers must be painted black.

Where kerb, or kerb and channel, is located within 6m of sewer rising main (SRM) valves install kerb markings in accordance with Standard Drawing R-0160 and marked with black lettering 'SRM' on a white background. Valve covers must be painted black.

Marker stakes material may be recycled plastic or in accordance with Standard Drawing W-0060. Marker stakes must be coloured white.

The location of pipes crossing roads shall be indicated by kerb markers. Refer to Standard Drawing R-0160.

10.10 Welding of Steel Pressure Mains

10.10.1 General

(Add the following)

At welded joints apply either polyethylene heat shrink sleeves or a petrolatum tape wrap system in accordance with the manufacturer's installation requirements.

11 WET-WELLS AND MAINTENANCE HOLES (MHS)

11.1 General

(Add the following)

Further to Clause 20.10 (amended) concrete for wet-wells and maintenance holes must:

- Contain only Type SR cement;
- Contain a maximum of 20% fly ash additive; and
- Contain cement no older than three (3) months from manufacture.

11.2 Precast Concrete Systems

(Add the following)

Precast concrete systems may only be used in lieu of cast in-situ concrete systems with prior approval of Council.

Precast maintenance holes' components must comply with:

- For concrete – AS4198 "Precast concrete access chambers for sewerage applications";

- For PVC – AS1477 “PVC pipes and fittings for pressure applications”;
- For PE – AS2033 “Installation of polyethylene pipe systems;
- For ABS – AS3518 “Acrylonitrile butadine styrene (ABS) compound, pipes and fittings for pressure applications”; and
- For GRP – AS3571.1 “Plastics Piping Systems – Glass reinforced thermoplastics (GRP) systems based on unsaturated polyester (UP) resin Part 1: Pressure and non-pressure drainage and sewerage”.

Precast wet-well components must comply with:

- For concrete – AS4198 “Precast concrete access chambers for sewerage applications”;
- For ABS – 3518 “Acrylonitrile butadine styrene (ABS) compounds, pipes and fittings for pressure applications’; and
- For GRP - AS3571.1 “Plastics piping systems—Glass-reinforced thermoplastics (GRP) systems based on unsaturated polyester (UP) resin Part 1: Pressure and non-pressure drainage and sewerage”.

Precast system components must not be delivered to the site until compliance with the relevant Australian Standard has been demonstrated to the Superintendent. This action constitutes a **HOLD POINT**. Release of the Hold Point, by signoff by the Superintendent following review of the submission and confirmation of its adequacy by the Superintendent, is required prior to delivery.

11.3 Internal Coating of Concrete Wet-wells and MHs

(Add the following)

Refer to Council Standard Drawings for the required internal coating of 1800 diameter and 2400 diameter wet wells respectively.

Use of alternate protective coatings will not be permitted with first receiving written confirmation from Council.

11.4 Covers

(Replace the contents of Clause 31.8 with the following)

11.4.1 Maintenance Holes

Maintenance hole covers must be finished flush with the surface in roadways, footpaths and paved surfaces of any type. Elsewhere, covers must be finished to the levels detailed on Standard Drawings S-0020, S-0021, S-0022, S-0024, S-0025 and S-0026.

Bolt-down covers must be installed in areas subjected to 1 in 100 year flooding and elsewhere as shown on the Drawings.

11.4.2 Wet-wells, Valve Pits and Flow Meter Pits

McBerns sealed safety lids (or similar) are to be provided for all pump wells. Safety screens must be of Grade 316 Stainless Steel. Lids and frames must be of aluminium construction.

11.4.3 Wet-well Ventilation

(Add the following)

Vents (inducts and educts) are to be designed in accordance with WSA Cl 5.5 and approved by Whitsunday Regional Council prior to installation. All installation shall be as per the design specification.

11.4.4 Odour Control

(Add the following)

Odour control measures are to be to be designed in accordance with WSA Cl 10.10 and approved by Whitsunday Regional Council prior to installation. All installation shall be as per the design specification. As a minimum all vents are to be fitted with a “Green Dome” to be specified by Whitsunday Regional Council.

The use of forced aeration techniques to control wet-well odour are not to be specified without prior agreement with Whitsunday Regional Council.

11.4.5 Water Service Connection

(Add the following)

The contractor shall provide a 32mm internal diameter water service to each pump station, and the cost of such shall be included in the contract price. Each service shall be fitter with a Reduce Zone Backflow Prevention Device and hose cock.

11.4.6 Wet-well Washers

(Add the following)

Well washers are to be provided for all pump stations. Well washers are to be operated by an automated timer system. Design of well washers is to be in accordance with WSA Cl 5.4.7 and Whitsunday Regional Council requirements.

11.4.7 Dewatering and Groundwater

(Add the following)

The contractor is to implement appropriate dewatering measures as required to permit excavation and construction of the pump station and lift stations and associated works.

The contractor shall take all necessary precautions to prevent uplift of structures due to groundwater. Prior to construction of the wet well, the Contractor will supply buoyancy calculations (by an RPEQ) demonstrating that the necessary ballast has been provided.

11.4.8 By-pass Connection

(Add the following)

The Contractor shall provide a rising main bypass connection in the valve pit. The bypass is to be a take-off from the rising main and incorporate a check-valve, sluice-valve and cam-lock fitting. The arrangement is to be approved by Whitsunday Regional Council prior to works commencing.

12 PIPE EMBEDMENT AND SUPPORT

12.1 Embedment Materials

(Replace the contents of Clause 32.1 with the following)

Refer to WRC Standard Drawings and others referring to 'Embedment material'.

Embedment Material must be sand as defined in WSAA Product Specification WSA PS – 350 'Compaction Sand for Pipe Embedment'. Grade B must apply (as per AS2566.2 'Buried Flexible Pipelines – Part 2: Installation', Appendix G, Table G3).

Coarse Embedment Material must be:

- Either a 10mm, 7mm or 5mm processed naturally occurring single-size aggregate compliant with WSAA Product Specification WSA PS – 351 'Processed Aggregates for Pipe Embedment' and as defined in Table 351.1. (Processed naturally occurring means 'not crushed'), or; and
- A 14mm processed naturally occurring graded aggregate compliant with WSAA Product Specification WSA PS – 351 'Processed Aggregates for Pipe Embedment' and as defined in Table 351.1. (Processed naturally occurring means 'not crushed').

'Crusher Dust' (the waste product from the crushing process), whether further processed or not, is not permitted for use as Embedment Material or Coarse Embedment Material.

12.2 Compaction of Embedment

12.2.1 General

(Add the following)

Table 36.2 'Minimum Compaction of Embedment and Trench / Embankment / Other Fills' does not apply.

Table 22.1 and Table 22.2 of WSA 02-2002 apply.

Unless concrete encased, backfill to risers must be hand compacted to the top of the socket, or coupling, on the highest branch off the riser and for the full width of trench and for a minimum distance of 500mm upstream and downstream of the riser.

Compaction of embedment material using water flooding is not permitted.

12.2.2 Methods

(Add the following)

Embedment operations must not damage structures, pipes and fittings, pipe and fitting external coatings, pipe and fitting sleeving or produce any movement of structures, pipes or fittings.

Damaged materials must be replaced.

12.3 Concrete Embedment and Encasement

(Add the following)

Concrete encasement of pipes is not permitted without the written approval of Council

13 FILL

13.1 Trench Fill

13.1.1 General

(Add the following).

Backfilling operations must not damage pipes and fittings, pipe and fitting external coatings, pipe and fitting sleeving or produce any movement of the pipe and fittings.

Damaged materials must be replaced.

Trench fill requirements and specifications also apply to general fill around pump stations.

13.1.2 Material Requirements

(Replace the contents of the erroneously numbered Clause 33.3 with the following).

Refer to WRC Standard Drawings and others referring to 'Trench Fill'.

Trench Fill within trenches not under new or proposed roadways, new or proposed improved surfaces, new or proposed trafficable areas or road reserves must be Ordinary Fill as defined by AS2566.2; that is, material obtained from the excavation, or imported, and containing not more than 20% by mass of rock with a size (any dimension) between 75mm and 150mm and none larger than150mm.

Trench Fill within trenches under new or proposed roadways, new or proposed improved surfaces, new or proposed trafficable areas or road reserves must be Sand as defined by AS2566.2 (Appendix G, Table G3); that is, the same material defined as Embedment Material.

Trench Fill within trenches under existing roads, existing improved surfaces, existing trafficable areas or road reserves must be a cement stabilised sand comprising sand as defined by AS2566.2 (Appendix G, Table G3) and 5% cement by weight.

13.1.3 Compaction of Trench Fill

(Add the following)

Table 36.2 'Minimum Compaction of Embedment and Trench / Embankment / Other Fills' does not apply.

Table 22.1 and Table 22.2 of WSA 02-2002 apply.

Compaction of trench fill material using water flooding is not permitted.

14 CONNECTION TO EXISTING GRAVITY SEWERS

(Add the following)

All connection to existing sewers or sewerage infrastructure must be undertaken by Council at the Contractors expense.

A cost estimate of the works to be undertaken by Council will be provided to the Contractor and the connection will not be made until the payment is made to Council. An undertaking to pay the actual costs of the work, signed by the Contractor, must accompany the payment.

The Contactor must provide Council, affected neighbouring residents and the Superintendent with five (5) working days' notice of the proposed connection commencement date.

Connections to existing pipes in-service shall be made at such times as will cause the least interference with the system operation.

If Council is to perform the connection:

- All connection to existing sewers work undertaken by Council shall be at the Contractors expense; and
- A cost estimate of the works to be undertaken by Council will be provided to the Contractor and the connection will not be made until the payment is made to Council.

If the Contractor is to perform the connection:

- The Contractor must obtain Council's written approval to perform the works;
- A Council representative shall attend all works involved in connecting to existing sewers (including plugging of live mains);
- The Contractor must follow Council directions;
- The Contractor remains responsible for all matters relating to the health and safety of the Contractor, his employees and those affected by the works;
- All costs incurred by Council due to Council involvement in connection to existing sewers shall be at the Contractors expense;
- A cost estimate of the works to be undertaken by Council will be provided to the Contractor and the connection must not commence until the payment is made to Council. A signed undertaking to pay the actual costs of the work must accompany the payment;
- The Contractor must co-ordinate the work including notifications to Council, the Superintendent and the Developers representative;
- The Contactor must provide Council, the Superintendent and the Developers representative with 5 working days' notice of the work commencement date; and
- Council reserves the right to stop, or take over, works being undertaken by the Contractor, if, in Council's opinion, the Contractor is incapable of completing the connection work in a reasonable time, Council's infrastructure may be damaged or undue inconvenience to the public may be caused.

15 RESTORATION

15.1 General

(Add the following)

References to 'trench' in this Clause 35 amendment shall also be read as 'excavation'.

15.2 Pavements

(Add the following)

Final restoration of pavements must include the removal of temporary restoration works.

Backfilling must restore full support to those structures or surfaces (including kerb and channel, road pavements or other improved surfaces) tunneled under in lieu of trenching.

15.3 Provision for Settlement

(Add the following)

Further backfilling must be carried out, or the original backfill trimmed, at the end of the Defects Liability Period so that the surface of the completed trench matches design and/or adjacent finished surface levels.

Subject to Council approval, and to the satisfaction of the Superintendent, material excavated from trenches and surplus to backfill requirements may be disposed of by spreading neatly in the vicinity of the trench in such a way as to avoid future erosion of the backfill and adjacent ground surfaces.

Trench backfill finished surfaces must be levelled at the time of backfilling where the reasonable convenience of persons would be impacted upon if the backfill was left 'high'. Subsequent settlement must be made good by additional filling at the time that the settlement becomes apparent.

15.4 Maintenance of Restored Surfaces

(Add the following)

Backfill and adjacent areas must be maintained throughout the Defects Liability Period.

16 ACCEPTANCE TESTING

('Acceptance Testing' shall be read as 'Acceptance Inspections and Testing')

16.1 Pipelines

This Clause 36.1 title is amended to '36.1 General'.

(Add the following)

Construction of gravity sewers and maintenance structures, including acceptance testing of such, shall be in accordance with the requirements of WSA 02-2002 'Sewerage Code of Australia'.

16.2 Compaction Testing

16.2.1 Trench fill compaction testing

16.2.1.1 Frequency and location of tests

(Add the following)

The contractor shall perform compaction tests 75mm to 100mm below the top surface of the fill layer to be tested.

Fill material within a trench traversing existing, proposed or new roads and road reserves must be tested for compaction in at least one location in each 300mm of fill material depth along the trench length within the road or road reserve extents.

16.3 Air Pressure and Vacuum Testing of Gravity Sewers

16.3.1 Testing of concrete emergency storage and maintenance structures

16.3.1.1. General

(Add the following)

Initial pressure testing and acceptance pressure testing requirements for emergency storage structures shall be determined by Council on a project specific basis given the variety of emergency storage structure types.

The performance of initial pressure testing on emergency storage structures in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise, at the time of notification by the Contractor, whether the option for the Superintendent to inspect the initial pressure testing is to be exercised. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the initial pressure testing is to be exercised.

The performance of acceptance pressure testing on emergency storage structures in the presence of the Superintendent and Council constitutes a **HOLD POINT**. The Superintendent's and Council's presence during acceptance pressure testing and sign-off of the test result certificates, as satisfactory is required prior to the release of the hold point.

16.4 Hydrostatic Pressure Testing of Pressure Mains

16.4.1 General

(Add the following)

The performance of acceptance pressure testing in the presence of the Superintendent and Council constitutes a **HOLD POINT**. The Superintendent's and Council's presence during acceptance pressure testing and their sign-off of the test result certificates, as satisfactory, is required prior to the release of the Hold Point.

Pressure mains shall be tested in sections approved by Council as soon as practicable after each section has been laid, jointed and backfilled, provided that:

- if so specified, or if the Contractor so desires, some or all of the pipe joints shall be left uncovered until the whole of the section has been successfully pressure tested;

- pressure testing shall not commence earlier than seven (7) days after the last concrete thrust or anchor block in the test section has been cast; and
- pressure testing shall not be carried out during wet weather unless approved by Council.

A test section is defined as a length of pressure main which can be effectively isolated for testing, e.g. by means of main stop valves.

The length of pressure main tested in one test event must not exceed 1000 metres.

Pressure main of different diameter shall be tested separately and shall not be tested in the same test event.

Any failure, defect, visible leakage or excessive leakage detected during the Defects Liability Period shall be rectified by the Contractor at the Contractor's expense.

16.4.2 System test pressure

(Replace the contents of Clause 36.5.2 with the following)

The system test pressure shall be a minimum of 900kPa measured at the highest point in the test section.

16.4.3 Maximum allowable loss

(Replace the contents of Clause 36.5.3 with the following)

Calculate the Maximum Allowable Loss Rate (Q) as follows:

$$Q = ((0.000532 + (C/ L_p)) \times D \times L \times (H)^{0.5}$$

Where:

Q = Maximum Allowable Loss Rate (litres per hour)
C = 0.0548 (for D.I. pipe) or 0.0568 (for PVC pipe)
D = nominal diameter of pipe (mm)
L = length of section tested (km)
H = average test head (m)
L_p = average pipe length (m) = L ÷ n
n = total number of pipes + total number of fittings (in the section tested)

Alternatively, the Maximum Allowable Loss Rate (Q) may be calculated by the following simplified formula for the specific pipe types and associated average pipe lengths tabulated. The simplified formulae are based on coefficient "C" value as noted.

Pipe Type	Simplified Formula	Coefficient "C"	Average Pipe Length (m)
DI	$Q = 0.0105 \times D.L\,(H)^{0.5}$	0.0548	5.5
PVC	$Q = 0.01 \times D.L(H)^{0.5}$	0.0568	6.0

16.4.4 Test Procedure

(Add the following)

Prior to preliminary pressurisation (refer to Section 36.5.4 (c) the pressure main must be kept full of water for a period of not less than 24 hours.

During testing all pipe joints which have not been backfilled must be clean, dry and accessible.

During testing each stop valve must sustain, at least once and for at least 15 minutes, the full test pressure on one side of the valve in closed position with no pressure on the other side.

16.5 Electrical Works

(Add the following)

The Contractor is responsible for acceptance testing of the completed pump station electrical installation.

The Contractor must provide all testing and calibration equipment and instruments as required.

Megaohm meter testing must not damage any electronic equipment.

The performance of acceptance testing on the completed pump station electrical installation in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise, at the time of notification by the Contractor, whether the option for the Superintendent to inspect testing is to be exercised. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect testing is to be exercised. If exercised, the Superintendent's and Council's inspection of testing and sign-off of the test results, as satisfactory, is required prior to the release of the Witness Point.

16.6 Sewage Pumping Station Site Testing

(This Clause 36.10 is an additional sub-clause to Clause 36 of WSA 04-2005)

Sewage Pumping Station Site testing (Site Testing) must be performed once the works are substantially completed and the equipment is in a condition to be tested.

Site testing must include, but not be limited to the following:

- Performance tests of the mechanical and electrical equipment;
- Adjustments and setting of all field control and safety devices;
- Noise level measurements;
- Electrical and control tests as detailed below;
- Functional check of all control and instrument loops and logic testing of circuitry and programs;
- Verification of calibration of all flow meters;
- Setting and calibration of all other instrumentation;
- MEN Earthing: Conformation of effective earthing of exposed metal of electrical

equipment;

- A static and dimensional inspection to establish that all items of equipment are complete and the equipment is ready for no-load operation;
- No-load operation to demonstrate that all equipment functions successfully, both separately and as components of integrated systems;
- Design load/acceptance operation to demonstrate that all equipment can successfully and reliably operate under working conditions;
- checks and tests stipulated by those Australian Standards relevant to the works; and
- checks and tests required by the Electricity Supply Authority.

Submit a Site Testing Program to the Superintendent two (2) weeks prior to the commencement of any site testing.

All testing equipment, labour and necessary facilities for all tests must be supplied by the Contractor. Site testing of all equipment must be supervised by the Contractor and representatives of the relevant sub-contractors.

If it is not possible to activate any electrical protective equipment or device, use a simulate test to trigger a change of state in the RTU and observe control system functionality.

Further to the requirements of clause 33.5 of WSA 04-2005-2.1, which details electrical works acceptance testing to be performed, further specific site tests must be performed in relation to all aspects of the sewage pumping station as detailed in the Pre-Commissioning Record Sheets and as identified by the Contractor's Site Testing Program and ITP

Specific site test results must be recorded and submitted as test certificates. The Pre-Commissioning Record Sheets must also be completed appropriately.

The performance of the specific site tests on the sewage pumping station in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise, at the time of notification by the Contractor, whether the option for the Superintendent to inspect testing is to be exercised. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect testing is to be exercised. If exercised, the Superintendent's and Council's inspection of testing and sign-off of the test results, as satisfactory, is required prior to the release of the Witness Point.

16.7 Detectable Marking Tape

(This Clause 36.11 is an additional sub-clause to Clause 36 of WSA 04-2005)

Demonstrate detection of buried detectable marking tape in the presence of the Superintendent following completion of trench and structure backfill. Demonstrate at the rate of one in seven sewer- sections/structures.

The performance of detection demonstrations in the presence of the Superintendent constitutes a **HOLD POINT**. The Superintendent's presence during detection demonstrations and sign-off of the test results, as satisfactory, is required prior to the release of the hold point.

The performance of detection demonstrations in the presence of the Council constitutes a **WITNESS POINT**. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the detection demonstrations is to be exercised.

17 COMMISSIONING

17.1 General

(Add the following)

Field testing shall mean site testing.

Tests and inspections shall comply with relevant Australian Standards.

17.2 Pumping Station

17.2.1 Pre-Commissioning

(Add the following)

Pre-commissioning is the preparation of plant or equipment so that it is in a safe and proper condition and ready for commissioning and operation. It includes all aspects of plant operation such as safety, electrical, mechanical and instrumentation.

Pre-commissioning is the culmination of all works inspections and testing, all acceptance inspections and testing and all inspections and testing noted on the pre-commissioning record sheets.

Submit a Pre-Commissioning programme to the Superintendent for review two (2) weeks prior to the commencement of any site testing.

The pre-commissioning process shall include, but is not limited to:

- Completion of all works inspections and testing;
- Completion of all acceptance inspections and testing;
- Completion of all inspections and testing (other than those conducted as part of 'Acceptance Inspecting and Testing') as listed on the Pre-Commissioning Record Sheets;
- Completion of mechanical, electrical and control component testing;
- Completion of equipment and system operational tests;
- Submission of all inspection and testing results to the Superintendent;
- Submission of all Superintendent-verified inspection and testing results to Council;
- Submission of all manufacturer's compliance certificates for items, materials and equipment supplied, including, but not limited to, pipes, valves, pumps, flow-meters and electrical equipment, to the Superintendent;
- Submission of all Superintendent-verified manufacturer's compliance certificates to Council;
- Submission of all as-constructed information, including but not limited to drawings, to the Superintendent;
- Submission of all Superintendent-verified as-constructed information, including but

not limited to drawings, to Council;

- Submission of the 'Pump Data Record Sheet' to the Superintendent;
- Submission of the Superintendent-verified 'Pump Data Record Sheet' to Council;
- Initial charges of lubricants to pump arrangements;
- Proving the installations functional aspects such as rotation direction checks, balancing and vibration checks, temperature, pressure and flow measurements, control and protection equipment including adjustment of instrument set points and alarm settings and proving correct operation of alarms; and
- Proving the installations dimensional aspects such as assembly completeness, alignments and clearances.

Notwithstanding the hold-point and witness-point requirements noted elsewhere, the presence of the Superintendent and Council, during the various inspections and tests that constitute the pre-commissioning process, constitutes as a minimum a **WITNESS POINT**. The Superintendent shall advise, at the time of notification by the Contractor, whether the option for the Superintendent to witness any of the various inspections and tests that constitute pre-commissioning is to be exercised. Council shall advise at the time of notification by the Superintendent whether the option for Council to witness any of the various inspections and tests that constitute pre-commissioning is to be exercised. If exercised, the Superintendent's and Council's sign-off of test results, as satisfactory, is required prior to the release of the Witness Point.

Following completion of all inspections and tests, and other physical pre-commissioning process aspects, the submission of:

- satisfactory inspection and test results (refer paragraph below; 3 copies);
- all as-constructed information (refer Clause 39);
- the 'SPS Operations and Maintenance Manual' (refer Clause 39.3; 3 hard copies and 1 electronic soft copy);
- the 'Pump Data Record Sheet' (refer Appendix B); and
- the Commissioning Programme (refer to Clause 37.2.1; 3 hard colour copies)

From the Contractor to the Superintendent, the Superintendents verification that the submitted information satisfies the construction specification requirements, and then submission of the verified information by the Superintendent to Council, constitutes a **HOLD POINT.** The submission as a whole will be referred to as the 'Pre-commissioning Submission'.

Inspection and test results to be submitted include, but are not limited to:

- Works inspection and testing results (refer clause 20.9 (amended);
- Acceptance inspection and testing results (refer clause 36 (amended); and
- Pre-commissioning Record Sheet inspection and testing results (refer Appendix A).

The basis of the inspection and test results submission is the works inspection record sheets, the works testing record sheets, the acceptance inspection record sheets, the acceptance testing record sheets, the 'Pre-commissioning Record Sheets' and any other record sheet required to adequately record all inspection results or test results not described on the record sheets noted here.

Council's review and acceptance of the Pre-Commissioning Submission is required

prior to the release of the Hold Point. Pumping station commissioning shall not commence until the Hold Point is released.

17.2.2 Commissioning

(Add the following)

Commissioning is the running of the plant and equipment to ensure flow through the pumping system, and carrying out any necessary inspections, tests and adjustments until the sewage pumping station is ready and suitable for normal starting and running under service conditions.

A commissioning programme must be submitted to the Superintendent and Council for review (refer Clause 34.2.1).

The Contractor must give the Superintendent a minimum of five (5) working days' notice of the intention to commence commissioning and can only provide that notice after release by Council of the Hold Point stipulated in the Clause 34.2.1.

Commissioning inspections and tests must be carried out by qualified personnel. The commissioning process shall include, but is not limited to:

- Completion of pump performance tests in accordance with the 'Pump Performance Test Sheet' (refer Appendix D); and
- Completion of all inspections and tests noted on the 'Commissioning Record Sheet' (refer Appendix C).

The performance of commissioning inspections and tests in the presence of the Superintendent and Council constitutes a **HOLD POINT**. The Superintendent's and Council's presence during commissioning and their sign-off of the Record Sheets, as satisfactory, is required prior to the release of the Hold Point.

Pump performance testing must demonstrate that:

- Fixed-speed pumps operate at flow and head required under all operating condition to achieve the performance requirements; and
- Variable-speed pumps operate at flow and head required under all operating conditions over the entire range of operating speeds to achieve the performance requirements.

Commissioning is not complete until the pump station has been run continually without any faults for a minimum of fifteen (15) days in accordance with required control and operation procedures. If during this period any mechanical or electrical equipment does not operate as specified, then the commissioning must be repeated after rectification of defects. All rectification works and the cost of additional commissioning will be at the Developer's expense.

17.2.3 Handover

(Add the following)

The sewage pumping station must be complete and be in working order, as demonstrated by the successful completion of the pre-commissioning and commissioning processes, before the works are accepted by Council either as 'on-maintenance' or as 'practically complete'.

18 TOLERANCES ON AS-CONSTRUCTED WORK

(Add the following)

Construction of gravity sewers and maintenance structures, including as-constructed tolerances of such, shall be in accordance with the requirements of WSA 02-2002 'Sewerage Code of Australia'. Refer to Clause 23 of WSA 02.

Road and hardstand construction tolerances are not specified by this document.

19 WORK AS-CONSTRUCTED DETAILS

19.1 General

(Add the following)

Refer to Council's construction specification CP1 'Construction Procedures'.

Further to the requirements of CP1, as-constructed Drawings must show:

- sewage pumping station details;
- maintenance structure location (perpendicular distances to property boundaries), type, level;
- house connection branch location (distance to centre of downstream MH), type, depth to top-of- riser;
- pipeline locations / alignments, size, type, levels and grades; and
- easement extents.

Structures represented on design drawings and removed during the works (including but not limited to pipe, fittings, pavements etc.) must not be represented on the as-constructed drawings.

Structures represented on design drawings and made redundant during the works (including but not limited to pipe, fittings, pavements etc.) must be noted as 'redundant' on the as-constructed drawings.

Areas of side-fill which contribute to the structural integrity of pipelines of a diameter greater than 225mm must be shown on the as-constructed drawings as areas not be disturbed without performance of an appropriate risk assessment.

19.2 Operations and Maintenance Manuals

(This clause 39.3 is a new clause)

Operations and Maintenance Manuals must be submitted in hard-copy (paper) form and in soft-copy (electronic pdf) form.

All hard-copy pages and drawings shall be properly reinforced where attached to the binder.
Operations and Maintenance Manuals shall contain at least the following information:

- Cover page displaying:

- Council issued SPS number and SPS name; and
- SPS location (Street, Suburb)

- Contents Page
- Section containing:
- Constructors name, address and telephone numbers; and
- Principal's Contract number and project description.
- Section containing:
- Pumping station general arrangement as-constructed drawings.
- Section relating to pumps (including motors) and containing:
- details and formatting in accordance with WSA 101-2008 'Industry standard for submersible pumps for sewage pumping stations', Appendix D 'Documentation'; and
- Safe Work Procedures for all operating procedures and maintenance procedures.
- Section relating to valves and containing:
- dimensioned sectional arrangement drawings with associated parts and material list; and
- Safe Work Procedures for all operating procedures and maintenance procedures.
- Section relating to Electrical Equipment and containing:
- Component-part-number list;
- Technical data sheets;
- Routine maintenance details & procedures – step-by-step procedures for preventative maintenance work carried out at intervals of two (2) weeks or less;
- Periodic maintenance details & procedures – step-by-step procedures for preventative maintenance work carried out at intervals in excess of two (2) weeks, including replacement of consumables;
- Repair & Overhauling – step-by-step procedures for fault correction and for preventative maintenance, involving parts other than consumables. A list of any necessary special tools shall be included; and
- Recommended spare parts list – illustrations and schedules for identification and specification of all items of equipment.
- Section relating to Electrical Drawings and containing:
- Electrical-drawing index;
- Single-line diagram;
- Power-distribution schematic;
- Common-controls schematic;
- RTU-termination drawings;
- Equipment list;
- Cable schedule;
- Switchboard-label schedule;
- Site layout (with accurate as-constructed conduit paths noted);
- Switchboard general arrangement; and

- Switchboard construction details.
- Section relating to equipment warranty and containing all warranty information relating to:
- Pumps;
- Motors;
- Valves;
- Switchboards;
- Control equipment;
- Communications equipment;
- Other electrical equipment; and
- Miscellaneous fittings, fixtures, materials and equipment

.

Appendix A

Pre-Commissioning Record Sheets

Pre-Commissioning Record Sheet Mechanical Installations				
Job Name:		Date:		
Job Number:		ITP Reference:		
Description:		Category:		
Check Item Description:		Status (Y/N/n/a)	Checked (Initial & Date)	Comments
1	Check that the installation of pump sets & associated pipe-work, pump pedestals, valves, fittings & gauges complies with approved design			
2	**Static & Dimensional Check** – all equipment is complete			
3	**Static & Dimensional Check** – pipe alignments & clearances			
4	Pump sets provided comply with WSA 101- 2008			
5	Guide rails provided comply with WSA 101- 2008 – Clause 3.9.1. Guide rails & top guide rail mounting bracket constructed of 316 stainless			
6	Lifting chains comply with WSA 101 – 2008 – Clause 3.9.2. Lifting chains constructed of 316 stainless steel. Confirm lifting chains are coupled correctly to pump at nominated lifting points.			
7	Pump mounting pedestal fitted to floor in accordance with Council specifications. Check all pedestal holding down bolts are fastened and tight. Pedestal holding down bolts 316 stainless steel minimum 20mm			
8	Visually check alignment of connections of pump to pedestal.			
9	Pumps can be removed from the well using guide rails & no conflict occurs with pipe-work, fittings or well			
10	No rubbish at the bottom of the well which is likely to damage the Pump when it is started			
11	All fasteners and mountings are tightened correctly			
12	Pump set & motor labels have been provided as per WSA 101-2008. Details have been noted for inclusion in site documentation.			
13	Confirm lubricant levels as per manufacturers requirements			
14	Rotor mechanical freedom – manually turn to confirm			

Pre-Commissioning Record Sheet Mechanical Installations				
15	Confirm that vendor Factory Testing Certificates or Type Test Certificates and pump curves have been obtained (attach copy of pump curve to this ITP)?			
16	Bump test pumps to confirm correct shaft direction of rotation			
17	Operate pumps against closed discharge valve & confirm pump seal is effective & that no pipe-work leaks			
18	All valves operate from the closed to fully open position. All valves are right handed, easy to operate and have no sharp protrusions on Hand Wheels. Number of turns between fully open to closed to be noted &			
19	Confirm all valves seal when closed			
20	Pressure gauges & associated process connection installed in valve chamber as per approved design. Pressure gauges ranged correctly for maximum discharge pressure			
21	Operate pumps & confirm balance/vibration levels are			
22	Pump well & confirm rising main is full by sighting 100% flow discharging at receiving manhole			
23	Close line valve & open scour valve, confirm flow back into well with pumps operating			
24	Open line valve (no pumps operating) & confirm rising main drains back into well			
25	Open emergency pump valve with pumps operating & confirm discharge from camlock fitting			
26	Design-load Operation performed – flow (calculated & flow meter), pressure, amps, kwh/1000lts.			
General Comments				

Representatives			Date
Principal Contractor	Name		
	Signature		
Superintendent	Name		
	Signature		

Pre-Commissioning Record Sheet Electrical Installations				
Job Name		Date:		
Job Number		ITP Reference:		
Description		Category:		
Check Item		Status (Yes/No/n/a)	CHECKED (Sign & Date)	Comments
1	Insulation resistance - @ 1000V between phases and each phase-to-earth			
2	Circuit Continuity			
3	Continuity (Earth Connections) – check and check on phase & earth connections in terminal boxes			
4	Continuity (hard-wired motor control & motor monitoring circuits)			
5	Functional Check (Control circuits & Devices) – ensure correct operation prior to energising motors			
6	Direction of Rotation – via local start/stop operation and/or control station operation			
7	Run & Direction – check			
8	No-load Currents – Record			
9	Confirm Motor frame and Terminal Boxes have been properly grounded?			
10	Safety labels installed correctly			
11	Main earthing conductor, protective earthing conductors & bonding conductors to earth stake Resistance to earth			
12	Motor wiring and earthing conductor is enclosed in a continuous metallic sheath or conduit which has a good contact to both the motor and the inverter chassis on VSD			
13	Insulation Resistance between all live parts & earth – Consumer Mains & Motor Cables (>1MΩ measured with 500V insulation tester)			

Pre-Commissioning Record Sheet Electrical Installations				
14	See evidence of polarity testing to ensure correct connection of active, neutral & earth			
15	FAT results attached – Earthing system continuity to AS3000.8.3.5			
16	FAT results attached – Insulation resistance to AS3000.8.3.6			
17	FAT results attached – Polarity to AS3000.8.3.7			
18	FAT results attached – Circuit connections to AS3000.8.3.8			
19	FAT results attached – Impedance to AS30000.8.3.9			
20	General inspection of electrical installation. Works are completed & ready for testing.			
21	Confirm no installation damage has occurred to switchboard – dents, scratches etc.			
22	All equipment checked against equipment schedules and marked up schedules adjusted as required			
23	SCA rating plate complying with AS3439.1 has been fixed to indoor type SCA and all detail have been confirmed			
24	Station identification labels mounted at top of each outer door on outdoor pump station SCA's			
25	Electrical signage installed as per AS3439 – Clause 5.2			
26	KWH meter panels are wired to Supply Authority			
27	Switchboard orientation and fixing correct			
28	Switchboard plinth and all gland plates sealed			
29	All wiring holes are bushed			
30	No sharp edges on metal work			
31	All cables properly glanded at the switchboard			

Pre-Commissioning Record Sheet Electrical Installations				
32	Weather seals fitted to all outer door openings and fixed securely			
33	All locking bars on multi point lock systems are fixed securely into lock mechanism			
34	Switchboard locks fitted – all operable			
35	Adequate space provided around switchboards as per AS3000 – Clause 2.9.2.2. Clearance space does not include a step down in concrete FSL - trip hazard.			
36	Consumer mains have been sized for all operational pump loads plus any auxiliary load. Submit all cable calculations			
37	Consumers mains installation inspection – mechanical protection, location of underground cable & proximity of other services confirmed			
38	All power & earthing cable terminations tested for tightness			
39	Consumer mains conductor CSA, current carrying capacity, DC resistance - recorded. Primary (Ergon) protective device rating/characteristics – recorded. Insulation resistance test conducted at 500VDC, test result no less than 1.0Mohm.			
40	Cables checked as per cable schedule. Derated Cables (0.6/1kV Cables) – check for compliance with AS3008.1.1. check cables are as per cable schedule			
41	Cable Markers (0.6/1kV Cables) – check for correct identification as per drawings			
42	Labels identifying all neutral connections located adjacent to neutral link			

Pre-Commissioning Record Sheet Electrical Installations				
43	Electrical supply has been connected and energised.			
44	Phase Rotation – Consumer Mains (L1, L2, L3) clockwise			
45	Earth Electrode installed in specified connection box. Earth electrode diameter > 16mm & depth 2400mm.			
46	Structure concrete reinforcing connected to main earth. Connection able to be separated from the main earth for testing.			
47	Earth pit, main earth electrode and water service bond equipotential bonding installed & labelled as per AS 3000 Clause 5.5.1.3.			
48	Main earth & equipotential earth resistance– complies with AS3000 & AS3017. Values no more than 0.5 ohm.			
49	Sub-circuit earthing to comply with AS3000 & AS3017. Fault loop impedance tests for each sub-circuit to be tested & results provided.			
50	Sub-circuit insulation testing to be conducted & results provided. Insulation resistance test conducted at 500VDC, test result no less than 1.0Mohm.			
51	Insulation Resistance (0.6/1kV Cables) – check with 1000V megaohm meter (phase-to-phase, phase-to-neutral, phase-to-earth)			
52	Insulation Resistance (0.6/1kV Cables) – test all control cores in a cable, as a group, to earth - value not to exceed 1.0Mohm @ 500VDC			
53	All labels fixed to insulating panels and enclosures are fixed with insulated bolts, nuts and fixings			
54	Rating of all fuse elements is marked by label adjacent to the respective fuse			

Pre-Commissioning Record Sheet Electrical Installations				
55	Termination numbers as per drawings			
56	Confirm sufficient terminals installed to allow an individual terminal for every incoming field wire			
57	All control wiring terminated with crimp lugs or crimp ferrules			
58	Wire numbers as per drawings			
59	Point-to-point checks conducted			
60	All motor isolating switches are labelled			
61	All motor isolating switches are pad-lockable in the off position			
62	Fuses/circuit breaker settings correct as per drawings			
63	Control switches & sequences operate as specified			
64	Confirm that supply monitoring relay picks up (indicating correct supply phase			
65	Trips tested			
66	Control sequences – delay start etc			
67	Pump detail and rating plate installed and all pump details engraved on the plate have been confirmed against pump manufacturers approved pump			
68	Ratings for all motor starter equipment and ammeters checked against Specification and information from pump drive motor supplier			
69	Shielded cable has been used on VSD starters. Shield terminated in EMC glands & terminals at both the VFD & motor as per manufacturers requirements.			
70	Insulation test motor PU01 at 500V – motor isolated from starter circuitry (must be > 1.0 Mohm) Pump 1 -____MΩ Pump 2 -_			

Pre-Commissioning Record Sheet Electrical Installations				
71	Insulation test motor PU02 at 500V – motor isolated from starter circuitry (must be > 1.0 Mohm) Pump 1 -____MΩ Pump 2 -_			
72	Insulation test motor PU03 at 500V – motor isolated from starter circuitry (must be > 1.0 Mohm) Pump 1 -____MΩ Pump 2 -_			
73	Thermistor resistance T1 to T2 – measured with low voltage ohmmeter (must be between 150ohms - 600ohms) Pump 1 -____Ω Pump 2 -___Ω Pump 3 -____Ω			
74	Motor Thermistor resistance – measured with high impedance multi-meter (must be 150ohms < R < 600ohms)			
75	Resistance between control cores S1 & S2 (non-Flygt pumps) – S1 disconnected (must be R>40 Kohm) Pump 1 -____kΩ Pump 2 -__kΩ Pump 3 -____kΩ			
76	Resistance between control cores S1 & Earth (Flygt pumps) – S1 disconnected (must be R>40 Kohm) Pump 1 -____kΩ Pump 2 -__kΩ Pump 3 -____kΩ			
77	Cable supports for the pump cables and level instrumentation are correctly located and properly fixed			
78	Excess cable is supported clear of incoming sewer levels			
79	No cable stocking has more than one cable installed in it			
80	Motor cables are supported in the well so as to avoid damage when removing other pump			
81	Motor cables in wells have minimal slack and do not present undue stress on motor cable glands			

Pre-Commissioning Record Sheet Electrical Installations				
82	Appropriate lugs/pins fitted to all cables, and cables correctly identified at terminations			
83	Motor terminations are in accordance with the manufacturers' connection diagram. With star- delta starters, cable No. 1 is			
84	Where parallel cables may be installed on site, provision has been made to ensure only one cable lug needs to be installed on each side of terminal lug.			
85	Bell all cores (0.6/1kV cables)			
86	Point-to-point wiring checks performed			
87	Voltage Variation – Phase-to-Phase & Phase- to-Earth (variation < 2%)			
88	With Flygt pumps, ensure that an earth has been put on S2P			
89	Seal Failure Probe resistance – test with high impedance multimeter (R>40,000ohms)			
90	Level probe supported by suitable cable clamp			
91	Level probe stilling pipe installed			
92	Level probe is minimum 300 mm clear of all concrete and metal components & free of entanglement with other equipment			
93	Level probe is mounted at correct level as per drawings			
94	Analogue signals are calibrated (incl. Flow & pressure transmitters)			
95	Analogue Spans – configured as per Council requirements (instrument, RTU, & SCADA) as per drawings			
96	Level sensor ranged to include up to overflow level			
97	Pressure transmitters ranged for maximum discharge pressure including shut head conditions & hydraulic transients			
98	Pressure Switches – check settings as per drawings			

Pre-Commissioning Record Sheet Electrical Installations				
99	Alarms transmit to centralised alarm monitoring point			
100	Hydrostatic level sensor breather tube filter installed			
101	Instrument mounting bracket installed			
102	Float cables fitted with stainless steel thimbles			
103	Instruments installed with sufficient spare cable to permit 1m adjustment & easy removal from the well for inspection			
104	High level float activated & RTU input activation confirmed			
105	Imminent Overflow level float activated & RTU input			
106	Emergency back-up circuit activated & run timer calibrated			
107	Flow Meters – calibration verified			
108	Generator socket inlet or junction box installed as per approved design			
109	Emergency Start – alternator starts upon mains power failure (if applicable)			
110	Generator inlet socket phase rotation configured (L1, L2, L3) clockwise			
111	Generator connected to inlet socket & operation of “Mains/Generator” transfer switch confirmed			
112	Noise levels (alternator operated on full station load) At 1m -____dB At nearest property Boundary - dB			
113	UPS Full Load Test – Output delivered for 8 hours duration			
114	General Power – test all power outlets as per AS3000			
115	General Power – test all RCD’s as per AS3000 & AS3017			

Pre-Commissioning Record Sheet Electrical Installations				
116	Lighting – test switching circuits & light fitting operation.			
117	Emergency Lighting – test			
118	Smoke detectors – test			
119	Arc flash certification – if applicable			
120	**Static & Dimensional Check** – all equipment is complete & ready for no-load operation			
121	No-load Operation performed – all equipment functions correctly			
123	Design-load Operation performed – all equipment operates reliably under working conditions			
124	Electrical Drawings (current) stored onsite			

General Comments

Representatives			Date
Principal Contractor	Name		
	Signature		
Superintendent	Name		
	Signature		

Pre-Commissioning Record Sheet Telemetry Installations				
Job Name:		Date:		
Job Number:		ITP Reference:		
Description:		Category:		
DESCRIPTION:		Status (Y/N/n/a)	CHECKED (Sign & Date)	Comments
1	Installation – check aerial supports & mast comply with approved design eg stainless steel fixtures, galvanised mast etc. As per drawings / vertical aligned / drain hole to bottom			
2	All unit isolating switches are labelled			
3	Visual check of antenna installation, clearance from surroundings and			
4	Check antenna magnetic bearing and polarisation (as specified on licence)			
5	Check antenna mounted with weep hole to bottom			
6	Inspect telemetry and radio supply cable connections for correct polarity			
7	Check for secure earth on radio coax surge protection (if applicable) and Coax continuity			
8	Check that telemetry cubicle doors & latches operate effectively & that WRC locks are fitted to telemetry cubicle.			
9	Check correct rating of protective devices for radio and telemetry			
10	Check for mains voltage rated insulation on data cables where mixed with mains voltage cables			
11	I/O's – Point-to-point testing			
12	Measure telemetry supply voltage and back up battery voltage			
13	Check hardware configuration of telemetry unit			
14	Check address switch/es of telemetry unit for correct addressing.			
15	Enable RTU and check telemetry unit is configured correctly			
16	Check software configuration of telemetry unit			

Pre-Commissioning Record Sheet Telemetry Installations				
17	Check telemetry transmit level to network device. Set as required by network device			
18	Radio TX/RX – check signal strength & fade margins are within project approved levels -82dB between site &			
19	Check telemetry receive level from network device, and set as required by the network device (or if not adjustable,			
20	Monitor telemetry messages for error			
21	Monitor radio audio clarity and set audio control off or to min. volume			
22	Signals transmit to centralised alarm monitoring point			
23	I/O's – Point-to-point testing, all signals register on scada & activate events & alarms as per approved design			
24	RTU operates for 8 hours without mains power applied			
25	Functional Operational check – all equipment as specified as per approved design			
26	Operation – all hardware & software provided as per approved design			
General Comments				
Representatives				Date
Principal Contractor	Name			
	Signature			
Superintendent	Name			
	Signature			

Pre-Commissioning Record Sheet Civil Works				
Job Name:		Date:		
Job Number:		ITP Reference:		
Description:		Category:		
Check Item Description:		Status (Y/N/n/a)	Checked (Initial & Date)	Comments
Structure & Surrounds				
1	Concrete structure as per approved design eg cast in- situ. Drop tube and baffle wall installed etc.			
2	Structure sited on allotment as per approved design – survey verification			
3	Structure dimensions as per approved			
4	SPS FSL as per approved design			
5	P.S. Level is 150mm higher than Fill			
6	Structure verticality within tolerance			
7	No damage to any exposed concrete			
8	Seepage through structure not present			
9	Wall penetrations sealed (around pipes & conduits)			
10	Pump-well benching as per approved			
11	Internal wall surface coating as per			
12	Internal wall coating application certification (Wall coating installed as per manufacturers requirements. Temperature, humidity, wall preparation,			
13	Structure hardware installed as per approved design eg lids, bollards			
14	Lids hinge freely and locking systems operate effectively. Lid gas proofing seals inspected & functional.			
15	Pit sumps are provided as per approved design & dimension verified			
16	Pit drains are installed as per approved design & gas seal is functional			
17	Vent pole installed as per approved			
18	Vent pole rag bolt assembly & grouting installed as per approved design			
19	Vent pole RL & foul air pipe-work invert into wet well verified by survey			
20	Vent pole PVC to metal support pole termination installed correctly. Rotary vent installed & functional			

Pre-Commissioning Record Sheet Civil Works				
21	Security fences & gates installed as per approved design, alignment verified by survey. Fence material, gate openings & location, heights, fitment of locks verified.			
22	Site drainage is installed as per approved design. Surface stormwater drains away from SPS & is sized adequately for site flows.			
23	Potable water service provided to the site as per approved design. Authority water meter installed. RPZ valve installed, tested & verification certificate provided. 50mm camlock water outlet provided. 25mm general water service provided adjacent to the wet well c/w vandal tap. Mandatory signage depicting non potable water supply in use is provided.			
24	Wet-well washers comply with Council Specifications. Wet-well washers fitted with gate valves, solenoids & regulators. Well washers water distribution is effective.			
25	Driveway & Access area sealed as per approved design			
26	Civil construction debris removed from general site & well/pits. No trenching slumps present. Site restoration is complete.			
27	Maintenance truck turnout radius confirmed. Adequate space for outrigger extensions verified. Adequate space for mobile crane to access site. Concrete pump well slab loading tag installed.			
Health & Safety				
1	Facility name plaque with WRC contact details installed			
2	Safety grates over pits installed as per approved design			
3	Adequate space provided around switchboards as per AS3000 – Clause 2.9.2.2. Clearance space does not include a step down in concrete FSL - trip hazard.			
4	Mandatory signage installed – eg indication of confined spaces etc			
5	Electrical signage installed as per AS3439 – Clause 5.2			

Pre-Commissioning Record Sheet Civil Works				
6	Stainless steel labels provided to indicate location of PU01 & PU02.			
7	Stainless steel tag installed on internal well wall indicating overflow level for wells with network overflow discharges			
8	All gates, lids & switchboard doors lock effectively & are fitted with WRC locks			
9	Height safety davit sockets installed. Test certificates provided.			
Products & Materials				
1	All products are Council approved			
2	Plates & labels installed			
3	Covers & frames greased			
4	Non hinged covers have lifting-lugs provided			
Pipes & Fittings				
1	Valves are anti-clockwise closing			
2	Valve supports installed			
3	Valve extension spindles installed			
4	Pipe supports installed (to horizontal pipes) & are constructed of 316 stainless			
5	Valve hand wheel installed			
6	All pipework of correct diameter			
7	Gate valves operate through full range & are in open position			
8	Flap valve on valve chamber drain installed			
9	Valve coatings as per Council requirements			
10	Pipework coatings as per Council requirements			
11	Inlet pipe dropper installed			
12	Flange bolting system as per Council requirements			
13	All valves pumps can be removed from well through opening			
14	Flanged dismantling joints installed			
15	All bolts are 316SS & Nuts are 304SS			
16	Emergency pump-out pipework (incl. camlock arrangement) installed			
17	SRM air releases/SRM scours installed			

Pre-Commissioning Record Sheet Civil Works				
18	Clearances between pipe-work, valves & fitting to adjacent pit floor or well walls > 300mm			
Overflow EROS				
1	Overflow pit constructed as per approved design			
2	Frog-flaps installed & operational (Pit & Outlet)			
3	Pit covers are of specified class and material			
4	Covers are installed as per approved design. Lids & hinges operate effectively & are locked.			
5	Screens are installed as per approved design. Screen sizes & material of construction confirmed.			
6	Overflow RL & well invert confirmed by survey			
7	Overflow is accessible for maintenance			
Acceptance Testing				
1	Pump-well infiltration test – result complies			
2	SRM testing – results comply			
General Comments				

Representatives			Date
Principal Contractor	Name		
	Signature		
Superintendent	Name		
	Signature		

Appendix B

Pump Data Record Sheet

Pump Data Record Sheet				
Project			Date	
Job Number		ITP Reference		
Pump Data - General				
Equipment Tag Number		Serial Number		
Equipment Location		Weight (kg)		
Hazardous Area Rating		Design Flow (l/sec)		
Manufacturer		Design Head (m)		
Pump Type		Liquid Type		
Rated Motor Power (kW)		Paint Type		
Pump Speed (rpm)		Casing Material		
Pump Data - Motor				
Manufacturer		Motor Speed (rpm)		
Model Number		Speed – if fixed (rpm)		
Serial Number		VSD Max. Speed (rpm)		
Full Load Current (Amp)		VSD Min. Speed (rpm)		
Rated Volts (V)		Gearbox		
Weight (kg)		Gearing Ratio		
IP Rating		Gearbox Weight (kg)		
Comments				

Appendix C

Commissioning Record Sheet

Commissioning Record Sheet				
Job Name		Date:		
Job Number		ITP Reference:		
Check Item		Status (Y/N/n/a)	CHECKED (Sign & Date)	Comments
1	**HOLD POINT** release by WRC	Yes		◄ Sign-off by WRC Dev Eng Inspector
2	Motor and pump nameplate details match pump rating plate data. Record name-plate information ►			
3	Megger test motors at 500V - main switch, pump circuit breakers, control isolating switches in OFF position (must be >1Mohm, ideally >30Mohm) Pump 1 -____Mohm Pump 2 -_____Mohm Pump 3 -____Mohm			
4	Set “Reduced Voltage Starter” as per manufacturer's instructions			
5	Wet-well is filled with water			
6	Operate the station and record performance data for sewage pumps and check they are operating in accordance with design parameters and without undue noise, vibration, temperature or unusual odour.			
7	Demonstrate control and protection equipment functionality for manual and automatic modes			
8	Check pipework for leakage			
9	Check operation of the alternating set with utility power switched off under design operating conditions. The alternating set should operate without undue noise,			
10	Switch all circuit breakers and the main switch off			
11	Check that adjustments and setting of no-flow, torque limit switches and thermal overload relays have been set.			
12	Test any associated field devices. e.g. isolating switches and safety devices			
13	Test pump for Field start / stop and emergency stop control.			
14	Uncouple motor and check direction of motor by jump- start. Is direction of rotation of pump correct?			
15	Test pump for Remote Manual start / stop control?			

Commissioning Record Sheet				
16	Test pump for SCADA start / stop control			
17	Check that the equipment Input / Output signals are consistent with the control system Feedback signals			
18	Has Motor Been Re-coupled from direction test?			
19	Have all dry-commissioning checks been signed of as per ITP?			
20	Is there any leakage in the system?			
21	Do upstream and downstream pressure gauges read the same?			
22	Thermistor resistance T1 to T2 – measured with low voltage ohmmeter (must be 150ohms < R < 600ohms) Pump 1 -____ohm Pump 2 -_ohm Pump 3			
23	Motor Thermistor resistance – measured with high impedance multi-meter (must be 150ohms < R < 600ohms)			
24	Resistance between control cores S1 & S2 (non-Flygt pumps) – S1 disconnected (must be R>40 Kohm) Pump 1 -____Kohm Pump 2 -_____Kohm Pump 3 -____Kohm			
25	Resistance between control cores S1 & Earth (Flygt pumps) – S1 disconnected (must be R>40 Kohm) Pump 1 -____Kohm Pump 2 -_____Kohm Pump 3 -____Kohm			
26	Is there any leakage in the system?			
27	Does equipment fulfil its designed function under Wet- commissioning? (Delivers design flow rates, current draw etc.)			
28	Is equipment deemed ready for Process Commissioning / demonstration? (e.g. can be operated under Remote Manual control for a process cycle without tripping alarms)			
29	Check pump type (brand, pole)			
30	Wet-well mechanical installation (pipework & fittings) – material type, valve types, operational check			
31	Valve Pit mechanical installation (pipework & fittings) – material type, valve types, operational check			

Commissioning Record Sheet				
32	Pump-out mechanical installation (pipework & fittings) – type material, valve types, operational check			
33	Overflow pit mechanical installation (pipework, screens & fittings) – material type, valve types, operational check			
34	Perform Performance Test (complete 'Pump Performance Test' sheet)			
35	Operate bypass system (SRM closed)			
36	Operate Mobile Pump Connection arrangement			
37	Vent pole is correct height			
General Comments				

Commissioning Representatives			Date
Principal Contractor	Name		
	Signature		
Superintendent	Name		
	Signature		
WRC Dev Eng Inspector	Name		
	Signature		

Appendix D

Pump Performance Test Sheet

Pump Performance Test Record Sheet					P&ID No.: Location: Date :				Job Job No: ITP No:		
Description	Current Amp.	Rated Motor Current Amp.	Current-draw acceptance (1-2)/2<10% Y/N	Flow Measurement					Flow rate		Vibration -visual observation Normal/Abnormal
				Surface area of Wet Well m^2	Water Depth At START m	Water Depth at STOP m	Pumped Flow L	Duration of Test S	Design (Units) L/sec	Measure (Units) L/sec	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Pump No. (Tag. No.):											
Test 1											
Test 2											
Test 3											
Comments:											
Notes:											
				Witnessed by: (Contractor's Representative) Signed: Dated:				Witnessed by: (Supervising Engineer) Signed: Dated:			

ADDENDUM TO

DUAL WATER SUPPLY SYSTEMS

WSA 03-2011

NWD 2.2 Water Supply Mains – Drinking Water

Buried appurtenances shall be colour coded blue.

NWD 2.3 Water Supply Mains – Non-Drinking Water

Buried appurtenances shall be colour coded lilac.

NWD 3.1 Design – Demands

Fire-fighting demands shall be provided from the drinking water mains.

NWD 3.4 Cross-Connections between Drinking and Non-Drinking Water Supply Systems.

No cross-connections, either permanent or temporary, shall be installed between drinking and non-drinking water supply systems downstream of Councils headwork storages without prior council approval.

NWD 3.4.2 Temporary Cross-Connections

No temporary cross-sections shall be installed downstream of Councils headwork storages without prior council approval.

NWD 3.5 Sizing of Mains

The sizing of external non-drinking water mains shall be undertaken by the Consulting Engineer.

The standard sizes for non-drinking water mains shall be the same as the standard sizes for drinking water mains.

NWD 3.7 Location of Mains

Water mains shall be laid on the standard alignment – refer to Section D6.10 of this manual. Where the non-drinking water mains and drinking water mains are laid in the same footpath, the drinking water main shall be laid nearest to the property boundary. Access to the valve and pipe need to be clear of the footpath.

NWD 3.8 Main Depths

The depths of non-drinking water mains shall comply with the requirements for drinking water mains.

NWD 3.10 Property Services

The size of non-drinking water property services shall be DN20 or DN25 as agreed with Council. Where non-drinking water and drinking water property services are laid across a road at a common location, the services shall be placed in a commonDN100 conduit. Meters for the non-drinking water shall be placed above ground.

NWD 3.12 Hydrants

Hydrants shall only be installed on the drinking water mains. Flushing points shall be provided on the non-drinking main, at all ends of line and cul-de-sac heads. Flushing points shall consist of an isolation valve and camlock coupling with dust cap.

NDW 3.18 Identification Markers and Marker Posts

Identification markers for the components for the non-drinking water network shall comply with that specified for drinking water components except that:

The hydrant road pavement markers shall be purple.

Where there is no road pavement adjacent to hydrants, posts with reflective indicator plates shall be installed similar to that for the hydrants marker posts on drinking water mains.

All marker posts for the non-drinking water components shall have the letters

NDW added to the lettering on the indicator plates and the top of the marker posts painted purple.

NWD 7.1 Tapping of Mains

Tapping of non-drinking water mains shall be carried out to the same requirements as specified for tapping of drinking water mains.

NWD 8.3 Independent testing of Reticulation Main

The test pressure for non-drinking water property services shall be 1.2 MPa.

Construction Specification

Sewage Pumping Station Electrical Switchboards

Supplement to the WSAA Sewage Pumping Station Code of Australia (WSA 04-2005 Version 2.1

Revision 2
November 2016

Document Control

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1 Scope of Specification

This specification covers the requirements for materials and the standard of workmanship to be employed in the construction of low voltage electrical switchboards. Note however that this document is not a complete electrical specification. A job specification will need to be provided for any given project. The checklist provided in Appendix G will provide some guidance on the elements required to be covered under the job specification.

Design of sewerage pumping station switchboards is to be carried out generally in accordance with WSA 04 Sections 6 – 8 (inclusive).

This specification should be read in conjunction with WSA 04 Sections 20.6, 20.9 and 21.6 and the job specification to determine the requirements for a particular project. Any conflict between WSA 04, this specification and the job specification should be referred to the Superintendents Representative for clarification.

Appendix F contains a schedule for the submission of design information, inspections, testing and as-constructed information.

While this specification represents the current preferred standards, Council is prepared to consider new developments that may offer advantages such as cost saving, improved control or reliability. Any such alternatives are to be submitted to the Superintendents Representative for approval prior to purchase.

2 Design Philosophy

This switchboard shall be designed and constructed to:

- Ensure safe, reliable and efficient operation;
- Withstand the electrical and mechanical loads, temperatures, pressures and vibration that will be encountered under normal service and fault conditions;
- Ensure that operation or failure of any component does not cause damage to other equipment;
- Minimise electrical interference;
- Require the minimum of maintenance;
- Prevent the ingress of dust, moisture, vermin or other foreign matter; and
- Facilitate operation, cleaning, maintenance and repairs.

The switchboard manufacturer shall confirm the electrical loads of all equipment supplied from the switchboard and shall determine the ratings of all switchgear and protective equipment.

3 Standards and Regulations

Design, materials and workmanship shall conform to the requirements of:

- WSA 02-2002 – Sewerage Code of Australia;
- WSA 04-2005 – Sewage Pumping Code of Australia;
- Queensland Electrical Safety Act, Regulations and Code of Practices;
- Ergon Energy;
- Australian Communications and Media Authority (ACMA);
- Any other Authority having jurisdiction over the works;
- All relevant Australian Standards;
- Relevant IEC Standard or British Standard where no Australian Standard exists; and
- To the satisfaction of the Superintendents Representative.

The contractor shall be responsible for ensuring that all equipment and materials supplied are in complete accordance with the requirements of all relevant authorities and that all required approvals are obtained.

4 Operating Conditions

All equipment shall be suitable for operation in a tropical coastal environment.

Unless specified otherwise in the job specification the equipment will be required to operate continuously under the following conditions:

Minimum ambient temperature	4°C
Maximum ambient temperature	44°C
Minimum relative humidity	33%
Maximum relative humidity	100%
Elevation	Not exceeding 1000m
Atmosphere	Refer to job specification*
Location	Refer to job specification
Wind Loading	Refer to job specification

* Note that a corrosive gas (sulphide gas) environment is common at Council wastewater facilities

5 Materials - General

All materials used shall be new and of the best quality, manufactured and tested in accordance with the relevant Australian Standards.

6 Power Supply

Unless specified otherwise in the job specification the power supply will be 400/415V 3 phase 4 wire 50Hz. The switchboard shall be designed for the fault level present at the installation site - refer to job specification.

The control voltage will generally be 230/240V AC or 24V DC. In some cases, additional supplies of 24V AC, 24V DC or 12V DC may be required for instrumentation or telemetry equipment.

The switchboard shall be arranged for a MEN earthing system in accordance with AS 3000 and Supply Authority requirements.

The switchboard shall be constructed to withstand the short circuit stresses generated by the fault level stated in the job specification. If a fault level is not stated, the fault level shall be taken to be a minimum of 35kA rms for one second with a Peak Factor of 2.2 at the source of supply.

All sites operate on a 12V control supply with DC/DC converts as required to operate other low voltage equipment. The 12V battery system shall be sized such that it will run the sites SCADA and telemetry system for a minimum of 24hrs in the event of power failure.

6.1 Voltage Drop and General Cabling Requirements

- All cables shall be sized for 1.3 time's maximum demand of the nominal running currents;
- The maximum voltage drop for any circuit under normal load conditions shall be limited to less than 3½% of the no load voltage at the consumer terminals;

- Motor cables shall be sized such that the maximum voltage drop at the motor terminals under DOL starting conditions is not more than 20% relative to the consumer main no load voltage. This sizing requirement is regardless of whether the motor will be DOL or soft started, they must be sized to allow for DOL starting within 20% voltage drop limits; and
- Joining of cables is unacceptable, unless indicated on the design drawings.

7 Metering

Where kWh metering is required in the job specification it shall be installed in strict compliance with the Supply Authority requirements. Refer to Queensland Electricity Connection and Metering Manual. Special attention is drawn to the requirements for spacing / shielding meters from heavy current carrying conductors.

For external switchboards, Supply Authority meters shall be housed in a section of the switchboard with access via a dedicated door that can be fitted with a Supply Authority padlock. A glass viewing window is not required.

When the main switchboard is located inside a building the Supply Authority metering shall be located in a separate cubicle mounted in an external location accessible to the meter readers. The material of construction will be typically stainless steel. A propriety type metering enclosure can be used. Refer to the job specification for details of meter locations and metering cubicle.

The required metering tariff will be specified in the job specification.

8 Switchboard Enclosure

8.1 General Construction

The switchboard will be a cubicle type construction, fully front connected and present a complete dead front. Switchboards for a typical water or wastewater pumpstation will generally be constructed to Form 2 separation. Power distribution switchboards or motor control centres will have other form of internal separation specified, e.g. Form 3b or 4b. Refer to job specification (Form factors refer to AS3439).

Cubicles will generally be fabricated from 1.6mm grade 316 stainless steel and be constructed to IP56D to AS60529. Aluminium may be offered with prior approval of the Superintendents Representative. Other materials such as sheet steel may be considered when the switchboard is to be located in environments free of corrosive agents such as control rooms. The job specification will detail if materials, other than stainless steel, can be offered.

The cubicle will be constructed of folded and welded construction. All seams shall be a continuous weld and be ground smooth after fabrication. Spot welding will not be accepted.

Typically, the maximum dimensions for cubicles shall not exceed 2100mm high or 3000mm in length. Where length of the switchboard will exceed 3000mm, the switchboard is to be supplied with suitable shipping breaks complete with appropriate wiring harness, busbar joints and seals between sections.

Avoid contact between metals of widely dissimilar electrode potential to minimise electrolytic corrosion.

8.2 Mounting

Cubicles to be suitable for pole / wall mounting or plinth mounting as per job specification. Mounting brackets / bolts for pole / wall mounted cubicles are to be external to the cubicle.

Plinth mounted cubicles are to be fitted with a channel base fabricated from 75 x 40 (min) mild steel channel. The channel base shall have a suitable number of 40 x 40 tags welded to the external long-side edges. Each tag shall have 16Φ hole and shall be used for fixing down the switchboard. The tags shall be positioned so it is possible to drill through them perpendicularly into the supporting material (e.g. concrete) once the cubicle has been positioned. The channel base shall be hot dipped galvanised after fabrication.

Cubicles that cannot be safely lifted by two people shall be provided with removable eyebolts and plugs. Alternatively, for plinth mounted cubicles, tubes can be provided through the channel base to permit the insertion of lifting rods.

Freestanding cubicles shall be stiffened to ensure overall rigidity. Additional stiffening and support members shall be provided where necessary to support heavy equipment. Such members shall be fabricated to the same specification as the cubicle.

8.3 Sunhood

All external switchboards are to be fitted with a sunhood. The purpose of the sunhood is to limit the temperature rise within the cubicle caused by direct sunlight thus protecting the internal electronic equipment from adverse heating effects. Sunhoods shall be fabricated from the same material as the cubicle. The sunhood shall project beyond the vertical faces of the cubicle and provide an air gap between the sunhood and the cubicle roof.

The dimensions of the sunhood are to be such that the back, front and sides of the switchboard are protected from direct sunlight (between the hours of 9am to 4pm). It would be acceptable to install additional false plates on the back and sides of the cubicle to prevent direct sunlight falling on the cubicle walls. These false plates would be spaced from the cubicle wall so that a minimum air gap of 50mm is provided. The sunhood shall extend approximately 900mm in front of the switchboard to offer some protection from rain and allow operators to open the external door and access control switches and indicators during wet weather. The sunhood shall be fixed in a manner suitable for the cyclonic wind loading possible at the site. Additional support posts may be required. The support posts can be fabricated from mild steel sections and be hot-dipped galvanised after fabrication.
Sun hoods and standoff supports shall be made of the same material as the main switchboard.

8.4 Doors, Mounting Pans and Hat Sections

Each cubicle shall be accessible at the front by hinged doors. Doors shall be fabricated as per the cubicle. They shall be of folded construction and fitted with stiffening members to ensure adequate rigidity and freedom from warping. Alternatively, a heavier gauge material may also be used. Each door shall have an M6 stud welded on the inside (lower hinge side corner) for earthing purposes. A 6mm^2 spiralled flexible connection shall be fitted for earth bonding across the door hinges.

Typically, the width of any door shall not exceed 850mm.

Doors shall be fitted with chromium plated hinges of the lift off type. The hinge pins are to be stainless steel. Fixing screws are to be concealed when the door is closed. Door handles are to be chromium plated (unless otherwise specified) padlockable swing handles (e.g. Emka 1107). Detail of handles to be submitted for approval. Door handles are to be locked with Lockwood No. 234A long shank padlocks, keyed to Whitsunday Regional Council's (WRC) master system, with two keys to be supplied to WRC. Doors with a height greater than 600mm shall be fitted with a 3-point roller latch to secure the door at the top, bottom and middle. External doors shall be fitted with a catch stay or strut to hold them in the 120^o open position.

External doors shall be fitted with a resilient neoprene gasket retained by metal framing. The gasket shall be compressed when the door is closed to ensure a moisture and dust proof

seal. The gasket shall not be installed in a stressed condition.

Where escutcheon doors are required, they shall be manufactured from either 2mm grade 316 stainless steel or 2mm sheet steel (powdercoated after fabrication). Refer to job specification. They shall be fitted with a chromium plated "T" handle fitted with a standard L&F 92268 series lock. Escutcheon doors shall be fitted with a catch stay or strut to hold them in the 120^{o} open position.

Each cubicle compartment shall be provided with a mounting pan. The mounting pan shall be manufactured from either 2mm grade 316 stainless steel or 2mm sheet steel (powdercoated after fabrication). Refer to job specification. The mounting pan shall be of folded construction and have a 20mm return. Mounting pans will generally be removable to facilitate the initial mounting of switchgear and wiring. They shall be fixed to the rear wall of the cubicle by M6 studs and chrome acorn nuts. Mounting pans are to be of the maximum possible dimensions. Where two (2) or more mounting pans are located in the same compartment they shall neatly butt against each other.

Hat sections are to be manufactured from the same material as the mounting pans and have the same surface finish. Where hat sections are used to support switchgear they must be rigid and not flex when switchgear is operated.

The design of the cubicle shall incorporate sufficient ribs, channels, hat sections and the like to accommodate all equipment mounting and wiring requirements. Screws and bolts shall not project through the walls and doors of the cubicle (screws for labels and door hardware excepted).

Cubicles may be specified for either outdoor or indoor locations. Outdoor cubicles shall have blank external doors. The number of external doors is to be kept to a practical minimum with segregation achieved by internal partitions / escutcheon doors (exceptions - Supply Authority metering and cable zone). All control switches, indicators and the like shall be mounted on an internal hinged escutcheon door. With the prior written approval of the Superintendents Representative, indoor cubicles may have equipment mounted on external doors but such equipment must provide an IP56 seal.

8.5 Ventilation

All cubicles shall be provided with adequate ventilation to ensure that the internal equipment does not exceed the manufacturer's specified operating temperature range when installed on site and operating under typical conditions at full load for extended periods. The effects of heating due to solar radiation shall receive full consideration in the design.

As a minimum all cubicles shall be provided with ventilation openings in each compartment, including the cable zone. The vents shall provide a minimum of 22,500mm^2 total outlet area per cubic meter of internal volume. The ventilation openings shall be provided with a protective cover to prevent the entry of rain. The vents shall be fitted with insect and vermin proof stainless steel gauze and a removable dust proofing media. Ensure the cubicle design and equipment layout will allow the easy replacement of dust-proofing media once the switchboard has been put in to service.

Where increased cooling is required, quiet running forced ventilation equipment shall be employed. Ventilation fans shall be thermostatically controlled and operate under a positive pressure. High quality replaceable filters shall be provided to dust proof the air intakes. For some applications cubicle mounted air-conditioners may be required.

The supplier shall submit for review, drawings and calculations detailing the effectiveness of the proposed ventilation, prior to switchboard construction.

8.6 Cable Entry

Each switchboard shall be provided with a dedicated cable zone to facilitate cable entry and glanding. The cable zone is to be not less than 250mm in height (if horizontal) or 250mm in width (if vertical) and be of suitable dimensions to accommodate the field cables. The cable zone shall be fully segregated and shall have a gas-tight seal from the remainder of the switchboard. Access to the cable zone can be either via a hinged door or removable panel fixed with chrome acorn nuts. Gasket seal and earthing of cable zone access shall be as previously specified for external doors. In certain situations, it may be considered impractical to provide a cable zone. For such situations prior written approval is required from the Superintendents Representative before this requirement will be varied.

Cable entry shall generally be through the bottom of the cubicle. Non-magnetic gland plates are to be provided. Brass is the preferred material. Aluminium will be accepted in non-corrosive environments where only non-metallic glands will be used and adequate provision is made to minimise electrolytic corrosion. Gland plates shall be fitted with a neoprene gasket and be secured by screws and nuts. Nuts are to be welded to the underside of the cubicle. Ensure adequate clearance is provided to allow tool access to gland plate fixings, e.g. do not have fixings located under ducts.

For plinth mounted cubicles the gland plates shall be in two (2) sections – one (1) section for cable glands and the other to permit hand access below the cubicle with the other section in place. This is to facilitate cable installation and the tightening of glands.

8.7 Surface Finish and Completion

Upon completion of fabrication the cubicle shall be descaled and degreased then given a light buffing. All surfaces are to be free from blemish, scratches, welding splatter and the like.

Unless otherwise specified in the job specification, all cubicles (including stainless steel cubicles) shall be powder coated or painted with 2-pack polyurethane. Surface preparation and coating application shall be in accordance with the manufacturer's instructions. The colour of cubicles shall be specified in the job specification. Escutcheon doors, mounting pans, hat sections and the like shall be white. Powdercoating / painting shall only be done after all fabrication work including the punching of holes and cut-outs has been completed.

A PVC document holder for drawings and a circuit breaker schedule cardholder shall be provided on the rear of a cubicle door.

The cubicle shall be suitably crated / packaged to minimise damage during transportation.

8.8 Distribution Boards

Consideration would be given to use of a proprietary line of enclosures for circuit breaker distribution boards and small cubicles such as telemetry panels or marshalling boxes. Such enclosures are to be manufactured from a material suitable for and have an IP rating appropriate to the environment in to which they are to be installed. Full details are to be submitted to the Superintendents Representative for approval before use.

9 Switchboard Equipment

9.1 Main Switch

The main switch shall typically be a three pole moulded case circuit breaker. In certain circumstances a manual change over switch may be used as a main switch – refer to clause 9.1.1 below. Automatic changeover switches shall not be used as a main switch without written approval of the Superintendents Representative.

The main switch shall be capable of breaking an inductive current 20% (minimum) in excess

of the calculated maximum demand for the switchboard. The main switch shall have a fault rating higher than the prospective fault current at that point of the distribution network but shall not be less than 6kA at 250V A.C. (sym).

The main switch shall be mounted so that it can be operated without opening the escutcheon or exposing live terminals. Where extension shafts are used they are to be suitably supported so that they do not sag thus making door closing difficult. Extension shafts shall not exceed 100mm in length. Hat sections shall be used to mount the switch at a suitable position.

The handle of the main switch shall be padlockable in the off position. It shall be possible to open the escutcheon with the switch in the on position (by use of a tool to operate / defeat the door interlock mechanism).

Care shall be taken to ensure discrimination between the main switch and other downstream circuit breakers.

The line side terminals of the main switch shall be fully shrouded to IP4X such that with the main switch in the off position there are no exposed live terminals in the switch board.

The main switch shall be fitted with an auxiliary contact that is closed when the main switch is closed.

Residual current protection shall only be fitted to the main switch with the express permission of the Superintendents Representative.

9.1.1 Manual Change-over Switches

For switchboards that incorporate a generator inlet socket or link connection bars it may be preferable to utilise a manual change-over switch as the main switch upstream of the main circuit breaker. The manual change-over switch, whether used as a main switch or not, shall comply with the requirements of clause 9.1 above and the following additional provisions.

The three positions of the change-over switch shall be clearly labelled “Mains” – “Off” – “Generator”. It shall be padlockable in the off position.

The manual change-over switch shall have two (2) auxiliary contacts, one that is closed when the switch is closed on mains and the other that is closed when the switch is closed on generator.

9.2 Lightning and Surge Protection

Protection of circuits against the effects of lightning shall be provided on all switchboards. Protection systems shall be designed in accordance with AS1768 and be suitable for a location category C site.

Primary surge protection shall be provided on incoming mains. The surge protection devices (SPD) shall be of an approved type, housed in a metal enclosure and be segregated from remainder of switchboard equipment. The SPD shall be connected between phase and neutral or phase and earth, as per manufacturers recommendation. The primary SPD shall be located in close proximity to the main switch and the main earth bar. Connecting leads are to be a minimum of 6mm^2, be as short as practical (consideration to be given to the effect of lead inductance). They shall not be run in ducting or loomed with other wiring.

SPD’s shall be capable of discharging a minimum of 40kA (8/20μs waveshape) per phase and incorporate status indication, visible without the need to open the escutcheon door or expose any live terminations. SPD’s shall be protected by HRC fuses or circuit breaker in accordance with manufacturer’s recommendation.

In high risk installations, such as remote sites more than 150m from adjacent earthing, more stringent surge protection will be required. In these cases, it is recommended that the surge protection capacity be increased to a minimum of 85kA (8/20μs waveshape) per phase.

Secondary protection for communications, data and instrumentation shall be specified elsewhere in this document.

Total length of cable between the active conductors through the surge diverter to earth shall not be more than 50cm.

9.3 Busbars

Busbars shall be fabricated from high conductivity copper with radiused edges. The current rating of the busbars shall be minimum 20% higher than that of the associated switchgear. Busbars, where not enclosed within a segregated, earthed chamber, are to be fully insulated. Insulation shall be applied by a hot dip process or heat shrink unless otherwise approved by the Superintendents Representative. Insulation is to be phase coloured.

Connections between busbars shall be tinned. Where it is necessary to have tapped threads in a busbar then stainless steel inserts shall be used to ensure that screw threads do not bear directly on the conductor material. Busbars are to be supported on insulators and be capable of withstanding the stresses arising from the prospective fault currents.

Main busbars will be fully enclosed and with the exception of power take-offs be segregated from other wiring and equipment. Inspection covers are to be provided in each busbar enclosure and at each connection point.

Where flexible busbar is used then correct work practices shall be adopted when cutting, punching and terminating to minimise lamination damage.

9.4 Active, Neutral and Earth Links

All links shall be manufactured from brass or copper and have studs and/or tunnels of correct capacity for the wiring to be terminated. Each link shall have at least 20% spare capacity for the termination of future circuits. Links shall be mounted so that access to them is not obstructed by wiring or cables. Active and neutral links shall be mounted on insulated supports and be fitted with a coloured insulated cover (red for active links, black for neutral) over all live surfaces. Neutral and earth links shall have capacity for the individual termination for the maximum number of circuits that can be supplied from the switchboard.

9.5 Circuit Breakers (CB)

Circuit breakers are to be used for the protection of all circuits and shall be selected to provide reliable supply. Circuit breakers shall be selected to match the prospective fault current of the switchboard but shall not be less than 6kA at 250V A.C. (sym). Tripping characteristics shall be selected to suit the particular circuit it protects. When selecting circuit breakers consideration must be given to the cable the circuit breaker is protecting and the earth fault loop impedance of the circuit. Cascading of CB's in accordance with manufacturer's instructions is permissible. Circuit breakers shall be graded to ensure correct discrimination.

Circuit breakers used for motor protection shall be matched to the motor ratings and shall not trip on motor starting inrush current but shall trip on all overloads in excess of 125% of full load current. The CB shall not trip on 105% of the rated current continuously. Operating curves shall be submitted on request. Motor circuit breakers shall provide Type 2 short circuit coordination with the motor starter unless otherwise specified in the job specification. Circuit breakers used for motor protection shall have an auxiliary contact fitted to allow for remote signalling of closed status.

If circuit breakers are used as an isolating switch they must also comply with Section 9.6 below.

Circuit breakers will be mounted on a suitable chassis with a standard busbar assembly. Chassis shall have a minimum spare pole capacity of 25%. The operating tags of all circuit breakers are to be accessible without the need to open escutcheon doors or exposing any live terminals. Escutcheon cut-outs are to match the maximum number of poles on the chassis. Insulated pole fillers shall be installed to blank spaces. If mounted on sheet metal hat sections, then these shall be manufactured from the same material as the mounting pans and have the same surface finish.

9.6 Isolating Switches

Isolating switches shall be rated for utilisation category AC-23. They shall be padlockable, preferably by a device integral to the switch. Removable latch dog or clip-on type devices are not acceptable. Isolating switches are to be mounted so that they are operable without the need to open escutcheons or expose live terminals. Where extension shafts are used they are to be suitably supported so that they do not sag thus making door closing difficult. Extension shafts shall not exceed 100mm in length. Hat sections shall be used to mount the switch at a suitable position. It shall be possible to open the door with the isolator in the on position (use of tool to operate defeat mechanism is acceptable). The line side terminals of the switch shall be fully shrouded to IP4X. An auxiliary contact is to be fitted to allow for remote signalling of closed status. Every motor shall have a padlockable isolating switch rated to break the locked rotor current.

9.7 Combination Fuse Switches (CFS)

CFS units will only be used when specifically called for in the job specification. CFS units shall comply with AS60947.3 and be of the double break type. Full interphase shrouding is required throughout the travel of the switch. Utilisation category shall be AC-21 minimum and AC-23 for motor circuits. Fuses shall be of the HRC type and be replaceable without the use of special tools. CFS units shall be flush mounting, dustproof and be padlockable in the off position. On-off status is to be clearly indicated by handle position. An auxiliary contact is to be fitted to allow for remote signalling of closed status.

9.8 Fuses

Fuses shall only be used for circuit protection where approved in writing by the Superintendents Representative. Fuses shall be of the HRC type and comply with AS60269. Fuses selection shall suit the fault level of the installation. Fuse holders shall be a fully enclosed type and have fully shrouded contacts. One full set of spare fuses shall be provided for each rating used, (e.g. where fuses protect a 3-phase circuit then 3 spare fuses shall be provided).

Fault current limiting fuses are to be located in an accessible compartment of the switchboard.

9.9 Isolatable Fuse-carrier

Isolatable fuse carriers shall be used to provide short circuit and over current protection to circuits wired on the line side of main switches or metering equipment. The fuse-carriers shall be of fully insulated construction, have a switched disconnection function and be suitable for equipping aM or gG type HRC fuses. Fuses shall be captive. Merlin Gerin STI or equivalent.

9.10 Selector Switches

Selector switches shall be cam operated with a rotary snap action. Contacts shall have a minimum rating of 10A at 250V. Switches shall be suitable for flush mounting and incorporate an engraved escutcheon indicating switch function and its respective positions.

9.11 Pushbuttons

Pushbuttons shall be a heavy duty, IP66 industrial type with a shroud to prevent accidental operation. Contacts shall be rated at 10A minimum and be of the double make-break type with definite over travel limits. Pushbuttons will generally be 22.5mm dia. Colours shall comply with AS 60947.5.1. Start and stop functions shall not be combined in one pushbutton assembly. Emergency stop pushbuttons shall be red mushroom heads, twist to reset.

9.12 Indicator Lights

Indicator lights will be of an IP66 industrial type with a diameter of 22.5mm. Colours shall comply with AS 60947.5.1 as per the following table:

Lamp Colour	Function
Green	Off, Available, Safe condition
Red	Dangerous condition
Amber	Fault
White	Motor run
Blue	Miscellaneous, e.g. Duty selection

Lamps shall operate off extra low voltage (typically 24VAC) and be of the LED cluster type. Lens caps shall be of the optically enhanced type. Lamp brilliance and colour shall be readily distinguishable regardless of the effect of ambient light.

A lamp test button shall be provided to test all indicator lights. Relays shall be used in the test circuit for isolation purposes. The use of diodes will not be accepted.

9.13 Phase Failure Relays

Phase failure relays shall detect loss of phase, phase reversal, undervoltage and phase imbalance and sequence. The relay shall have an integral time delay to prevent spurious operation during momentary fluctuations and shall be self-resetting on restoration of supply.

Typically, a phase failure relay would monitor the main distribution bus within the switchboard to protect equipment from the effects of supply abnormality. A contact controlled by the phase failure relay shall operate in the control circuit of all motors and also a voltage free contact shall be provided for telemetry signalling. A 0-10 minute adjustable time delay shall be provided prior to control circuit re-energisation. The phase failure relay shall be protected by a suitably rated circuit breaker.

For some applications a separate phase failure relay may be required to protect each motor circuit. Where required this will be detailed in the job specification.

Where the switchboard incorporates a change-over switch (either manual or automatic) a separate phase failure relay shall be provided to indicate the status of the Ergon mains supply. This phase failure relay shall be connected to the mains line side of the change-over switch via an isolatable fuse carrier. A voltage free NC contact from this relay shall be wired as a digital input to the telemetry unit to indicate loss of Ergon supply.

9.14 Voltmeter

A voltmeter shall be installed to indicate the phase to phase and phase to earth voltage. The voltmeter shall be a 90^{o} quadrant type, scaled 0-500V. The meter shall be 72mm square (min), dustproof and have an accuracy class of 1.5 in accordance with AS 1042. Terminals on the rear of the meter case are to be shrouded. The voltmeter shall be protected by a suitably rated circuit breaker.

9.15 Ammeter

An ammeter shall be provided for each motor. The meter shall display the current in each phase of the motor circuit. The meter shall be a 90^{o} quadrant type, scaled so that the full load current is approx. 70% of the meter scale and incorporate a 5 times FLC over scale. The meter shall be 72mm square (min), dustproof and have an accuracy class of 1.5 in accordance with AS 1042. Terminals on the rear of the meter case are to be shrouded. Suitably rated current transformers shall be used where a direct wired type is not practical.

9.16 Hours Run Meters

An hours run meter shall be provided for each motor. The meter shall be a minimum 48mm square and consist of a non-resettable cyclometer showing 6 digits plus tenths. Terminals on the rear of the meter case are to be shrouded.

9.17 Contactors

Contactors shall be moulded block, electromagnetic, air break type incorporating double break contacts with arching enclosures. Utilisation category shall be AC-3 (AC-4 for duties involving inching or plugging operation). Coils shall be continuously rated to operate at the control circuit voltage. Contactors shall have a minimum of two auxiliary contacts (1 x N/O & 1 x N/C) over and above what is required for the control circuit. It shall be possible to fit additional auxiliary contacts to any contactor in the switchboard.

Special attention is required where ELV control circuits are used. The contactor may be wired to a 240V AC circuit and switched via a pilot relay from the ELV circuit. Alternatively, it may be possible to use contactors with electronic coil circuits.

9.18 Control Relays

Control relays will be of the plug in type and shall be rated for continuous operation. Each relay shall have an indicator to show state and be enclosed in a clear dust proof case. Contacts shall be rated for the required duty but shall not be less than 5A. Where current exceeds 12A then a contactor shall be used.

Timer relays will be solid state and of the plug in type or suitable for din rail mounting. They shall incorporate an LED to indicate timer operation. Multi-range, multi-function timers are preferred.

9.19 Control Transformers

Low voltage transformers shall be of the double wound type continuously rated with an earthed metal screen between the windings. Output load shall not exceed 80% of the transformers continuous rating.

9.20 Current Transformers (CT) (excluding Supply Authority CT's)

Current transformers shall be housed in a self-extinguishing flame retardant housing and be capable of withstanding the switchboard fault level. The rated primary current shall suit the rating of the controlling device. The secondary current shall be 5A and rated to suit the burden of the connected equipment. Measurement CT's shall have accuracy class 2 minimum. When installed the CT shall be easily removable by mounting on busbar links or short flexible cables.

9.21 Current Transducers

Current transducers shall be used to monitor current in one phase of a motor circuit via a suitable CT. The transducer shall accept either 1A or 5A CT input (selected by on board link) and provide a 4-20mA output that is proportional to the motor current. This output shall be used to provide remote signalling of the motor current via the telemetry system. Transducers shall be loop powered from a 24VDC supply and shall be easily adjusted to suit multiple current ranges. Devices with integral CT's are preferred.

9.22 Power Supplies

Power supplies for instrumentation, PLC or telemetry equipment shall provide a regulated DC output to suit the voltage requirements of the equipment, generally 12V or 24V.

Each power supply unit shall include non-sacrificial protection against input overvoltage and other mains borne transients. Noise rejection characteristics (common mode and normal mode) shall be at least 120dB. Isolation characteristics (input to output) shall provide a capacitance of less than 0.005pf.

9.23 Surge Reduction Filters (SRF)

All power supplies to electronic equipment or instrumentation distribution boards will be wired through a suitably rated surge reduction filter. The surge reduction filter shall have rapid response to transients and noise at any point on the sine wave and not be effected by line or load impedance. The SRF shall include MOV protection and LC filter stages and include status indication.

All contactors and coils larger than 5kW shall have surge suppressing snubbers fitted. The size and type selected shall be in accordance to manufacturer's recommendations.

9.24 Signal Isolators

Signal isolators shall be fully solid state and be capable of receiving a 4-20mA signal. They shall be installed where the loop impedance exceeds the source device capabilities or where specified. Front panel adjustments shall be provided for span and zero settings. Externally powered devices are preferred.

9.25 Transient Barriers

Transient barriers shall be fitted to each end of instrument signal lines, data-lines and communication circuits. The barriers shall incorporate 3 levels of protection (gas arrester, MOV and clamping diodes) and be housed in a DIN mounting enclosure with screw terminals. Current and voltage ratings shall suit the protected equipment.

9.26 Terminals

Terminals are to be din rail mounted tunnel screw type. Terminal housings are to be manufactured from 6.6 polyamide and metallic parts from non-corrodible copper with stainless steel screws. Minimum terminal size shall accommodate $4mm^2$ wiring. Terminals shall be grouped into sections of common voltage with suitable barriers separating them. An individual terminal shall be provided for each wire. Common terminals shall be linked with a bridging strip. All terminals shall have a clip in plastic number and shall match the numbering shown on the electrical schematics.

Where earth terminal blocks are used for the termination of earthing conductors, the terminal block connection to the rail shall not be relied upon to provide earth continuity. Separate earthing conductors shall be used to ensure continuity to the earth bar. An earth terminal shall be provided adjacent each outgoing circuit.

Special attention must be paid to effects of dissimilar metals when using aluminium din rail.

Knifes-edge type terminals are to be used on instrumentation analogue signals to permit isolation and testing. Fuse terminals incorporating HRC type cartridges may be used for instrumentation and I/O circuit power supplies.

9.27 Power Outlet

A 15A GPO shall be mounted on the escutcheon door of every switchboard. The GPO will be protected by a 30mA RCD.

9.28 3-Phase Power Outlet

When a 3-phase power outlet is specified in the job specification the following shall apply.

A 15A 3 phase, neutral and earth (5 pin) switched socket shall be provided mounted either on the escutcheon door or the side of the switchboard cubicle. A 30mA RCD shall be incorporated in to the outlet housing. The outlet shall be Clipsal 56 series or approved equivalent.

9.29 Lighting

An 18W fluorescent light shall be provided in each compartment of the switchboard. The light/s shall be switched by a 10A switch on the escutcheon.

Where a sunhood is fitted, an 18W vandal-proof fluorescent light shall be fitted under the sunhood and shall be switched by a 10A switch on the escutcheon.

External lighting shall not be wired on the same circuits as the switchboard lighting.

All lighting circuits shall be protected by a 30mA RCD.

9.30 RCD Test Socket

To facilitate the testing of RCD circuits a dedicated, round earth pin, unswitched socket outlet shall be provided on the switchboard escutcheon. All RCD circuits shall be connected to this test socket via a selector switch mounted adjacent to the socket. This will allow the test technician to quickly and safely carry out injection tests for all RCD circuits by plugging the test instrument into the socket outlet and using the selector switch to switch individual circuits to the socket for testing. A suitable warning label is to be fitted adjacent the socket outlet to distinguish its function from a standard GPO. A schedule card is to be provided showing switch position relative to the RCD circuit.

The number of circuits switched by a selector switch is to be kept within practical limits. For switchboards with a large number of RCD circuits multiple selector switches will need to be provided.

9.31 Intruder Switches

When intruder switches are specified in the job specification the following shall apply.

Each external door or compartment cover of the switchboard shall have a micro-switch fitted. The micro-switch would be closed when the door / cover is closed. This does not apply to Supply Authority metering compartments. The micro-switches shall be wired in series and connected to a telemetry input to provide remote signalling when a door or cover is opened.

External doors of switchrooms shall have magnetic reed switches fitted to show when a door is opened. These switches would be closed when the door is closed and wired in series with the switchboard micro-switches to a telemetry input.

9.32 Site Security Provisions

In addition to the conduit specified in clause 28.1.7, a 10A 1Φ circuit breaker shall be provided on the distribution chassis for a future security camera installation.

9.33 Anti-Condensation Heaters

Where indicated on drawings, supply and install anti condensation heaters which shall incorporate a thermostat and heat resistant leads. The wattage of the heaters shall have a minimum size of 20 watts per square meter of exposed surface area of the cabinet.

9.34 Circuit Terminations (Power and Control)

The number of terminals and terminal identification shall be based on the outgoing cable connected thereto as follows:

- Sufficient terminals shall be provided for the number of cable cores, including earth wire; and
- Terminals associated with one cable to be numbered consecutively 1, 2, 3 ...etc, with all terminals arranged in one block. The earth terminal shall be adjacent to the terminal containing the highest core number.

10 Motor Starters

10.1 General

Every motor supplied from the switchboard shall be provided with an automatic motor starter. The preferred type of starter is:

- <= 6kW – Direct On-Line (DOL);
- 6kW to 30kW – Soft Starter; and
- >=30kW – VSD

Or as directed by WRC.

When starting current limitations or other operational issues require the use of reduced voltage starting then soft starters shall be used. Only under extenuating circumstances will autotransformer or other starter types be considered.

10.2 DOL Starters

DOL starters shall comprise a contactor and motor protection device (see Clause 11). The starter shall be designed for utilisation category AC3 and an intermittent duty of up to 12 starts per hour. Type 2 coordination with motor protection and short circuit protection devices shall be employed unless otherwise specified in the job specification.

10.3 Electronic Starters

Electronic Starters include soft starters and variable speed drives (VSD) (also known as variable frequency drives (VFD)).

The starter shall be mounted in accordance with manufacturer's instructions paying due attention to the spacing and cooling requirements. The operating temperature of the unit must be maintained within the manufacturer’s specification, typically less than 40°C.

Electronic starters shall be protected by semi-conductor fuses in accordance with manufacturer’s recommendations.

Ensure that manufacturer’s directions are followed with regard to control circuit voltages. Some starters (e.g. AB SMC-Flex) will require the use of control transformers or ELV control voltage.
The disturbance to the electricity supply system due to harmonics generated by the starter shall not exceed the limits specified in AS61000. Radio interference external to the starter shall not exceed the limits specified in CISPR11. The Point of Common Coupling shall be the line side of the main switch of the switchboard that supplies the starter. The chassis of the starter shall be bonded to earth with an earth conductor 20% larger than normal. The supplier shall provide the anticipated harmonic voltages and currents and a conformance statement before construction and shall confirm the predicted values by test during commissioning.

10.3.1 Soft Starters

Soft starters shall have a microprocessor based thyristor control circuit for the control of induction motors operating on a three phase 400/415V 50Hz supply. They shall have a continuous rating, of not less than, the maximum input rating of the driven equipment after allowing for motor efficiency. Soft starters shall be selected for 3-wire connection only, utilisation category AC-53b and 12 starts per hour as a minimum duty.

Starters shall have two modes of starting, standard soft start and a current limiting soft start. In standard mode the terminal voltage shall be increased gradually over the selected ramp time. The peak motor starting current is a function of ramp time. In current limiting mode the peak current shall not exceed a user defined value. Starters shall have the provision for energy optimisation when the motor is running; i.e. the power factor is adjusted to suit the motor load conditions. The starters shall have provision for soft stop. Adjustable controls shall be provided for ramp time, acceleration, deceleration, current limit and stalled current.

The starter shall include protection for microprocessor error, phase loss, open circuit thyristor, short circuit thyristor, motor disconnected, controller temperature, locked rotor and thyristor transient voltage. Motor protection features shall include thermistor, undercurrent, and overcurrent. The starter is to include three CT's for accurate motor current measurement. An auxiliary trip input shall be provided to allow connection of external protection devices such as seal failure. Relay outputs shall be provided for run, fault and top of ramp. It shall be possible to reset a fault trip either via a local reset pushbutton or from a remote reset pushbutton. An analogue output shall be provided when specified in the job specification.

Where called for in the job specification the starter shall have a display panel that can be remotely mounted on the escutcheon door. The panel is to include LED's indicating motor status, starter status, trip status and output relay status. The panel shall also include pushbuttons for local motor control and parameter programming. The starter shall be suitable for local or remote control as selected via a control input.

Soft starters shall be wired via a line contactor to provide positive line isolation. A bypass contactor shall be wired to operate when the motor is up to speed. These contactors shall be controlled via outputs from the soft starter. Particular attention is to be paid to the current and voltage ratings of the starters control relays. Use interposing relays or CR circuit or diodes for inductive loads as recommended by the manufacturer. Where a starter incorporates an integral internal bypass, a separate bypass contactor is not required.

In certain applications the use of less featured soft starters may be considered. Written approval from the Superintendents Representative is required for the use of such equipment.

10.3.2 Variable Speed Drives (VSD)

Variable speed drives shall be of the solid state electronic type with pulse width modulated output suitable for use with squirrel cage induction motors. VSD's shall be suitable for operation from a 240/415V 50Hz mains supply. VSD's must comply with AS/NZS 61800 and AS/NZS 61000 in terms of EMC and harmonic performance.

The VSD shall offer selectable control methods including V/Hz, sensorless vector control and field oriented control. The drive shall have the ability to model the thermal capacity of the motor in order to calculate the motor temperature.

The VSD shall be C-Tick approved for use within Australia. EMC filters shall be integral to the drive and be in accordance with AS61800. Unless otherwise specified the VSD shall comply with the limits specified for installation in the First Environment. Harmonics shall be limited to the levels specified in AS61000. Special attention is required to applications where regeneration will occur. The use of active front ends or similar will be required. Output

chokes shall be used on installations where motor cable length exceeds the drive manufacturer's recommendation or the motor is not rated for use on a VSD.

The drive shall have a keypad for display of status information, fault messages, parameter programming, drive control and monitoring. It shall be possible to remote mount this keypad on the escutcheon door. It shall be possible to control the drive either locally from the keypad or remotely from a PLC, communications network, operator station or the like. Switching to / from local and remote shall be bumpless. The drive shall also have an integral status display visible when the keypad is removed.

The drive shall have the following I/O as a minimum requirement:

- 1 x Analogue input for speed reference – 4-20mA, 0-10V or -10V/+10V. It shall be possible to set reference speed via keypad, remote potentiometer and analogue signal from PLC;
- 2 x Analogue output – 4-20mA. Programmable for output speed, output current, torque, power;
- 8 x Digital inputs programmable for control signals or external trip signals (e.g. seal failure);
- 2 x Relay outputs programmable for fault or status conditions. Relays to have changeover contact available so they can be used as NO or NC; and
- Thermistor input – for monitoring motor temperature.

It shall be possible to add internal expansion cards to increase the I/O of any type above the minimum requirements. Analogue I/O shall generate an alarm for loss of signal or signal outside of range.

The VSD shall include comprehensive fault monitoring and protective functions. This shall include but not limited to:

- Hardware fault;
- Software fault;
- Phase failure;
- Over current;
- Over voltage;
- Over temperature;
- Cooling fan failure;
- Motor overload; and
- Motor over temperature.

A fault history shall record the last eight faults with a log detailing the operational status at the time of each fault. It shall be possible to reset fault conditions either locally or remotely.

The VSD shall have communications capability and support the following protocols:

- Modbus;
- Profibus DP; and
- Ethernet IP.

The use of an internally mounted option card would be acceptable if the protocol is not included in the basic unit.

It shall be possible to program the drive from a PC via suitable software and connection lead (USB connection preferred over serial). It is preferred that the software does not require the use of a software licence token or dongle. If the software is not available for free download, then a licensed copy shall be provided. The connecting lead shall also be supplied with the drive. The software shall provide the ability to upload, download, modify, store and print a full parameter list and be capable of full monitoring and control of the drive. The software must be downward compatible with earlier versions of the drive firmware.

In a switch room type environment, VSD's shall generally be mounted separate from the switchboard cubicle. The IP rating of the VSD enclosure is to be suitable for the environment but shall not be lower than IP44. Smaller drives (e.g. ≤ 7.5kW) may be installed within a segregated, screened compartment of the switchboard provided generous space provisions are made and an effective cooling system is installed. Where it is not possible to install drives in a switch room type environment they shall be enclosed within a cubicle constructed as per Section 8 of this specification with due consideration given to ventilation requirements. It is generally expected that such cubicles will be fitted with an air-conditioner unit.

Variable speed drives are not to be installed in any external cubicles that may be subject to direct sunlight, without prior written approval of the Superintendents Representative.

Care shall be taken to segregate power, control and motor cables. Motor cables for VSD's shall be of the screened type, designed for use with variable frequency motors and be terminated using correct gland types. Screened cables shall be continuous from the motor terminals to the VSD terminals. All wiring and termination is to strictly comply with the manufacturers recommendations.

Where VSD's are used to control sewage pumps, the initial start shall be at 100% to assist with moving potential blockages. After a 30 sec time delay the VSD shall ramp to the required control point as dictated by the control logic.

10.4 Autotransformer Starters

Written approval from the Superintendents Representative is required for the use of autotransformer starters.

Autotransformer starters are to be of the closed transition type. The autotransformer is to be isolated from the circuit once the motor has started. Autotransformers are to be copper wound, 3-coil type and have tapings at 50%, 65% and 80%. Manually reset over-temperature protection shall be provided for the transformer and shall be separately indicated on the switchboard escutcheon. The autotransformer is to be installed in a separately mounted enclosure remote from the switchboard. Where this is not practical the transformer shall be housed in a totally segregated section of the switchboard lined with fire resistant sheeting and have a separate access door. Adequate ventilation shall be provided to prevent excessive heat build-up in the autotransformer enclosure. All wiring between the autotransformer and the starter shall be insulated with fireproof material.

11 Motor Protection

All motors up to 45kW shall be protected by a thermal overload relay (TOL). The TOL shall provide single phasing protection as well as overload protection. The full load current of the protected motor shall be between 30 - 80% of the current range of the TOL. The TOL shall be ambient temperature compensated, have both N/O and N/C auxiliary contacts and shall be capable of both manual and automatic reset. On motors fitted with a soft starter the TOL shall remain in circuit when the starter is bypassed.
Motors with a rating of 45kW or greater shall be protected by an electronic motor protection relay. The MPR shall provide protection for thermal overload, thermistor, single phasing and asymmetry. The MPR shall have N/O and N/C auxiliary contacts, LED indication and be capable of both manual and automatic reset.

All motors shall be provided with over-temperature protection via sensors embedded in the motor windings, e.g. thermistors. The sensors shall be wired in series and connected to a monitoring relay. The monitoring relay shall have N/O and N/C auxiliary contacts and be capable of both manual and automatic reset. The monitoring relay shall incorporate a time delay function to mitigate unreliable operation on power up. The sensors shall be wired on an

ELV circuit. For motors with an electronic starter, separate monitoring relays need not be provided if the starter incorporates suitable inputs and monitoring functionality.

Submersible pumps (either wet or dry mounted) shall be provided with a means of detecting failure of the mechanical seal and/or ingress of moisture. This protection shall stop/inhibit pump operation via the motor fault circuit. A separate indication lamp shall be provided but it shall be common with other motor protection for telemetry signalling of motor fault.

Unless otherwise specified, conductivity type sensors such as Water In Oil (WIO) are to be used as a local warning indication only. Refer to job specification.

Where equipment is supplied with integral protection devices (e.g. thermal switches, moisture switches, insulation monitors etc.) these devices are to be wired in to the motor protection circuit as recommended by the equipment manufacturer.

Where pump monitoring relays (e.g. Grundfos IO111 or similar) are used, they shall be mounted so that the indicating lights are visible and controls are accessible without the need to open escutcheon doors and expose live parts.

All motor protection circuits shall be arranged for fail-safe operation. Generally, the protective devices will be wired in series to a common, maintained fault relay. Should any device trip, the fault relay would be de-energised and signal a fault condition. The motor would be unavailable for further operation until reset. The protective devices would generally be set for automatic reset but the fault relay shall require manual resetting by the operator. A reset pushbutton shall be provided on the escutcheon door. In addition to the reset pushbutton it shall also be possible to reset motor faults remotely via an output from the telemetry unit.

All circuits shall reset automatically after a power failure unless there is a genuine fault present.

For certain installations additional protection may be required for water void, undercurrent etc. Refer to job specification and consult with the suppliers of mechanical equipment to ensure all control and protection elements required for equipment warranty are incorporated.

Motor control circuits shall incorporate a timer function to prevent excessive, frequent starting of the motor. The time delay between successive start attempts shall be based on the duty rating of the motor (ie number of starts per hour). Where the motor is normally controlled via logic within the telemetry unit or PLC (ie system mode) this timer function will be provided by the control software. The start delay timer does not function in manual control mode.

Each motor shall be provided with an available relay which shall be energised when all protective devices are healthy, supply circuit breaker and motor isolator switch are closed and any process or operational interlocks are true.

12 Control Circuits

For basic Form 2 type pumpstation switchboard, there shall be one common control circuit that shall typically operate at 240VAC.

For an MCC style switchboard, Form 3 or Form 4, each motor shall have an independent control circuit that operates at ELV, typically 24VDC.

Circuits that interface to PLC systems shall operate at 24VDC.

A typical motor control circuit shall consist of:

- Duty or Mode selector switch;

- Auto / off / manual selector switch (where required);
- Manual pushbuttons for start, stop and reset;
- Indicator lights for run and common fault;
- Manually reset fault relay;
- Motor available relay;
- Hours run meter (where required);
- Ammeter reading current in each phase (where required); and
- Motor isolator (padlockable).

13 Mounting of Equipment

Equipment is to be arranged to prevent inadvertent contact with live terminals during normal operation of switches, resetting circuit breakers or the like.

All door mounted equipment is to have finger-proof terminals or be fitted with insulating boots / covers. Alternatively, the equipment can be completely screened by a clear, removable cover. Equipment mounted on doors shall be positioned so that the door can be fully opened without damage to the equipment. Adequate space shall be left between equipment for wiring and labelling. A minimum of 30mm shall be provided between ducting and equipment terminals.

All equipment shall be grouped in a logical order.

The term escutcheon shall also refer to the external door in an indoor cubicle.

The following equipment is to be fitted on the mounting pan on the rear wall of the cubicle:

- Main Switch*;
- Circuit breakers*;
- Isolator switches*;
- Motor starters;
- Motor protection relays;
- Control relays, timers etc;
- Current transformers, control transformers, power supplies;
- Neutral link, earth link; and
- Terminal strips.

* The operating handles / tags for switches and CB's are to be accessible from the front of the escutcheon door. Extension shafts are not to exceed 100mm in length. Where hat sections or similar are used they shall be manufactured from the same material and the same surface finish as the mounting pans.

When mounting the main switch and neutral link consideration is to be given to the size of the incoming mains cables. Sufficient space is to be provided for termination. Generally, no equipment is to be mounted within 150mm of the floor of a plinth mounted cubicle.

The following equipment is to be mounted on the escutcheon door:

- Voltmeters, ammeters and associated selector switches;
- Hours run meters;
- Selector switches;
- Pushbuttons;
- Indicator lights;
- GPO;
- Light switch; and
- Any other operating equipment that may be specified, e.g. level control relay.

It shall be possible to reset all protective devices from the escutcheon without the need to access compartments containing live terminals.

A minimum of 20% spare space is to be provided on all escutcheon doors and mounting pans for future equipment. This space is to be in a single, contiguous area and not achieved by multiple small areas.

All equipment is to be fixed with metal thread screws in drilled and tapped holes. Where panel thickness may not provide adequate thread depth to support the equipment then stainless steel threaded inserts may be used.

Use of non-conductive screws (e.g. nylon) will be permitted where insulated fixings are required.

14 Cabling

The circuitry, in conjunction with the components and accessories used, shall be arranged to prevent recycling and feedback and shall generally be fail-safe. Power and control wiring within the cubicle shall be minimum 0.6/1kV stranded copper conductor insulated with V75 grade PVC. Conductors shall be sized to suit the application in accordance with AS 3008. Minimum size shall be 7/050 or 30/025 where flexible conductors are required. Wiring from CT's shall be minimum 2.5mm^2 unless otherwise specified. Instrumentation wiring shall be screened twisted pairs – Olex Dekoron or equivalent. Communications wiring shall be suitable for the particular application. I/O wiring, instrumentation wiring and communications wiring shall be segregated from all LV wiring.

Wiring will generally be enclosed within slotted PVC ducting or neatly loomed using nylon cable ties. PVC ducts shall be adequately sized for the number of circuits within and shall be filled to no more than 75% of its capacity. Lids for ducts shall be neatly cut and mitred at corners. Cable looms shall be supported with PVC saddles as necessary. Where wiring is bundled together in either duct or loom all wiring shall be insulated for the highest voltage present. Wiring to equipment mounted on doors or hinged panels shall be of the flexible type and enclosed in PVC spiral wrap adequately fastened at each end.

Wiring from a circuit fitted with a surge reduction filter shall not be loomed with wiring from unfiltered circuits.

Wiring shall be colour coded as follows:

Function		Colour	Abbreviation
AC Power	3 phase	Red, White, Blue	R, W, B
	1 phase	Red	R
	Neutral	Black	Bk
DC Power	Positive	Brown	Br
	Negative	Orange	O
Control	240V Control	White	W
	ELV Control	Grey	Gr
	Analogue Signals	Black, White scr. pair	Bk, W
	Thermocouple	To suit T/C type	
Earth		Green/Yellow	G/Y

Every control wire is to be identified with a wire number that completely encircles the wire, Legrand Memocab or equivalent system shall be used. The correct sized sleeve shall be

used so that the ferrule is firm on the wire. The wire numbering shall match that shown on the electrical schematics and shall read from left to right, top to bottom. The wire numbering for each drive or device shall be unique.

Power wiring will be terminated on to equipment using suitably sized crimp lugs. Control wiring will be terminated with correctly sized bootlace pins crimped using the manufacturers recommended tool. Each core shall have sufficient length at each termination to allow a fresh connection to be made.

All field wiring, with the exception of power cables 10mm^2 or greater, shall be terminated at a terminal strip comprised of din rail mounted tunnel type screw terminals. A minimum of 10% spare terminals shall be provided at each terminal strip.

Wiring or 10mm^2 or greater can be terminated directly to switchgear using appropriate crimp lugs or similar.

15 Labelling

All equipment shall be identified with an engraved label of a rigid plastic laminate such as Twoplex. The labels shall be screw fixed. Self-adhesive labels or double-sided tape is not acceptable. Labels are to be positioned so that they are not obscured by equipment or wiring. Labels are not to be fixed to removable duct lids.

Labels will generally be black letters on a white background. Warning labels shall be white letters on a red background. Letter height will be selected to suit the particular equipment but as a guide the following shall apply:

Switchboard identification label	25mm
Major equipment labels	10mm
Equipment identification	5mm

The main switch and motor isolators are to be clearly labelled with 10mm white letters on red background. The OFF position shall be clearly marked.

Each item of equipment shall have a unique tag name and the label shall match the tag names shown on the electrical schematics.

Where a switchboard has multiple sources of supply or contains circuits supplied from other locations (e.g., control circuit interlocks) prominent warning labels are to be installed.

16 Fastenings

All bolts, nuts and washers shall be ISO metric complying with the relevant Australian Standards and be manufactured from 316 SS.

Bolts and studs used for constructional purposes shall be provided with a full nut and lock washer. The use of self-locking nuts would be permitted if they are of an approved type that can be used several times without deterioration and the connection is not one that would require frequent undoing. Electrical connections using bolts or studs shall be fitted with flat washer, lock washer and a full nut. Electrical connections using screws shall be fitted with a flat washer and a lock washer.

Screws and bolts shall project a minimum of one thread pitch and not more than three thread pitches beyond the nut or panel. Cover retaining screws shall be of the captive type.

Self-tapping or self-drilling screws shall not be used in any part of the switchboard.

Double-sided tape shall not be used in any part of the switchboard.

17 Electronic Equipment

Electronic circuits and components shall be high grade solid state discrete or integrated circuit devices having been substantially derated for the duty required. All components shall be assembled on high quality fire resistant epoxy fibreglass laminate or similar non-hygroscopic printed circuit boards. Each PCB shall be varnished or similarly protected for use in tropical and corrosive environments. Circuit board components shall be liberally spaced and shall have test points and links provided to assist with fault finding.

All equipment shall be suitable for operation in the vicinity of other electrical equipment and have a high degree of immunity to electrical transients and noise.

17.1 Telemetry Equipment

Where telemetry equipment is specified in the job specification then it shall be supplied, installed and wired by the contractor. Note that telemetry is required on every sewerage pumpstation switchboard. Unless otherwise specified, WRC technicians will carry out the software configuration and integration into the SCADA system. WRC technicians require a minimum of 6 weeks' notice prior to commissioning to allow for scheduling of tasks in to their works program.

A listing of approved telemetry equipment is provided in Appendix B2. Note that certain equipment is mandatory and no alternatives will be accepted. Possible suppliers are also listed but this does not imply they are the only suppliers that can be used.

WRC is progressively implementing a digital radio network to replace the old analogue radio network. It is expected that all new sites will be digital. Only under extenuating circumstances will new sites be added to the analogue network. In such cases, the job specification will detail requirements.

When telemetry equipment is to be located within the switchboard it shall be located in a dedicated section, preferably with a separate internal access door. The telemetry compartment shall be sized and equipment positioned so that it shall be possible to accommodate the future retrofitting of a Schneider Electric SCADAPack ES P500 telemetry unit or a Serck eNet type telemetry unit (including an additional din rail, terminals and wiring duct for the topside I/O connections). Approximate dimensions of this section would be 800mm x 800mm.

All telemetry equipment is to be wired through a terminal strip located in the telemetry section. Sufficient space shall be left on din rails and in wiring ducts to permit the future wiring of 50% additional of I/O of each type (DI, DO, AI and AO).

The signals would be voltage free contacts or analogue signals. If the analogue signal is part of a loop with several devices, it is to be wired via a signal isolator and the telemetry input shall be the last device on the instrument loop. Telemetry digital outputs would be wired through 12VDC interposing relays. A problem currently exists with SCADAPack P334 units. If the P334 losses power or fails, the analogue current loops will also fail. To ensure the integrity of critical instrument loops, a precision 255Ω resistor is to be wired across the analogue input on the P334. As an example, this will be required on the pump well level input on any sewerage pumpstation RTU.

The 240VAC supply to telemetry equipment power supply is to be supplied via a dedicated circuit breaker wired through a surge reduction filter.

When telemetry equipment is to be mounted in a remote cubicle the required signals shall be wired to a segregated section of the field cables terminal strip. The remote cubicle will be a

stainless steel type of appropriate IP rating, approximately 800 x 800 x 300. The cubicle shall be generally constructed in accordance with Clause 8. Sun protection as per Clause 8.3 is required on all external mounted telemetry cubicles.

The job specification will contain details of scope and location of equipment.

Appendix C contains tables showing the required I/O signals and address assignment for several sewerage pumpstation telemetry scenarios. These assignments are not to be varied without written permission of a Whitsunday Regional Council Electrical or Control Systems Engineer. For other telemetry installations the I/O signals and address assignment shall be detailed in the job specification.

Refer to drawings in Appendix A for a typical telemetry schematic for a sewerage pumpstation.

Note that for pumpstations incorporating more than two pumps, dual RTU's may be required. Refer to job specification.

Refer to Clause 28.2 for additional information relating to installation works associated with telemetry equipment.

17.2 HMI Screen

A HMI screen may be requested for an installation at the discretion of Whitsunday Regional Council. Where an HMI screen has been requested, it shall be programmed to show the status of all analogue and digital I/O, status of the PLC and status of the telemetry communications link. All programming delays, counters, offsets and totalisers shall be adjustable from the HMI with the use of a supervisory password, otherwise these parameters will be read only.

In the event where council deems an HMI unnecessary for any installation, spare space shall be provided within the switchboard escutcheon, mounting plane, marshalling, cable entries and door space for an HMI to be retrofitted at a later date. This extra capacity shall be additional to the spare space necessary to fulfil the requirements of the other sections of this specification.

17.3 PLC Equipment

PLC equipment shall only be used where complex control functions warrant. **The job specification will contain specific details if a PLC is required.**

When called for in the job specification the following general requirements must be satisfied.

PLC equipment shall be housed in a segregated section of the switchboard, preferably with a separate internal access door. This can be a shared compartment with telemetry equipment.

The PLC and I/O power shall be supplied through an approved surge reduction filter.
The PLC shall be programmed via an IBM compatible PC. A licensed copy of the programming software, a software manual and the correct programming lead shall be supplied as part of the works, unless the PLC is of an approved type and Whitsunday Regional Council Electrical or Control Systems Engineer gives written direction that it is not required.

A minimum of one complete set of PLC documentation shall be supplied including a descriptive functional specification, ladder diagram (anointed with ample notes, labels and comments to fully describe code), full label listing and full cross reference table. A backup copy of the PLC code shall be provided on CD-ROM.

17.4 Pump Control Relay

Refer to Clause 18 below for a discussion of pump control strategies. For installations where a pump control relay is required the following shall apply.

The preferred pump control relay is a Yokogawa UM33A Digital Indicator (with alarms). This relay will accept a 4 - 20mA signal from the level sensor and provide outputs to drive relays for pump control. Ensure that manufacturer's instructions are followed with regard to freewheel diodes or CR networks on outputs. The UM33A incorporates a digital display and is to be mounted on the escutcheon door.

17.5 Sump Pump Control Relay

In certain applications, such as sump pump control, electrode type level sensors shall be used in conjunction with an electrode relay to control the starting and stopping of the pump. The preferred type of electrode relay is a Multitrode MTR series.

18 Pump Control

This clause is mainly aimed at a sewerage pumpstation installation but could also be applied to other installations. The discussion refers to a typical pumpstation with 2 pumps. For stations with more than two pumps the job specification will detail the pump control requirements.

18.1 Pump Control Strategy

18.1.1 Telemetry Control with Local Control Backup

Unless otherwise specified in the job specification, this strategy would be the default method of controlling pumps at sewerage pumpstations.

A four-position selector switch shall be used to select between System / Off / Local Manual / Local Auto. This switch is to be of a distinct colour or have a distinctively coloured escutcheon plate so that it is readily identifiable to operations staff.

When System is selected the motors would be controlled via logic within the PDS telemetry unit. The logic would monitor the well level analogue signal and start / stop the motors by energising digital outputs. The selection of motor duty and level set points would be via remote SCADA system. All motor starter functions and motor protection functions will be incorporated in the system mode control circuit. Faults would be reset by either an escutcheon mounted reset pushbutton or remotely via the SCADA system. Programming of PDS logic and remote SCADA system would be carried out by WRC unless otherwise specified in the job specification. System would be the normal operating mode for a pumpstation.

When Local Manual is selected the motors will be under local manual control via escutcheon mounted start and stop pushbuttons. There will be no automatic or remote control in this mode however remote monitoring via telemetry would be active. All motor starter functions and motor protection functions will be incorporated in the local (manual) control circuit. Faults would be reset via an escutcheon mounted reset pushbutton. It is intended that this mode of control would only be used during maintenance activities or if there was a critical failure of the telemetry or the auto control equipment.

When Local Auto is selected, pump operation would be controlled by a Pump Control Relay (refer to Clause 17.4). Starting and stopping of pumps would be determined by the wet well level and the set points in the pump control relay. The pump control relay will energise interposing relays to operate in the pump control circuits. Duty selection would be via an escutcheon mounted selector. The duty selector is to have an adjacent label stating that it is

only for use in the Local Auto mode. There will be no remote control in this mode however remote monitoring via telemetry would be active. All motor starter functions and motor protection functions will be incorporated in the Local Auto control circuit. Faults would be reset via an escutcheon mounted reset pushbutton. The duty selector, pump control relay outputs and associated control relays will only be active when the selector switch is in the Local Auto position. A time delay is to be incorporated in the Local Auto mode to ensure that pump available relays and other circuitry has operated before the control mode becomes active.

It is only intended that this mode of control is used if there is a critical failure of the telemetry equipment.

18.2 Pump Operation Methods

This clause describes two (2) common methods of pump operation employed in WRC sewerage pumpstations. Other methods may be employed to meet the requirements of a particular pumpstation. (refer to the job specification).

18.2.1 Pump Operation Method 1

The pumps are configured to operate in a standard duty / standby arrangement. Typically, the two (2) pumps would be the same size. Duty selection is effected via SCADA in System Mode or by an escutcheon mounted selector switch in Local Auto Mode. This discussion assumes that Pump 1 has been selected for duty and Pump 2 for standby. The same principle applies if Pump 2 was selected as duty pump.

When the level in the pump well rises to the duty start level, Pump 1 will start and pump down to the stop level. If the level continues to rise and reaches the standby start level, Pump 2 will start and both pumps will operate in parallel until the stop level is reached. If the duty pump becomes unavailable, then the standby pump will be enabled to operate off the duty start level.

It shall not be possible for both pumps to start simultaneously, e.g. after a power fail when well level may be high.

In some circumstances it is not desirable to have the pumps operate in parallel. In these cases, the duty pump would be stopped at the standby level and after a short time delay the standby pump would start. If the standby pump becomes unavailable, then the duty pump would be re-enabled.

The job specification will detail if parallel operation is required or not.

18.2.2 Pump Operation Method 2

This method applies to stations where pumps are of different sizes. Typically, one pump would be sized for 2 x ADWF and would be the main duty pump. The second pump would be sized for 5 x ADWF and would only run during high flow periods (e.g. rainfall events) or when specifically selected by the operator. Pump 1 is always the small pump and Pump 2 is the large pump. Duty selection is effected via SCADA in System Mode or by an escutcheon mounted selector switch in Local Auto Mode. In normal operation Pump 1 is selected for duty. Pump 2 is only selected for duty for a short period each month to exercise the pump.

Normal operation is with Pump 1 selected for duty. When the level in well rises to the duty start level, Pump 1 will start and pump down to the stop level. If the inflow is greater than Pump 1's capacity and the level continues to rise to the standby level, Pump 1 will stop and after a short time delay Pump 2 will start. Pump 2 will pump down to the stop level and turn off. When the level next rises, Pump 1 will resume normal operation. Should Pump 2 fail after operation has initiated then Pump 1 must be re-enabled and start operation immediately. If Pump 1 becomes unavailable, then Pump 2 will operate off the standby level.

It shall not be possible for both pumps to start simultaneously, e.g. after a power fail when well level may be high.

When Pump 2 is selected for duty, Pump 1 will not run under normal conditions. Pump 2 will operate off the duty level. Should Pump 2 become unavailable then Pump 1 must be enabled to operate off the duty start level.

19 Miscellaneous Equipment

The equipment discussed in the following Clauses is generally only applicable to sewerage pumpstation installations however it can also be called for other types of installation.

19.1 Level Sensor

All sewerage pumpstations are to be fitted with a level sensor. For other facilities it shall only be provided when specifically detailed in the job specification.

Level sensors will be of the hydrostatic pressure measuring type. The housing shall be stainless steel with a capacitive ceramic sensor element and stainless steel diaphragm. This sensor connects to a separately mounted transmitter incorporating zero and span adjustments. Unless otherwise specified the sensor shall be ranged 0 -10m. The sensor shall be supplied with a minimum 12m of cable and a strain clamp for suspension in the pumpwell. In turbulent wells, a stilling tube or suspended weight may be necessary for a satisfactory installation. The transmitter is generally mounted in the switchboard. The transmitter will output a 4 - 20mA/HART signal in proportion to the level in the pumpwell. The preferred type of level sensor is a Vega Vegawell 52 with a VegaDis 62 Transmitter. Typical catalogue number for a Vegawell 52 with HART protocol, 0-10m range and 27m of cable is Vegawell 52.XXA4AMD1DD1X. The part number of the Vega transmitter is DIS62.XXKMCSX (with display). The Vega transmitter shall be positioned in such a way as to allow easy removal / replacement of the cover during installation and calibration work.

19.2 High Level Alarm (HL)

All sewerage pumpstations are to be fitted with a high level alarm.

A float switch shall be installed in the wet well to provide a high level alarm signal. The float switch will be a mechanical switch enclosed in a polypropylene ball, suspended by its own cable. The float switch contact shall be a change-over type. The float would operate on a battery backed 12VDC supply (typically the telemetry system power supply) and be an input into the telemetry system. In certain specific applications it may be used to initiate an alarm light as detailed below.

The preferred well High Level float switch is Flygt model ENM 10. The float switch shall be configured fail safe such that a normal well level is a closed input. This input shall be wired directly to the RTU.

19.3 Critical High Level Alarm (HHL)

All sewerage pumpstations are to be fitted with a critical high-high level alarm.

A float switch shall be installed in the wet well to provide a critical high-level alarm signal. The float switch will be a mechanical switch enclosed in a polypropylene ball, suspended by its own cable. The float switch contact shall be a change-over type. The float would operate on a battery backed 12VDC supply (typically the telemetry system power supply) and be an input into the telemetry system. In certain specific applications it may be used to initiate an alarm light as detailed below.

The preferred well High High Level float switch is Flygt model ENM 10. The float switch shall be configured fail safe such that a normal well level is a closed input. This input shall be wired directly to the RTU.

The flexible cables shall be capable of supporting the weight of the ball float and cable without the need for additional support. The ball bloat cable length shall be sized to allow position adjustment within the well entirety. This ball float shall be installed in accordance with the manufacturer's installation instructions at the RL of 300mm below the overflow for the station.

19.4 Alarm Light

This shall only be provided when specifically detailed in the job specification.

A flashing alarm light shall be installed to indicate high wet well level. This alarm light shall be a weatherproof (IP66D) and vandal proof fitting mounted on top of the cubicle (or external to building). A wire guard shall be fitted. It shall be connected to a flashing relay activated by the float switch detailed above and shall be manually reset by an escutcheon mounted pushbutton. The lamp shall be clearly visible from a distance of several hundred metres.

The alarm light shall operate off either 240VAC or 24VDC as specified in the job specification. Where a DC supply is specified it shall be supplied via a separate battery backed power supply (ie not the telemetry supply).

19.5 Diesel Pump

This shall only be provided when specifically detailed in the job specification.

A diesel pump is installed at some pumpstations to provide emergency pumping capacity when Ergon supply has failed. The diesel pump will have its own dedicated level sensors and control panel and will operate independently of the electric pumps.

A dedicated 240V 10A circuit breaker is to be provided in the switchboard for the diesel pump battery charger.

The following voltage free input signals are to be wired to telemetry terminal strip:

- Diesel pump started (1 x DI);
- Diesel pump failed to start (1 x DI);
- Diesel pump fault (1 x DI);
- Diesel pump flow (from limit switch on reflux valve) (1 x DI); and
- Starting battery low voltage (1 x DI via suitable relay).

The starting battery low voltage signal can be provided by a process relay similar to APCS PA201. The relay monitors the battery voltage and if it falls below the trip set point (e.g. 10.5V) then an output contact will be used to provide the signal to the telemetry system.

19.5 Disconnection Chamber

This shall only be provided when specifically detailed in the job specification.

The disconnection chamber shall be an extension of the switchboard cubicle and shall be fabricated from the same materials. The chamber will be fitted with a lockable door and would generally be located at the very bottom of the switchboard. It shall be completely segregated from the rest of the switchboard. The chamber would have no bottom but a gland plate would be fitted between the chamber and the cubicle proper. Cables from the sockets into the switchboard proper shall be fitted with a secure cable gland at the gland plate. The disconnection chamber will require ventilation openings as per Clause 8.5.

The chamber will house decontactor type sockets to allow the disconnection of pumps by non-electrical personnel. The sockets are to be Marechal or equivalent. Matching plug tops are to be supplied for fitting to pump cables. Ensure that the conduit access into the well can accommodate the plug size and can be easily pulled through with all cabling installed.

For some sites it may be preferable to have the pump disconnection chamber separate from the switchboard (e.g., where the switchboard is installed remote from the pumpwell). It would be acceptable to utilise an URD type distribution pillar or a 316 stainless steel cubicle to house the decontactor sockets.

19.6 Pumpstation Ventilation Fans

This shall only be provided when specifically detailed in the job specification.

The ventilation fans in pumpstation buildings shall have an Auto – Off – Manual selector switch. In manual they shall operate continuously. In auto they shall be controlled via a 24hour time clock such that they operate for a 30-minute period twice a day, once at 6AM and once at 6PM.

20 Emergency Power

Provision is to be made for emergency power at all WRC facilities. At critical sites a permanent standby generator will be installed. The full requirements for a permanent generator will be detailed in the job specification. Clause 20.1 below serves only to highlight some particular requirements. For other sites, provision is to be made for the easy connection of a transportable generator set – refer to clause 20.2 for requirements. There may also be a requirement to allow for future connection of a permanent generator at an installation, at the discretion of WRC. In this case, the switchboard modifications required for future connection of a permanent generator shall be outlined in the job specification, including all applicable parts of section 20.1 below.

20.1 Permanent Standby Generator

When a permanent standby generator is to be provided, the job specification will fully detail all requirements. The following are some of the general items required for a diesel generator installation:

- Generators will be supplied with a fuel tank with sufficient capacity for minimum 24 hours running at full load;
- The generator will have a circuit breaker to protect the output cable;
- An automatic transfer switch and logic panel is to be provided to detect loss / restoration of Ergon supply and switching to/from the generator supply. The transfer switch can utilise circuit breakers or contactors to suit the installation requirements. The logic panel is to be a commercially available type. A single switch shall be provided to allow operations personnel to test the generator and change-over function. This switch shall simulate a mains failure, start the generator and transfer site loads on to the generator. A contact from this switch shall be wired to a telemetry input for monitoring purposes;
- Due to the cyclic nature of pump operation it may be necessary to have an automatically switched load bank to prevent the generator running under light load situations. The load bank would typically comprise resistor elements mounted within the exhaust air ducting. The load bank shall be controlled by a load sensing controller. The load bank controller shall have facility to accept a disable signal from the site control system, e.g. this may be used to drop out the load bank prior to large loads coming on line;
- For installations where an internal load bank is not practical, the job specification may call for provision to be made for connection of a transportable load bank. In this case, connection to the switchboard shall be made via a 3-phase 150A decontactor inlet socket (e.g. Proconect 3PS9A3NE01) via a suitably rated circuit breaker;

- For other sites a stand-alone external load bank may be required. The job specification will detail requirements;
- A dedicated 240V 10A circuit breaker is to be provided in the switchboard for the generator battery charger; and
- The following voltage free signals to be made available at a terminal strip for wiring to the telemetry equipment:
    - Generator running;
    - Generator fault;
    - Generator failed to start;
    - Generator low fuel warning (approx. 2 hours' run-time left);
    - Generator starting battery voltage low (1 x DI via suitable relay);
    - Generator circuit breaker closed;
    - ATS Mains supply position;
    - ATS Generator supply position;
    - Generator test switch active; and
    - Load bank healthy.

If the generator control panel does not provide a starting battery voltage low alarm directly then a process relay as described in clause 17.4 above can be used.

- Where the generator is to be installed external to a building the following requirements shall apply:
    - The unit shall be fully enclosed in a vandal-proof, acoustic enclosure. The top of the enclosure is to be manufactured from stainless steel and painted;
    - The enclosure shall have no glass or perspex panels;
    - Lockable covers shall be provided for all access hatches including radiator filler and fuel filler – to suit WRC padlock system;
    - There are to be no exposed hot surfaces;
    - A cage shall be fitted over the exhaust cap; and
    - Noise rating is not to exceed 70dB at the boundary of the facility.

20.2 Mobile Generator Connection

For facilities where a permanent standby generator is not installed and the maximum demand is less than 110kVA (with due consideration for motor starting requirements) provision shall be made for the connection of a mobile generator set. Contact WRC's Electrical Technical Officer to verify what generator connection is required for any given site.

For sites with a maximum demand of less than 110kVA (with due consideration to motor starting requirements) a 150A decontactor type inlet socket is to be provided either fitted to the switchboard (for an external board) or, where the switchboard is located inside a building, mounted in an accessible, external location. The socket is to be a Marechal DS9-3198017, Cutler Hammer CH9A3NE01 or Proconect 3PS9A3NE01 and is to be mounted in a suitable wall box and fitted with an inlet cap.

For sites with a maximum demand of less than 65kVA (with due consideration to motor starting requirements) a 90A decontactor type inlet socket is to be provided either fitted to the switchboard (for an external board) or, where the switchboard is located inside a building, mounted in an accessible, external location. The socket is to be a Marechal DS6-3168017, Cutler Hammer CH6A3NE01 or Proconect 3PS6A3NE01 and is to be mounted in a suitable wall box and fitted with an inlet cap.

The following requirements are common to all sites to be fitted with a mobile generator connection:

- A suitably rated circuit breaker is to be fitted downstream of the inlet socket to limit the generator current to suit the switchboard wiring. This circuit breaker is to be suitable for a

fault level of 18kA minimum. The circuit breaker shall comply with Clause 9.5 and also Clause 9.1 in terms of mounting, extension shafts, locking and labelling;

- A manual change-over switch, rated to the generator full load current, is to be provided in the switchboard to select between Ergon supply, off or generator supply. It shall not be possible for both supplies to be selected at the same time. All line side terminals (Ergon and Generator) are to be shrouded to IP4X. The change-over switch shall also comply with Clause 9.1.1 in terms of mounting, extension shafts, locking and labelling;
- A set of three indicator lights are to be wired to the Ergon line side of the change-over switch via a suitably rated isolatable fuse-carriers. The purpose of these lights is to alert operators that Ergon power has been restored. A suitable warning label is required to show these indicators are not isolated by the main switch or change-over switch. Refer also to clause 9.13 regarding the provision of a phase failure relay on the Ergon line side;
- In addition to the inlet socket, a set of terminals shall be provided behind the escutcheon panel as an alternative generator connection point. This is to accommodate generators that do not have an outlet plug compatible with the inlet sockets stated above. Refer to drawing WRC24-R13-03. The cable connecting the generator inlet to the changeover switch, neutral link and earth link shall be flexible cable. The conductors on the socket end shall be terminated with bootlace pins. The cable shall be long enough to allow easy disconnection and reconnection between the inlet socket and the inlet terminals; and
- Provision shall be made in the side of the changeover section for temporary generator cable entry. Any holes or doors provided must not compromise the IP rating of the panel. The cable entry shall incorporate means to support the incoming cable (e.g. gland or clamp).

For certain installations it would be acceptable to have the transfer switch, circuit breaker and decontactor inlet socket mounted in a separate enclosure. The enclosure would be IP56, fabricated from 316 SS, have a blank external door (padlockable or require a special tool to open) and an internal escutcheon door. The inlet socket is to be mounted on side of cubicle and changeover switch and circuit breaker operable from the escutcheon. There shall be no exposed live parts when the external door is open.

20.3 Other Facilities

For facilities where a permanent standby generator is not installed and the total demand is in excess of 110kVA (with due consideration to motor starting requirements) or when specified in the job specification, generator connection links are to be provided. The purpose of the links is to permit the quick and easy connection of a transportable generator via a trailing cable. For an outdoor switchboard the connection links are to be housed in a dedicated section of the switchboard. For an indoor switchboard the connection links are to be housed in an IP65 stainless steel enclosure mounted in an accessible, external location.

The generator connection link shall be designed so that the cable termination is adequately protected and supported and all doors, covers and the like can be closed and secured with the trailing cable connected.

The trailing cable shall terminate on to copper busbar with brass studs, stainless steel threaded inserts or bolted connections. All necessary hardware is to be supplied including bolts / studs, flat washers, spring washers and nuts. Stud / bolt size is to suit the size of connected cables but shall be not less than M8. The terminations and busbar are to be shrouded to prevent inadvertent contact with live parts.

The busbar links are to be connected to a manual change-over switch via a circuit breaker using suitably rated cable. The circuit breaker is intended to limit the generator current to match the switchboard design specification and shall have a minimum breaking capacity of 35kA. The circuit breaker shall comply with Clause 9.5 and also Clause 9.1 in terms of mounting, extension shafts, locking and labelling. The connection links and wiring to the circuit breaker are to be rated for a minimum of 150% of the maximum demand of the switchboard.

The manual change-over switch shall be rated for the same current as the main switch. The change-over switch shall select between Ergon supply, off or generator supply. It shall not be possible for both supplies to be energised at the same time. All line side terminals (Ergon and Generator) are to be shrouded to IP4X. The change-over switch shall also comply with Clause 9.1.1 in terms of mounting, extension shafts, locking and labelling.

A set of three indicator lights are to be wired to the Ergon line side of the change-over switch via a suitably rated isolatable fuse-carriers. The purpose of these lights is to alert operators that Ergon power has been restored. Refer also to clause 9.13 regarding the provision of a phase failure relay on the Ergon line side.

For certain installations where the generator connection links are mounted in an external enclosure it would be acceptable to also have the transfer switch and circuit breaker located externally. The enclosure would be IP65, fabricated from 316 SS, have a blank external door (padlockable or require a special tool to open) and an internal escutcheon door. The changeover switch and circuit breaker would be operable from the escutcheon. There shall be no exposed live parts when the external door is open.

21 Inspection and Testing

During the construction of the switchboard every facility shall be accorded the Superintendents Representative to inspect the works in progress at any time. The following stages are mandatory inspections:

- Completion of sheet metal fabrication prior to installation of equipment; and
- Completion of construction prior to workshop testing.

Works shall not proceed past these stages until the Superintendents Representative has been advised and inspections completed or written confirmation is received from the Superintendents Representative that an inspection is not required. Note that inspections shall not take place until adequate workshop drawings have been submitted - refer clause 22.

The switchboard shall be thoroughly tested at the contractor's workshop at the completion of construction works. The Superintendents Representative shall attend, to witness the workshop testing (or shall notify the contractor in writing that witness testing is not required). All equipment and personnel necessary for carrying out the tests shall be provided by the contractor. A schedule of proposed testing shall be submitted to the Superintendents Representative for approval seven (7) days prior to the date of workshop testing.

The Superintendents Representative shall be given seven (7) days' notice in writing of the need for inspections and testing. The cost of the Superintendents Representatives' attendance will be borne by the Principal except where return visits are necessary due to the failure of equipment on the initial visit. In these cases, the costs incurred would be deducted from monies owed to the contractor.

Workshop test shall include but not be limited to:

- All routine tests to relevant Australian Standards;
- Operational test of all devices including interlocks, PLC's (Field I/O shall be simulated during these tests);
- Insulation resistance (excluding electronic equipment); and
- Earth continuity.

Where called for in the job specification, Type Test assemblies shall be used and certificates shall be provided on request.

The passing of inspections and tests at the workshop shall not prejudice the right of the

Superintendents Representative to reject whole or part of the switchboard if it does not comply when erected on site.

After completion of site erection, the installation shall be thoroughly tested. The Superintendents Representative shall attend to witness the site testing (or shall notify the contractor in writing that witness testing is not required). All equipment and personnel necessary for carrying out the tests shall be provided by the contractor. A schedule of proposed testing shall be submitted to the Superintendents Representative for approval seven days prior to the date of workshop testing.

The Superintendents Representative shall be given seven (7) days' notice in writing of the need for inspections and testing. The cost of the Superintendents Representatives' attendance will be borne by the Principal except where return visits are necessary due to the failure of equipment on the initial visit. In these cases, the costs incurred would be deducted from monies owed to the contractor.

Site tests to include but not be limited to:

- Check tightness of all electrical connections;
- Electrical safety tests as per AS3000;
- Insulation Resistance (excluding electronic equipment);
- Earth continuity;
- Operational tests of all circuits and devices including interlocks and fault circuits; and
- Analogue signal calibration at five points on scale (rising & falling inputs).

Where the Principal is required to carry out programming of telemetry equipment or control system elements a minimum of 6 weeks written notification of the anticipated date of commissioning is to be given to WRC's Electrical Systems Engineer to allow works to be scheduled.

Where required by the job specification a thermoscan shall be carried out of the switchboard at the completion of commissioning and 2 weeks prior to the end of the defects liability period.

The results from all tests are to be recorded on approved forms and included in the Operating and Maintenance Manuals.

22 Drawings

Electrical schematics are to be prepared in accordance with AS 4383 and preferably be of horizontal orientation. Symbols are to be in accordance with AS 1102, designated as per AS 3702 and be complete with line number cross-references for coil and contacts. Cubicle construction drawings are to be prepared in accordance with AS 1101. Drawings are to include provision for Council document number. The drawings included in Appendix A can be used as a guide for the standard of drafting required.

Each component or item of equipment used in a project shall have a unique tag name and wire numbers. The use of a unique prefix in front of the tag name or wire number is acceptable for multi-cell MCC type switchboards.

Workshop drawings are to be submitted to the Superintendents Representative for review prior to construction. Workshop drawings are to include sufficient detail of switchboard components to allow design check including but not limited to:

- Design parameters for switchboard including ratings of mains, sub-circuits, motors etc;
- Make and model of key components, e.g. circuit breakers, contactors, motor starters, protective devices, isolators etc;
- Rating of power wiring / bus;

- Settings of protective devices; and
- Parameter settings for soft starters / VSD's.

The contractor shall allow a period of 14 days in their program for design review by Superintendents Representative. Construction of switchboard is not to proceed until design review has been completed.

After the completion of workshop construction/testing the drawings are to be revised to "As-built" status and a copy forwarded to the Superintendents Representative prior to commencement of site installation / commissioning. Once the site installation works are completed and commissioned the drawings shall be revised to "As-installed" status. Unless otherwise specified three copies of the as-installed drawings are required in addition to those included in the manuals described below. One set is to be laminated and be suitable for keeping in the switchboard cubicle on site.

In addition to the hard copies specified above the as-installed drawings shall also be supplied on CD-ROM as a vector file in *.dwg format that can be edited in AutoCAD 2012. All x-refs, fonts, linetypes etc. used in the drawings shall be included on the disk. To assist with plotting of drawings *.pcp files shall also be included.

(Note: Where the contract is for supply only of switchboard then the requirements for as-installed drawings shall apply to the as-built drawings.)

23 Manuals

Unless specified otherwise, three hard copies of an Operation and Maintenance Manual shall be provided. The manual shall be a hard covered plastic four ring binder and shall include as a minimum the following:

- Electrical schematics (enclosed in plastic envelopes);
- Equipment list detailing item designation, type, manufacturer, catalogue numbers, ratings and local supplier;
- Manufacturers literature all equipment supplied (in English language);
- Listing of all settings/set points for all protective and control devices including timers, relays etc.;
- Detailed, step by step, programming instructions for all devices;
- PLC documentation where applicable;
- Test results (workshop and site);
- Equipment warranties - in name of Principal;
- Circuit design data including breaker selection, cable sizing etc.;
- Electrical installation test results; and
- Maintenance instructions for all equipment including a schedule for when maintenance tasks are to be carried out.

Draft Operation and Maintenance (O&M) Manuals are to be submitted to the Superintendents Representative for approval six (6) weeks prior to commissioning. Within two (2) weeks of commissioning, the manuals are to be revised to as-constructed status and submitted for final approval. Practical Completion will not be granted until approved Operation and Maintenance Manuals have been received by the Superintendents Representative.

In addition to the hard copies specified above, one digital copy of the Operation and Maintenance Manual shall also be provided. The digital copy shall be supplied on CD-ROM and consist of pdf files, word documents, excel files etc. that can be opened with standard software programs such as Adobe Reader and Microsoft Office.

24 Certification by RPEQ

Where required by the job specification the whole of the electrical installation shall be inspected and certified by a Registered Professional Engineer (Queensland). Unless otherwise specified the certification is to confirm:

- Compliance with the Electrical Safety Act;
- Compliance with applicable Australian Standards;
- Compliance with the contract documentation;
- Correct function of all circuits and equipment; and
- Suitability of installation test results and settings of protective devices.

It is recommended that a staged approach be used for RPEQ certification including:

- Review of workshop drawings and design information;
- Inspection of switchboard prior to delivery to site; and
- Site inspection and test review prior to final commissioning.

The RPEQ certification report is to be submitted to the Superintendents Representative prior to final commissioning and a copy included in the Operation & Maintenance Manuals.

Note that regardless of the requirement in the job specification, RPEQ certification may be required for other elements of the works to comply with Codes of Practice, Supply Authority requirements etc.

25 Preferred Suppliers

Appendix B contains a list of preferred equipment suppliers. This listing is provided to ensure that equipment supplied will be compatible with our existing plant and to minimise our stock holding of spare parts.

All equipment supplied should be available from Mackay suppliers who maintain stock so that replacement parts can be obtained at short notice in an emergency situation.

26 Spare Parts

Unless otherwise specified in the job specification the following spare parts shall be supplied with the switchboard as a minimum requirement:

- One contactor (complete assembly) of each size and voltage rating used;
- 4 off Thermistor relay;
- 1 off thermal overload relay;
- 2 off phase failure relay;
- 1 off seal failure relay;
- Six off control relay of each type and voltage rating used (including base);
- One timer of each type and voltage rating used (including base);
- Ten spare indicator lamps of each type / colour and voltage rating used, for LED indicators only four of each colour and voltage are required; and
- Six spare fuse cartridges of each type and rating used (including semi-conductive fuses).

27 Warranties

All equipment warranties, registrations etc. shall be made out in the name of the Principal and submitted in accordance with the supplier's instructions. Copies of all documents are to be included in the manuals.

28 Installation Considerations

This section is not a complete installation specification. It serves only to highlight certain issues that require consideration or have been recurring problems with recent contracts.

28.1 Electrical Installation

28.1.1 Electrical Work

All electrical work shall be performed by qualified electrical workers holding an appropriate certification / licence issued by the Electrical Safety Office, Queensland.

The person or firm responsible for the electrical work shall hold an Electrical Contractors Licence issued by the Electrical Safety Office, Queensland.

28.1.2 Design Information

The contractor is to supply full design information in regard to the electrical installation. This is to include but not limited to:

- Site power supply calculations including maximum demand and fault level;
- Cable calculations for all cables including current carrying capacity, voltage drop, short circuit and earth fault loop impedance. Spare cable capacity is also to be noted;
- Cable schedule showing size, type, route length, installation method, design load; and
- Circuit breaker selection data including cascade, discrimination, trip times, settings.

This information is to be supplied to the Superintendents Representative for review 2 weeks before the commencement of works / placement of orders.

28.1.3 Electricity Supply

Unless specifically excluded in the job specification the contractor is prepare the application for electricity supply, lodge the application with the supply authority and pay all associated fees. WRC will sign the form as required.

The point of supply can be either a URD type pillar or a property pole as required to meet supply authority requirements and/or site flood levels. If a property pole is used it must be positioned so that aerial cables are not installed across entrance roads, pump wells or vehicle working areas. Property poles and installation is to be certified by an RPEQ in accordance with Ergon requirements.

Where riser brackets are utilised they are to be certified by an RPEQ in accordance with Ergon requirements.

Where underground conduits are installed for Ergon's use, their position is to be accurately marked up on a site plan and certified by an RPEQ.

28.1.4 Consumer Mains

Consumer mains are to be designed with a minimum of 30% spare capacity over and above the calculated site maximum demand.

Consumer mains are to be installed underground to the point of supply. Under no circumstances are aerial cables to be installed across entrance roads, pump wells or vehicle working areas.

28.1.5 Main Earth

The main earth is to be installed in an accessible position and be protected from damage by mowers, line trimmers and the like. The protection must provide adequate room to allow disconnection of the earth for testing purposes. A commercial earth pit is preferred. The earth stake is not to be installed in a location where it is likely to become embedded within a

concrete slab, bitumen or landscaping.

28.1.6 Switchboard Location

When a switchboard is to be located adjacent to a pumpwell / valve chamber it is to be installed so that the switchboard doors open away from any hatch openings. Access to the switchboard is not to be impeded by mechanical equipment, safety rails (which may not be a permanent installation), landscaping etc. A suitable concrete slab is to be provided in front of the switchboard as a work area for electricians when working on the switchboard. Often this slab is added after completion of installation works – refer to Clause 27.1.4 regarding earth stake location. The area in front of the switchboard is to be at one level – no step.

28.1.7 Conduits

Conduits are to be of an adequate size to suit the installation requirements. Particular attention is to be paid when sizing conduits between a switchboard and a pumpwell. If the pump cables are to be fitted with plugs, then conduit must be large enough to permit the passage of the plug top with all other cabling installed. The use of bends must be kept to an absolute minimum. All bends must be long radius type.

At sewerage pumpstations 2 off 25mm conduits are to be installed from the switchboard to the base of the vent pole. One conduit may be used for lighting or antenna cabling. The other conduit will be for a future security camera (to be installed by Council).

A non-corrodible draw wire is to be left in all conduits.

The ends of all conduits are to be sealed to prevent ingress of dirt, debris or vermin. Special attention is required for conduits going to a sewerage pumpwell to prevent ingress of sewerage gases into switchboard.

28.1.8 Underground Cable Routes

The routes of all underground cables (including the consumer mains) are to be accurately marked up on a site plan, complete with dimensions from permanent landmarks / features. A laminated copy of this plan is to be left in the switchboard and other copies included in the O&M manuals.

28.1.9 Submersible Pump Cables

Cables for submersible pumps are to be suspended in the pumpwell from SS hooks adjacent the hatch opening. Excess cable is to be neatly coiled (taking due notice of minimum bending radii of the cable) and tied to these hooks.

28.1.10 Level Sensor Installation

Level sensors are to be suspended in the pumpwell from SS hooks adjacent the hatch opening. Excess cable is to be neatly coiled (taking due notice of minimum bending radii of the cable) and tied to these hooks. It shall be possible to remove the level sensor from the pumpwell without any need to enter the well. Float switches are not to be installed in small diameter conduits fixed to the pump guide rails.

When installing the level sensors, measures must be taken to ensure that level sensors remain suspended vertically and are not affected by any turbulence within the pumpwell. The preferred method is to fix a smooth weight to a stainless steel cable and suspend this from a SS hook adjacent the hatch opening. The level sensor cable can then be tied to the stainless steel cable and lowered into the well. The whole assembly can be withdrawn from above the hatch opening. A large diameter stilling tube can also be employed however in sewerage wells these can become a trap for rags etc. and should be avoided except in extreme cases.

All level sensors shall be wired from an ELV power supply.

28.1.11 Documented Electrical Test results

At the completion of electrical installation works all circuits are to be tested for safe operation in accordance with the Electrical Safety Act and the requirements of this specification. The test instrument readings and results are to be recorded and documented in a report to be delivered to WRC's Electrical Technical Officer. The report is to include the electrical contractors licence number and be signed by the contractor.

The testing required will include but not be limited to:

- Earth continuity;
- Insulation resistance;
- Polarity;
- Earth fault loop impedance;
- RCD trip times; and
- Correct circuit connections.

Practical completion will not be granted until the documented test results are received by WRC's Electrical Technical Officer.

28.2 Telemetry Installation

28.2.1 Radio Path Survey

When telemetry equipment is to be installed the contractor shall be required to undertake a radio path survey to verify the suitability of the signal path and determine the requirements for antenna selection and masting. The radio path would be a line of sight from the facility location to one of the radio repeaters in WRC's existing network. Contact WRC's Electrical Systems Engineer to determine which radio repeater site is to be utilised.

An acceptable radio path would have a minimum fade margin of 25dB (with ALL attenuation and losses included). The Received Signal Strength Indication at the site is to be greater than -70dBm. If the signal is marginal it may be possible to improve the signal through the use of a higher gain antenna or increased antenna mast height. If an acceptable signal path cannot be established to the site, then the contractor must provide an acceptable alternative or contribute to the establishment of a new repeater site.

28.2.2 Antenna Installation

Typically, a 6dB Yagi type antenna is used at our telemetry sites. The Yagi type antenna is to be mounted with horizontal polarisation on a bracket that can swivel through 180° to allow correct alignment. Higher gain antenna may be required at some sites and additional consideration must be given to their mounting requirements as they are physically larger and have a higher wind loading.

Masting requirements will vary from site to site. In some cases, small goose-neck type brackets will suffice while others will require pole type masts. Where pole type masts are employed, structural certification from a registered RPEQ will be required in terms of footings, wind loadings etc.

Generally, antenna masts and fittings will be constructed from hot dipped galvanised materials. In coastal or corrosive environments stainless steel materials will be required (including SS antenna).

When designing masts and antenna mounts consideration is to be given to access by maintenance personnel. Where antenna cannot be safely reached from a step ladder then the design must incorporate a means of lowering the mast to a safe working level (without

exceeding the minimum bending radius of the antenna cable). The need of specialised access equipment such as EPV's should be avoided.

Consideration must also be given to vandalism. It shall not be possible for vandals to easily reach antenna or climb on masts. In some cases, the use of a concealed "whip" type antenna might present a viable solution.

28.2.3 Antenna Cable

Where the route length of antenna cables is less than 15m, RG213 coax is to be used to connect the antenna to the radio. If the route length exceeds this then a higher specification coax, such as LDF-4, shall be used. The contractor is to submit calculations demonstrating correct cable selection in terms of signal strength and dB loss.

All antenna cable connections are to be made by N type or similar connectors. The connectors shall be sealed to prevent ingress of moisture, e.g. 3M Scotch rubber tape or similar.

A suitable surge diverter is to be installed on the antenna cable to minimise the effects of lightning on the radio equipment.

28.2.4 Additional Notes

Refer to Appendix B2 for additional notes in relation to the supply and installation of telemetry equipment.

28.2.5 Commissioning

WRC's Electrical Systems Engineer is to be given a minimum of six (6) weeks written of the anticipated date of commissioning to allow the works to be scheduled.

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Appendix B1 - Preferred Suppliers List

Switchboard and Equipment

Item	Manufacturer
Cubicle Hardware	Emka, Lockwood
Door Limit Switch	Telemecanique XCKP2145P16
Vent Fan	Pacific HVAC WQE Series
Lights	Rexel MIN8
Isolator Switches	Clipsal, Sprecher and Schuh, Socomec, Schneider
Circuit Breakers	Terasaki, Merlin Gerin, Cutler Hammer, Schneider
Lightning Protection	NHP, Heinemann, Critec, Novaris
Transient Barriers	Critec, Novaris
Surge Reduction Filters	Novaris SL36
Surge Diverter	Critec DSD160-1S-275
Signal Isolators	APCS, Weidmuller
Analog Signal Conditioner	Weidmuller 7940005554
Selector Switches	ABB OT Series, Kraus & Naimer CA10AU80R1-600-FT2
Pushbuttons	Sprecher and Schuh D7 Series 22.5mm
Indicator Lights	Sprecher & Schuh D7 Series w. BA9S Style Multichip LEDs
Phase Failure Relay	Schneider RM17TA00 – Zillio Control
Meters	Alstom, NHP, Carlo Gavazzi
Current Transformers	Crompton, IME
Relays	Sprecher and Schuh, Finder, Omron
Timers	Schneider Acti 9 Series
Power Supplies	NHP 2402440 – 24VDC
Power Outlets	Clipsal 2025 & 90B
Contactors	Schneider LC1D TeSys Series
Thermal Overloads	Schneider LDR Series
Thermistor Relays	Schneider LT3SM00M
Motor Protection Relays	Schneider TeSys T
Soft Starters	Zener 6000 Series Smart Start
Variable Speed Drives	Schneider ATV630 Series
Terminals	Telemecanique AB1 Series
Wire Numbers	Grafoplast, Legrand
PLC	Siemens S7
Pump Controller	Yokogawa UM33A
Sump Pump Controller	Multitrode MTR
Level Sensor	Vega Vegawell 52 or 72
Float Switch	Flygt ENM-10
Decontactors	Marechal, Cutler Hammer, Proconect
Current Transducers	Greystone CS475
Voltage Monitoring Relay	APCS PA201
Magnetic Reed Switches	Schmersal BN80-10Z / BP10
Sump pump level control	Multitrode MTR
Generator Inlet Socket	Clipsal WB Series 5 pin
Generator Autochangeover	Schneider UA Controller + ACP 240V AV
Flowmeter & Display	E & H Promag W 4000
Thermostat	Stego KTS1141
Micro-switches	Schmersal, Telemecanique

Appendix B2 - Preferred Suppliers List

Telemetry Equipment – Digital Radio Network

Equipment	Manufacturer	Cat No.	Supplier
Telemetry I/O Module	Schneider	Scadapack 6601	Schneider
Telemetry Processor	Schneider	Scadapack 535E	Schneider
Radio	Schneider	Trio QR Series Licenced Band	Schneider
Antenna [8)]	RF Industries	Yagi YB6-61	RF Industries
Lightning Arrestor	RF Industries	IS-B50LN-C2	RF Industries
Surge Filter	Novaris	PSF105DIN	PowerCom Solutions
Power Supply	Schneider	ABL7RM24025 - 24Vdc 2.5Amp	Schneider
Fuse & Terminals	Weidmuller	Z-Series	Ramelec
DC Converter		APK60-1224	Power House Qld
Battery	Yuasa	NP7.2-12	Battery World

Appendix C - Typical Telemetry I/O

Sewerage Pumpstation – I/O States

The On/Off states of telemetry I/O shall have the following meaning:

I/O Description	ON State	OFF State
AC power fail	Bus supply healthy	Bus supply failed
Intruder switch	Door closed	Door opened
Wet well level high	Well level normal	Well level high
Station system mode	System mode selected	Not in system mode
Station local manual mode	Local manual mode selected	Not in local manual mode
Station local auto mode	Local auto mode selected	Not in local auto mode
Pump run	Pump is operating	Pump is off
Pump healthy	Pump protection is healthy	Pump protection has tripped
Pump available	Pump is available	Pump is not available
Generator running	Generator set is operating	Generator set is off
Generator fault	Generator healthy	Generator faulted
Generator failed to start	Generator normal	Generator failed to start
Generator low battery	Battery voltage normal	Battery voltage is low
Generator low fuel	Fuel level normal	Fuel level is low
Ergon Supply Status	Mains supply healthy	Mains supply failure
ATS Ergon supply	ATS in mains position	ATS not in mains position
ATS Generator supply	ATS in generator position	ATS not in generator position
Generator Circuit Breaker	Generator CB closed	Generator CB open
Load bank healthy	Load bank OK	Load bank faulted

Note: I/O functionality is not to be changed without written approval from WRC's Electrical Systems Engineer.

Appendix C – Typical Telemetry I/O

Sewerage Pumpstation – Two pumps, no generator

Schneider Electric SCADAPack P334

I/O No	Description
DI1	Bus power fail
DI2	Intruder switch (where specified else spare)
DI3	Wet well high level (from ELV float switch)
DI4	Station system mode
DI5	Station local manual mode
DI6	Station local auto mode
DI7	Pump 1 run
DI8	Pump 1 healthy
DI9	Pump 1 available
DI10	Pump 2 run
DI11	Pump 2 healthy
DI12	Pump 2 available
DI13	spare
DI14	C/O switch in Ergon supply position
DI15	C/O switch in Generator supply position
DI16	Ergon supply status
DO1	Pump 1 system start
DO2	Pump 1 remote reset
DO3	Pump 2 system start
DO4	Pump 2 remote reset
DO5	spare
DO6	spare
DO7	spare
DO8	spare
DO9	spare
DO10	spare
AI1	Wet well level
AI2	Discharge pressure (where installed)
AI3	Pump 1 motor current
AI4	Pump 2 motor current

Note: I/O assignments are not to be changed without written approval from WRC's Electrical Systems Engineer.

Appendix C – Typical Telemetry I/O

Sewerage Pumpstation – Two pumps, with generator

Schneider Electric SCADAPack P500

I/O No	Description	I/O No	Description
DI1	Bus power fail	DI17	spare
DI2	Intruder switch (where specified)	DI18	spare
DI3	Wet well high level (from float sw)	DI19	spare
DI4	Station system mode	DI20	spare
DI5	Station local manual mode	DI21	spare
DI6	Station local auto mode	DI22	spare
DI7	Pump 1 run	DI23	spare
DI8	Pump 1 healthy	DI24	spare
DI9	Pump 1 available	DI25	spare
DI10	Pump 2 run	DI26	Load bank healthy
DI11	Pump 2 healthy	DI27	Generator CB closed
DI12	Pump 2 available	DI28	Generator running
DI13	Generator test switch	DI29	Generator fault
DI14	ATS Ergon supply position	DI30	Generator fail to start
DI15	ATS Generator supply position	DI31	Generator low battery
DI16	Ergon supply status	DI32	Generator low fuel
DO1	Pump 1 system start	DO9	spare
DO2	Pump 1 remote reset	DO10	spare
DO3	Pump 2 system start	DO11	spare
DO4	Pump 2 remote reset	DO12	spare
DO5	spare	DO13	spare
DO6	spare	DO14	spare
DO7	spare	DO15	spare
DO8	spare	DO16	spare
AI1	Wet well level	AI7	spare
AI2	Discharge pressure (where installed)	AI8	spare
AI3	Pump 1 motor current	AI9	spare
AI4	Pump 2 motor current	AI10	spare
AI5	spare	AI11	spare
AI6	spare	AI12	Discharge flow (where installed)
AO1	spare	AO3	spare
AO2	spare	AO4	spare

Note: I/O assignments are not to be changed without written approval from WRC's Electrical Systems Engineer.

Appendix C – Typical Telemetry I/O

Sewerage Pumpstation – Three pumps, with VSD and generator

Schneider Electric SCADAPack P500

I/O No	Description	I/O No	Description
DI1	Bus power fail	DI17	Pump 3 run
DI2	Intruder switch (where specified)	DI18	Pump 3 fault
DI3	Wet well high level (from float sw)	DI19	Pump 3 available
DI4	Station system mode	DI20	spare
DI5	Station local manual mode	DI21	spare
DI6	Station local auto mode	DI22	spare
DI7	Pump 1 run	DI23	spare
DI8	Pump 1 fault	DI24	spare
DI9	Pump 1 available	DI25	spare
DI10	Pump 2 run	DI26	Load bank healthy
DI11	Pump 2 fault	DI27	Generator CB closed
DI12	Pump 2 available	DI28	Generator running
DI13	Generator test switch	DI29	Generator fault
DI14	ATS Ergon supply position	DI30	Generator fail to start
DI15	ATS Generator supply position	DI31	Generator low battery
DI16	Ergon supply status	DI32	Generator low fuel
DO1	Pump 1 system start	DO9	spare
DO2	Pump 1 remote reset	DO10	spare
DO3	Pump 2 system start	DO11	spare
DO4	Pump 2 remote reset	DO12	spare
DO5	Pump 3 system start	DO13	spare
DO6	Pump 3 remote reset	DO14	spare
DO7	spare	DO15	spare
DO8	spare	DO16	spare
AI1	Wet well level	AI7	Pump 1 motor speed PV
AI2	Discharge pressure (where installed)	AI8	Pump 2 motor speed PV
AI3	Pump 1 motor current	AI9	Pump 2 motor speed PV
AI4	Pump 2 motor current	AI10	spare
AI5	Pump 3 motor current	AI11	spare
AI6	spare	AI12	Discharge flow (where installed)
AO1	Pump 1 VSD set point	AO3	Pump 3 VSD set point
AO2	Pump 3 VSD set point	AO4	spare

Note: I/O assignments are not to be changed without written approval from WRC's Electrical Systems Engineer.

Appendix D – Abbreviations Listing

The table below contains a listing of the abbreviations used in this document.

AC	Alternating Current
ADWF	Average Dry Weather Flow
AI	Analogue Input
AO	Analogue Output
CB	Circuit Breaker
CFS	Combination Fuse Switch
CT	Current Transformer
DC	Direct Current
DI	Digital Input
DO	Digital Output
DOL	Direct On-Line
ELV	Extra Low Voltage
EMC	Electromagnetic Compatibility
GPO	General Purpose Outlet
HMI	Human Machine Interface
HRC	High Rupture Capacity
I/O	Input / Output
LED	Light Emitting Diode
MOV	Metal Oxide Varistor
MPR	Motor Protection Relay
N/C	Normally Closed Contact
N/O	Normally Open Contact
PCB	Printed Circuit Board
PFR	Phase fail relay
PLC	Programmable Logic Controller
PV	Process Variable
PVC	Polyvinyl Chloride
RCD	Residual Current Device
RPEQ	Registered Professional Engineer (Queensland)
RTU	Remote Terminal Unit
SCADA	Supervisory Control and Data Acquisition
SPD	Surge Protection Device
SRF	Surge Reduction Filter
WRC	Whitsunday Regional Council
TOL	Thermal Overload
VSD	Variable Speed Drive

Appendix E - Revision Record

Number	Date	Clauses Altered
12	30.11.09	New clauses added - 9.29, 19.6, 24, 28.1.0, 28.1.1, App E, subsequent clauses renumbered. Revised clauses – 1, 3, 4, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 20, 21, 22, 23, 26, 28, App A, App B, App C,
12.1	21.01.10	Minor revisions, Appendix D added, subsequent clauses renumbered
13	07.02.13	Major revision, alterations to most clauses and appendices

Appendix F – Summary of Document Submissions and Inspections

The following table is intended to summarise the requirements for submission of documentation through the switchboard project and tie in to inspections and progression of milestone dates.

Milestone	Document/Inspection	Clause	Comment
Tender submission	Technical Data	App G1 & G2	Required to allow assessment of what has been offered with tender. May also require drawings, supplier data and other information
Within * weeks of contract award	Detailed design calculations inc: Drive / load list • Maximum demand; • Load balance; • Cable schedule; • Circuit breaker selection; • Harmonic study (if applic); • Ventilation study (if applic); and • Radio survey (if applicable). Workshop drawings for switchboards RPEQ certified drawings (if applicable)	22, 28.1.2 10 8.5 28.2.1 22 24	Review of workshop drawings will not occur until full design information is provided. Allow 14 days for review
Switchboard Construction	Inspections required at: • Completion of sheetmetal • Completion of wiring		Minimum 7 days' notice required
Workshop Testing	Witnessed testing at place of swbd manufacture		Minimum 7 days' notice required
	As-built drawings for swbd		Required before commencement of site commissioning
Site Construction	Inspections during construction phase		As required
Site Testing	• Electrical safety testing; • Functional testing; • Commissioning of telemetry / control system; and • Thermoscan of swbd (if applicable).	28.1.11 21 17.1 21	Minimum 6 weeks' notice required
Practical Completion	• Electrical safety document; • As-constructed drawings; • Draft O&M manual; and • Supply of spares (if applic).	28.1.11 22 23 26	Practical completion will not be granted until satisfactory documentation has been received
Completion	• Final O&M manuals; and • CAD files for drawings.		
Final Completion	• Thermoscan (if applicable)		2 weeks prior to end of defects period

* Refer to contract document for submission dates.

Appendix G – Job Specification Checklist

1. Check operating conditions. Specify location (Indoor / Outdoor) ___
2. Specify Fault Level ___
3. Specify requirement for Supply Authority metering inc. tariff ___
4. Specify degree of segregation (i.e. Form 1, Form 2 etc.) ___
5. Specify how cubicle is to be mounted (i.e. pole, wall or plinth) ___
6. Specify material for cubicle, mounting pans & escutcheon door ___
7. Specify type of door handles and method of locking ___
8. Specify sunhood (if required) ___
9. Specify paint colours (if applicable) ___
10. Specify size and configuration of mains cables [1] ___
11. Specify lightning and surge protection requirements ___
12. Detail all electrical equipment that is to be connected
    - include current ratings of circuits, kW ratings of motors etc. ___
13. Specify how motors are to be controlled [1] ___
14. Specify requirements for motor starters and protection [1] ___
15. Detail any special control or instrumentation requirements [1] ___
16. Specify if telemetry is required and detail all required I/O signals ___
17. Specify telemetry installation requirements ___
18. Specify requirements for PLC (if applicable) [1] ___
19. Specify any other requirements (e.g. alarms, generator etc.) ___
20. Review preferred suppliers list and make alterations if necessary ___
21. Specify requirements for inspection and testing ___
22. Specify delivery address and time ___
23. Specify if RPEQ certification is required ___

[1] The design of these items may be the contractor's responsibility.
Refer to main project specification.

Appendix H1 - Technical Data Sheets

Switchboard and Equipment

The technical data sheets will detail the proposed switchboard equipment. The tenderer shall complete all sheets and submit with his tender/quotation.

==========

Switchboard Cubicle

Manufacturer _____

Place of Manufacture_____

Dimensions _____

Degree of Protection_____

Fault Rating _____

Material of Construction_____

Make of Cubicle Hardware _____

Main Switch

Make _____

Model_____

Fault Rating _____

Current Rating _____

Method of Mounting _____

Changeover Switch

Make _____

Model _____

Fault Rating_____

Current Rating _____

Lightning Protection

Make _____

Type_____

Rating_____

Busbars

Dimensions _____

Fault Rating _____

Current Rating _____

Type of Insulation _____

Active, Neutral & Earth Links

Make_____

Model _____

Rating_____

Fault Current Limiting Circuit Breakers

Make_____

Model _____

Fault Rating _____

Coordination Category _____

Distribution Circuit Breakers

Make _____

Model _____

Fault Rating _____

Coordination Category _____

Method of Mounting _____

Isolator Switches

Make _____

Model _____

Rating_____

Load Break Type (yes/no) _____

Method of Locking_____

Method of Mounting _____

Selector Switches

Make _____

Model _____

Pushbuttons

Make _____

Model _____

Indicator Lights

Make _____

Model _____

Lamp Type _____

Voltage Rating _____

Phase Failure Relay

Make _____

Model _____

Features _____

Voltmeter

Make _____

Model _____

Size/Scale _____

Ammeter

Make _____

Model _____

Size/Scale _____

Current Transformers

Make _____

Model _____

Rating _____

Current Transducer

Make _____

Model _____

Power Supply _____

Output Signal _____

Voltage Monitoring Relay

Make _____

Model _____

Power Supply _____

Output Signal _____

Hours Run Meter

Make _____

Model _____

Size/Type _____

Control Relays

Make _____

Model _____

Type _____

Timers

Make _____

Model _____

Type _____

Control Transformers

Make _____

Model _____

Primary/Secondary Voltages _____

Rating _____

Power Supplies

Make _____

Model _____

Output Voltage _____

Motor Starters

Type _____

Duty Rating and Class_____

Utilisation Category _____

No of Starts per Hour _____

Contactors

Make_____

Model _____

Duty Class and Rating _____

Utilisation Category _____

Soft Starters

Make _____

Model _____

Current Limiting Mode (yes/no) _____

Soft Stop Function (yes/no)_____

Features _____

_____

_____

_____

Thermal Overload

Make_____

Model _____

Current Range _____

Thermistor Relay

Make _____

Model _____

Seal Failure Relay

Make _____

Model _____

Motor Protection Relay

Make _____

Model _____

Features _____

_____

_____

Wiring

Materials and Grade of Insulation _____

Method of Termination _____

Make and Type of Ferrules _____

Make and Type of Terminals _____

Pump Controller

Make _____

Model _____

Digital Display _____

Signal Isolators

Make _____

Model _____

Rating _____

Transient Barriers

Make _____

Model _____

Rating _____

Decontactor

Make _____

Model _____

Rating _____

Name of Tenderer _____

Signature of Tenderer _____

Date _____

Appendix H2 - Technical Data Sheets

Telemetry Equipment

These technical data sheets will detail the telemetry equipment and associated works. The tenderer shall complete all sheets and submit with his tender / quotation.

==========

Telemetry Cubicle/Compartment

Integral to Swbd or Remote _____

Materials _____

Dimensions _____

Degree of Protection _____

Telemetry Unit

Make _____

Model _____

Type of Firmware _____

IsaGraf Targets _____

Telemetry I/O (List all signals)

DI _____

_____

_____

_____

DO _____

_____

AI _____

_____

AO _____

_____

Power Supply

Make _____

Model_____

Rating_____

DC Converter

Make _____

Model _____

Rating_____

Battery

Make _____

Model _____

Rating_____

Radio

Make _____

Model_____

Antenna

Type _____

Make _____

Model_____

Gain _____

Wind Loading _____

Dimensions _____

Antenna Cable

Make _____

Type _____

Rating_____

Coax Surge Diverter

Make _____

Model _____

Rating_____

Antenna Mast

Type _____

Materials _____

Mounting Height_____

Design Wind Loading _____

Other Details_____

_____

_____

Name of Tenderer _____

Signature of Tenderer_____

Date _____

ITP and PS Checklists

INSPECTION AND TEST PLAN – WATER/SEWAGE PUMP STATION

ITP to be completed by Consulting Engineer

Developer:	**Consultant Engineer:**	**Consultant Engineer Representative:**
Project:	**Contractor:**	**Contractor Site Representative:**
Description:	**Sub-contractor:**	**Witness, Hold & Surveillance points added to ITP**
	Field Tester:	
Location:	**ITP Prepared by:** **Reviewed by:**	**Council Representative**
	Date / / **Date / /**	**Date / /**

No	Construction/Inspection Activity	Inspection Procedure & Acceptance Criteria	Contractor	Consult. Engineer	Council*	Record	Comment
1	Pre-start/Site establish	Pre-Start Meeting Checklist. Site establishment visual check. Checklist completed. (PS1)	I	**H**	**H**	Checklist PS1	
2	Approved materials on Site/delivered	Visual check approved materials. Quantity and condition. Checklist completed (PS2)	I	I	S	Checklist PS2	
3	Excavation	Visual inspection to WRC standards. Checklist completed. (PS3)	I	I	S	Checklist PS3	
4	Foundations	Visual and dimensional check to WRC Standards.	I	W	W	Checklist PS4	
5	Base slab	Visual inspection to WRC Standards.	I	**H**	I	Checklist PS4	
6	Reinforcement and formwork	Visual inspection to WRC Standards.	I	**H**	W	Checklist PS4	
7	Anchor/Thrust Blocks	Visual and dimensional check to WRC Standards.	I	**H**	**H**		
8	Embedment and Backfill	Visual check and compaction to WRC Standards	I	**H**	**H**	Compaction test results	
9	Electrical/Scada	Review certification and visually check installation to WRC standards.	I	W	I	Certification	
10	Lifting Chain	Review certification.	I	I	I	Certification	
11	Surface fittings	Visual and dimension check to WRC Standards. Checklist completed (PS6)	I	I	S	Checklist PS5	
12	Disinfection	Disinfection to WRC Standards	I	**H**	**H**	Test Results	
13	Testing	Pressure test and Compaction test to WRC Standards	I	**H**	**H**	Test Results	
14	Pre-connection	Visual inspection to WRC Standards. Checklist completed (PS6)	**H**	**H**	**H**	Checklist PS6	
	inspection	Isolation procedure as per Job Specific Letter					
15	Commissioning of System	Visual and dimensional check to WRC Standards and, where required, removal of RPZD.	I	**H**	**H**	PS Commi Checklist	

Symbol	Legend	No	Amendment	Date	Reviewed	Validation
I	Inspection					I certify that the works have been constructed in accordance with WRC Standards and the Inspection and Test Plan
H	Mandatory Hold Point					
W	Witness Point					
S	Surveillance					…… Consulting Engineer Date / /

*** Council reserves the right to vary these requirements at any time** **** Council's written approval MUST be obtained prior to varying these requirements**

PUMP STATION CHECKLIST PS1
PRE-START AND SITE ESTABLISHMENT

PROJECT:								CONSULTING ENGINEER:							
Date from: to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:							
		SITE						DATE:	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**			**COMMENT**				**SIGNATURES**
1.1	Plan current and on site														
1.2	Pre construct report inc. photographs														
1.3	Property Entry Agreement														
1.4	Road opening requirements														
	Fees paid														
	Traffic mgt plan implemented														
1.5	Environmental Management Plan on site and implemented														
1.6	WH&S Plan on site and implemented														
1.7	Receiving sewer located														
1.8	Specification on site														
1.9	Footways to finished levels														
1.10	Survey pegs in place							Registered Surveyor							
1.11	Job set out														
1.12	All services located							'Dial Before You Dig', services search and Relevant Authorities							
1.13	All services marked														
1.14	Contractors holding relevant accreditation on site														

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS2

APPROVED MATERIALS ON SITE AND DELIVERED

PROJECT:					CONSULTING ENGINEER:						
Date from: to:		PIPE TYPE:		SIZE:	CLASS:	CONTRACTOR:					
		SITE				DATE:	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**		**COMMENT**		**SIGNATURES**
2.1	Delivery Inspection											
2.2	Types and sizes to current plan											
2.3	Marking tape											
2.4	Bedding material											
2.5	Trench fill											
2.6	Fittings											
2.7	Surface Fittings											
2.8	Pre Cast chambers											

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS3 – PAGE 1 OF 2

EXCAVATION

PROJECT:									CONSULTING ENGINEER:						
Date from: to:		PIPE TYPE:		SIZE:		CLASS:			CONTRACTOR:						
		DAY						DATE:	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**			**COMMENT**				**SIGNATURES**
3.1	Environmental Management Plan on site and implemented														
3.2	Traffic Management Plan on site and implemented														
3.3	Services exposed														
3.4	Clearance from Services														
3.5	Trench width ..... mm														
3.6	Trench depth ..... mm														
3.7	Trench shoring														
3.8	Excavation prior to placement of backfill														
3.9	Embedment														
	Compaction														
	Bedding														
	Surround														
	Overlay														
	Testing														

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS3 – PAGE 2 OF 2
EXCAVATION AND PIPE LAYING

PROJECT:								CONSULTING ENGINEER:							
Date from: to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:							
		DAY						DATE:	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**			**COMMENT**				**SIGNATURES**
3.10	Valves, Hydrants & Surface fittings installed														
	Shroud assembly														
	Valve anchorage														
3.11	Marking tape														
	Correct location														
	Connected to fittings														
3.12	Concrete														
	Trench stops in place														
	Bulkheads in place														
	Thrust blocks in place														
	Embedment & Encasement in place														
3.13	Trench fill														
	Material														
	Compaction														
	Compaction Testing							NATA Certified Lab							

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS4 – PAGE 1 OF 2

CHAMBERS

PROJECT:				CONSULTING ENGINEER:
Date from: to:	PIPE TYPE:	SIZE:	CLASS:	CONTRACTOR:

	CHAMBER						DATE:	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6

ITEM	DESCRIPTION	1	2	3	4	5	6	MINIMUM STANDARD	COMMENT	SIGNATURES
4.1	Finished Surface Levels Supplied									
4.2	Base									
	Placement									
	Channels									
	First shaft section									
4.3	In-situ chamber									
	Formwork – correct sizing									
	Formwork – correct levels									
	Reinforcement									
	Cover									
	Concrete type to Specification									
	Step iron location and spacing									
	Dimension check									
	Cover and frame									
	Conduits							Plan Specification		
4.4	Pre cast chamber									
	Shaft assembled in correct order									
	Step iron location and spacing									
	Sealing									
	Offset cone located correctly									
	Minimum one make up ring									
	Cover and frame									

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS4 – PAGE 2 OF 2

CHAMBERS

PROJECT:								CONSULTING ENGINEER:							
Date from: to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:							
		CHAMBER						DATE:	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**		**COMMENT**					**SIGNATURES**
4.5	Ladders / handrails / step irons														
4.6	Sealing							Manufacturer Specification							
4.7	Drainage														
4.8	Security Grate lid														
4.9	Plastering/rendering														
4.10	Benching														
4.11	Operational access														

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS5
SURFACE FITTINGS

PROJECT:					CONSULTING ENGINEER:						
Date from: to:		PIPE TYPE:		SIZE:	CLASS:	CONTRACTOR:					
		SITE				DATE:	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**		**COMMENT**		**SIGNATURES**
5.1	Surface boxes and surrounds to finished levels											
5.2	Surface box lids hinged in direction of traffic flow											
5.3	Shroud pipes assembled to Standards											
5.4	Fitting bolts protected to Standards											
5.5	Correct depth to Spindle tops											
5.6	Correct depth to Hydrant lugs											
5.7	Spindle retaining disc in place											
5.8	Indicator plates in place											

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS6
PRE-CONNECTION INSPECTION

PROJECT:								CONSULTING ENGINEER:							
Date from: to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:							
		SITE						DATE:	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**			**COMMENT**				**SIGNATURES**
6.1	WAC compiled														
6.2	Compaction and concrete tests														
6.3	Pressure test results														
6.4	Deflection Test Results														
6.5	CCTV Inspection														
6.6	Marking tape in place & tested														
6.7	Surface boxes and surrounds level														
6.8	Indicator plates in place														
6.9	Chambers sized to Standard														
6.10	Chamber ladder or step irons to Standards														
6.11	Chamber drainage adequate & to Standards														
6.12	Benching to Standard														
6.13	Sealing to Standard														
6.14	Scour outlet protected from erosion														
6.15	Site restored satisfactorily														

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

Whitsunday Regional Council Planning Scheme

July 2017
Version 4.0
<Insert new artwork here>

Citation and commencement

This Planning Scheme may be cited as the *Whitsunday Regional Council Planning Scheme 2017.*

A notice was published in the Government Gazette No. 58 on 30 June, 2017 for the Planning Scheme for the Whitsunday Regional Council.

The commencement date for the Planning Scheme was 3 July, 2017.

Amendments to the Planning Scheme are included at Appendix 2.

Community statement

The Whitsunday region is a local government area located in North Queensland, approximately 1,000km north of Brisbane and 600km south of Cairns. In March 2008, Whitsunday Regional Council was formed by the amalgamation of Bowen and Whitsunday Shires. The region is a key pillar in Queensland's economy, rich in tourism, agriculture, mining and construction.

From country to coast, the Whitsunday region supports a diverse range of lifestyles that incorporates the regions key economic sectors and tropical natural environment. Major towns Collinsville, Bowen, Proserpine and Airlie Beach each have their own identity that Council seeks to develop and diversify to build a successful, stronger and more resilient region over the next 20 years. The region is spoilt for opportunity by growing links to the Asian tourist market and development of economic catalysts such as Whitsunday International Airport, Airlie Beach developments and the development of the Abbot Point Growth Gateway Project boosting regional exports. The ongoing management of the regions pristine natural environments, fertile soils and water supplies will maintain strong agricultural production in the region.

Whitsunday Regional Council seeks to accommodate these opportunities through the enhancement of existing infrastructure, developing liveable communities and encouraging innovative practices that improve efficiency and sustainability. The region is anticipated to grow by over 20,000 people up to 2036 with over 9,000 more jobs being created. This growth will be accommodated in a compact urban form to reduce impacts on the regions pristine natural environments and fertile agricultural lands. Population growth will be focused around existing centres, encouraging new modern developments that enhance the local community, build a sense of place and develop vibrant liveable communities that are attractive to permanent residents and tourists alike. Development will supplement the special opportunities afforded to the Whitsunday Region in order to maximise the growth in Tourism, Agriculture, Mining and Construction sectors.

In 2036, the Whitsundays will have a thriving economy in a diverse range of sectors that offer resiliency to the region and capitalise on the areas' privileged location alongside tropical paradise, beautiful hinterlands, fertile soils and resource rich geology. The region will attract new families, cultures and millions of visitors who flock to experience the unique Whitsunday lifestyle. Whilst the region will grow and develop, the Whitsunday lifestyle unique to each township will remain.

Editor's note—The Community statement is extrinsic material to the planning scheme.

Strategic vision

The Whitsundays strategic vision is reflected in the *Whitsunday Regional Council Planning Scheme 2017*, which shows how we will effectively manage growth and land use in the region. This Planning Scheme is the planning framework that focuses upon capitalising upon the regions' opportunities in a sustainable manner using the following guiding principles identified within the strategic framework:

- liveable communities and housing;
- economic growth;
- environment and heritage;
- safety and resilience to hazards; and
- infrastructure;

The *Whitsunday Regional Council Planning Scheme 2017* and its strategic intent will guide growth in the region whilst maintaining a high quality of life for Whitsunday residents.

Editor's note—The Strategic vision is extrinsic material to the planning scheme.

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Part 1 About the Planning Scheme

1.1 Introduction

(1) The Whitsunday Regional Council Planning Scheme 2017 (Planning Scheme) has been prepared in accordance with the *Sustainable Planning Act 2009* (the SP Act) as a framework for managing development in a way that advances the purpose of the SP Act.

(2) The Planning Scheme was amended for alignment with the *Planning Act 2016* (the Act) by the Minister's rules under section 293 of the Act on July 3 2017.

(3) In seeking to achieve this purpose, the Planning Scheme sets out Whitsunday Regional Council's (WRC) intention for the future development in the Planning Scheme area, over the next 20 years to 2036.

(4) The Planning Scheme seeks to advance state and regional policies through more detailed local responses, taking into account the local context.

(5) While the Planning Scheme has been prepared with a 20 year horizon, it will be reviewed periodically in accordance with the Act to ensure that it responds appropriately to the changes in the community at a local, regional and state level.

(6) The Planning Scheme applies to the Planning Scheme area of WRC including all premises, roads, internal waterways and local government tidal areas and interrelates with the surrounding local government areas illustrated in **Schedule 2** (Mapping) Overview map - WRC - 01 (Local government Planning Scheme area and context).

Editor's note—State legislation may state that the Planning Scheme does not apply to certain areas, e.g. strategic port land where there is a land use plan only to the extent of any inconsistency. In accordance with the provisions of section 26 of the *Sustainable Ports Development Act 2015* a port overlay for a master planned area prevails over the Planning Scheme, to the extent of any inconsistency.

1.2 Planning Scheme components

(1) The Planning Scheme comprises the following components:

(a) about the Planning Scheme

(b) State Planning Provisions

(c) the Strategic framework

(d) the Local government infrastructure plan

(e) Tables of assessment

(f) the following zones and where applicable, zone precincts specified in Table 1.2.1 (Zones and zone precincts) below:

Table 1.2.1 Zone and zone precincts

Zone and zone precincts
Residential zones category
(a) Low density residential zone (b) Low-medium density residential zone (c) Tourist accommodation zone
Centre zones category
(a) Major centre zone code (b) District centre zone code (c) Local centre zone code (d) Neighbourhood centre zone code
Industry zones category
(a) Low impact industry zone code (b) Medium impact industry zone code (c) High impact industry zone code (d) Special industry zone code (e) Waterfront industry zone code (f) Industry investigation zone code
Recreation zones category
(a) Recreation and open space zone code
Environmental zones category
(a) Environmental management and conservation zone code
Other zones category
(a) Community facilities zone code (b) Emerging community zone code (c) Mixed use zone code (d) Rural zone code (e) Rural residential zone code

(g) the Local plans specified in Table 1.2.2 (Local plans) below:

Table 1.2.2 Local plans

Local plans
(a) Airlie Beach local plan (b) Bowen local plan (c) Hamilton Island local plan

(h) the Overlays specified in Table 1.2.3 (Overlays) below:

Table 1.2.3 Overlays

Overlays
(a) Acid sulfate soils overlay code (b) Agricultural land overlay code (c) Airport environs overlay code (d) Biodiversity, waterways and wetlands overlay code (e) Building heights overlay code (f) Bushfire hazard overlay code (g) Coastal hazard overlay code (h) Extractive resources overlay code (i) Flood hazard overlay code (j) Heritage overlay code (k) Infrastructure overlay code (l) Landslide hazard overlay code

(i) the Development codes specified in Table 1.2.4 (Development codes) below:

Table 1.2.4 Development codes

Development codes
Relevant prescribed codes as specified in the Schedules of the *Planning Regulation 2017*
(a) Community residence code (b) Forestry for wood production code (c) Reconfiguring a lot (subdividing one into two lots) and associated operational works code
Use codes
(a) Business activities code (b) Caretaker's accommodation code (c) Child care centre code (d) Dual occupancy code (e) Dwelling house code (f) Extractive industry code (g) Home based business code (h) Industry activities code (i) Market code (j) Relocatable home park and tourist park code (k) Renewable energy facilities code (l) Residential care facility and retirement facility code (m) Rural activities code (n) Rural tourism code (o) Sales office code (p) Service station code (q) Short-term accommodation and Multi-unit uses code (r) Telecommunications code
Other development codes
(a) Advertising devices code (b) Construction management code (c) Excavation and filling code (d) Healthy waters code (e) Infrastructure code (f) Landscaping code (g) Reconfiguring a lot code (h) Transport and parking code

(j) Schedules and Appendices

(2) The Planning Scheme policies specified in Table 1.2.5 (Planning Scheme policies) below support the Planning Scheme:

Table 1.2.5 Planning Scheme policies

Planning Scheme policies
(a) Environmental features Planning Scheme policy (b) Heritage Planning Scheme policy (c) Landscaping Planning Scheme policy (d) Natural hazards Planning Scheme policy (e) Third party advice or comment Planning Scheme policy (f) Growth management Planning Scheme policy (g) WRC development manual Planning Scheme policy (h) Waste management policy

1.3 Interpretation

1.3.1 Definitions

(1) A term used in the Planning Scheme has the meaning assigned to that term by one of the following:

(a) the *Planning Act 2016* (the Act); or

(b) the *Planning Regulation 2017* (the Regulation); or

(c) the definitions in **Schedule 1 (Definitions)** of the Planning Scheme; or

(d) the *Acts Interpretation Act 1954*; or

(e) the ordinary meaning where that term is not defined in the Act, the Regulation, **Schedule 1 (Definitions)** of the Planning Scheme or the *Acts Interpretation Act 1954*.

(2) In the event a term has been assigned a meaning in more than one of the instruments listed in subsection 1.3.1(1), the meaning contained in the instrument highest on the list will prevail.

(3) A reference in the Planning Scheme to any act includes any regulation or instrument made under it, and where amended or replaced, if the context permits, means the amended or replaced act.

(4) A reference in the Planning Scheme to a specific resource document or standard means the latest version of the resource document or standard.

(5) A reference to a part, section, table or schedule is a reference to a part, section, table or schedule of the Planning Scheme.

Editor's note—In accordance with Section 5(2)(a) of the *Planning Regulation 2017*, the regulated requirements apply to this Planning Scheme.

1.3.2 Standard drawings, maps, notes, editor's notes and footnotes

(1) Standard drawings contained in codes or schedules are part of the Planning Scheme.

(2) Maps provide information to support the outcomes and are part of the Planning Scheme.

(3) Notes are identified by the title 'Note' and are part of the Planning Scheme.

(4) Editor's notes and footnotes are extrinsic material, as per the *Acts Interpretation Act 1954*, and are identified by the title 'Editor's note' and 'Footnote' and are provided to assist in the interpretation of the Planning Scheme; they do not have the force of law.

Note—This is an example of a note.
Editor's note—This is an example of an editor's note.
Footnote[1]—See example at bottom of page.

1.3.3 Punctuation

(1) A word followed by ';' or ', and' is considered to be 'and'.

(2) A word followed by '; or' means either or both options can apply.

1.3.4 Zones for roads, waterways and reclaimed land

(1) The following applies to a road, closed road, waterway or reclaimed land in the Planning Scheme area:

(a) if adjoined on both sides by land in the same zone—the road, waterway or reclaimed land is in the same zone as the adjoining land;

(b) if adjoined on one side by land in a zone and adjoined on the other side by land in another zone—the road, waterway or reclaimed land is in the same zone as the adjoining land when measured from a point equidistant from the adjoining boundaries;

(c) if the road, waterway or reclaimed land is adjoined on one side only by land in a zone—the entire waterway or reclaimed land is in the same zone as the adjoining land; and

(d) if the road, waterway or reclaimed land is covered by a zone, then that zone applies.

Editor's note—The boundaries of the local government area are described by the maps referred to in the *Local Government Regulation 2012*.

1.4 Categories of development

(1) The categories of development under the Act are:

(a) accepted development;

Editor's note—A development approval is not required for development that is accepted development. Under section 44(6)(a) of the Act, if a categorising instrument does not apply a category of development to a particular development, the development is accepted development. Schedule 7 of the Regulation also prescribes accepted development.

[1] Footnote—this is an example of a footnote.

(b) assessable development
  i. code assessment
  ii. impact assessment

Editor's note—A development approval is required for assessable development. Schedules 9, 10 and 12 of the Regulation also prescribe assessable development.

(c) prohibited development.

Editor's note—A development application may not be made for prohibited development. Schedule 10 of the Regulation prescribes prohibited development.

(2) The Planning Scheme states the category of development for certain types of development and specifies the category of assessment for assessable development in the Planning Scheme area in **Part 5 (Tables of assessment)**.

Editor's note—Section 43 of the Act identifies that a categorising instrument categorises development and specifies categories of assessment and may be a regulation or local categorising instrument. A local categorising instrument includes a Planning Scheme, a Temporary Local Planning Instrument or a variation approval.

1.5 Hierarchy of assessment benchmarks

(1) Where there is an inconsistency between provisions in the Planning Scheme, the following rules apply:

(a) the Strategic framework prevails over all other components to the extent of the inconsistency for impact assessment;

(b) relevant codes as specified in Schedules 6 and 10 of the Regulation prevail over all other components to the extent of the inconsistency;

(c) overlays prevail over all other components (other than the matters mentioned in (a) and (b)) to the extent of the inconsistency;

(d) local plan codes prevail over zone codes, use codes and other development codes to the extent of the inconsistency;

(e) zone codes prevail over use codes and other development codes to the extent of the inconsistency; and

(f) provisions of Part 10 (Other plans) may override any of the above.

1.6 Building work regulated under the Planning Scheme

(1) Section 17(b) of the Regulation identifies the assessment benchmarks for building work that a local planning instrument must not change the effect to the extent the building work is regulated under the building assessment provisions, unless permitted under the *Building Act 1975*.

(2) The building assessment provisions are listed in section 30 of the *Building Act 1975*.

Editor's note—The building assessment provisions are stated in section 30 of the Building Act 1975 and are assessment benchmarks for the carrying out of building assessment work or building work that is accepted development subject to any requirements (see also section 31 of the *Building Act 1975*).

(3) This Planning Scheme, through Part 5, regulates building work in accordance with sections 32 and 33 of the *Building Act 1975*.

Editor's note—The *Building Act 1975* permits Planning Schemes to:

- regulate, for the Building Code of Australia (BCA) or the Queensland Development Code (QDC), matters prescribed under a regulation under the *Building Act 1975* (section 32). These include variations to provisions contained in parts MP1.1, MP 1.2 and MP 1.3 of the QDC such as heights of buildings related to obstruction and overshadowing, siting and design of buildings to provide visual privacy and adequate sight lines, on-site parking and outdoor living spaces. It may also regulate other matters, such as designating land liable to flooding, designating land as bushfire prone areas and transport noise corridors;
- deal with an aspect of, or matter related or incidental to, building work prescribed under a regulation under section 32 of the *Building Act 1975*; and
- specify alternative boundary clearances and site cover provisions for Class 1 and 10 structures under section 33 of the *Building Act 1975*.

Refer to Schedule 9 of the Regulation to determine assessable development, the type of assessment and any referrals applying to the building work.

(4) The building assessment provisions are contained in the following parts of this Planning Scheme.

Table 1.6.1 Building assessment provisions contained in the Planning Scheme

Building assessment matter addressed in the Planning Scheme	Relevant section of the Planning Scheme
Flood hazard	
Identification of part of the Planning Scheme area as a natural hazard management area (flood).	Schedule 2 Flood hazard overlay maps
Identification of the level to which flood levels of habitable rooms of a building must be built.	Section 8.2.9 Flood hazard overlay code
Bushfire hazard	
Designation of part of the Planning Scheme area as a designated bushfire prone area for the BCA and QDC.	Schedule 2 Bushfire hazard overlay maps

Editor's note—A decision in relation to building work that is assessable development under the Planning Scheme should only be issued as a preliminary approval under section 83(b) of the *Building Act 1975*.

Editor's note—In a development application, the applicant may request preliminary approval for building work. The decision on that development application can also be taken to be a referral agency's response under section 56 of the Act, for building work assessable against the *Building Act 1975*. The decision notice must state this.

1.7 Local government administrative matters

(1) For the purpose of the Whitsunday Planning Scheme 2017, pursuant to 276(1)(c) of the Act, the whole of the Planning Scheme area is identified as a party house restriction area.

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Part 2 State Planning Provisions

2.1 State Planning Policy

The Minister has identified that State Planning Policy July 2017 is reflected in the Planning Scheme in the following ways:

State interests in the State Planning Policy are appropriately reflected

Liveable communities and housing

- Liveable communities;
- Housing supply and diversity.

Economic growth

- Agriculture;
- Development and construction;
- Mining and extractive resources;
- Tourism.

Environment and heritage

- Biodiversity;
- Coastal environment;
- Cultural heritage;
- Water quality.

Safety and resilience to hazards

- Emissions and hazardous activities;
- Natural hazards, risk and resilience (Flood, Bushfire, Landslide, Coastal).

Infrastructure

- Energy and water supply;
- Infrastructure Integration;
- Transport infrastructure;
- Strategic airports and aviation facilities;
- Strategic Ports.

State interests in the State Planning Policy not integrated

None

State interests in the State Planning Policies not relevant to Whitsunday Regional Council

None

Editor's note–In accordance with section 8(4)(a) of the Act the State Planning Policy applies to the extent of any inconsistency.

2.2 Regional plan

The Minister has identified that the Planning Scheme, specifically the Strategic framework, appropriately advances the Mackay Isaac Whitsunday Regional Plan 2012, as it applies in the Planning Scheme area.

2.3 Referral agency delegations

Schedule 10 of the Regulation identifies referral agencies for certain aspects of development. The following referral agencies have delegated the following referral agency jurisdictions to Whitsunday Regional Council:

Table 2.3.1 Delegated referral agency jurisdictions

Column 1 **Application involving**	**Column 2** **Referral agency and type**	**Column 3** **Referral jurisdiction**
There are no delegated referral agency jurisdictions for the Planning Scheme		

Editor's note - For the above listed referral agency delegations, the applicant is not required to refer the application to the referral agency listed under Schedule 10 of the Regulation because the local government will undertake this assessment role.

2.4 Regulated requirements

The Minister has identified that the regulated requirements prescribed in the Planning Regulation 2017 dated 1 September 2017 are appropriately reflected in full in the Planning Scheme.

Editor's note – Section 16(3) of the Act states that the contents prescribed by the Regulation apply instead of a local planning instrument, to the extent of any inconsistency.

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Strategic framework map

Part 3 Strategic framework

3.1 Preliminary

(1) The Strategic framework sets the policy direction for the Planning Scheme and forms the basis for ensuring appropriate development occurs in the Planning Scheme area for the life of the Planning Scheme.

(2) Mapping for the Strategic framework is included in Schedule 2 (Mapping).

(3) For the purpose of describing the policy direction for the Planning Scheme, the Strategic framework is structured in the following way:

- (a) the Strategic intent;
- (b) the following five themes that collectively represent the policy intent of the Planning Scheme:
  - (i) Liveable communities and housing;
  - (ii) Economic growth;
  - (iii) Environment and heritage;
  - (iv) Safety and resilience to hazards; and
  - (v) Infrastructure;
- (c) the Strategic outcome proposed for development in the Planning Scheme area for each theme; and
- (d) the Land use strategies for achieving these outcomes.

(4) Although each theme has its own section, the Strategic framework in its entirety represents the policy intent of the Planning Scheme. Zones organise the Planning Scheme area in a way that facilitates the location of preferred or acceptable land uses.

3.2 Strategic intent

(1) In 2036 and beyond, the Whitsundays is a prosperous, liveable and sustainable region where people live, work, play and invest. The region, extending over 23,862 square kilometres, will be built on the integration of the unique attributes and competitive advantages of Airlie Beach, Bowen, Collinsville, Proserpine and their surrounds as shown in Strategic framework map - SFM - 01:05 (Strategic framework maps).

(2) The Region's major townships and communities have a strong and proud social identity, being sustainable and well supported through the provision of a variety of affordable housing and lifestyle options and appropriate community and utility infrastructure. Risks to the community (including life and property) from hazardous activities and natural hazards are appropriately mitigated or avoided, ensuring disaster management response capabilities and capacities are supported.

(3) The major townships of the Region operate as a network of centres, each maintaining relatively strong levels of growth supported by the ongoing strengthening and development of the key economic sectors of agriculture, mining and tourism and associated development and construction activities. The strength of these industry sectors will continue to be supported by maintaining and protecting the resources and values upon which these sectors rely, promoting business innovation and increasing accessibility to robust road, rail, port and aviation facilities.

(4) The promotion and protection of the Region's cultural heritage and unique aquatic, coastal and inland environmental values continues as developmental and environmental pressures increase cumulatively. All matters of ecological, environmental and scenic value (including key urban gateways, views and vistas) are valued and preserved, ensuring the health and resilience of the regions overall biodiversity.

3.2.1 Liveable communities and housing

3.2.1.1 Strategic outcome

(1) The life-enriching (educational, health, cultural and recreational) capacities and resilience of the community and community infrastructure are enhanced or restored for present and future generations in a way which supports the region's settlement pattern and hierarchy of centres.

3.2.1.2 Land use strategies

(1) The settlement pattern of the Region ensures that urban uses are primarily located within the established urban areas of Airlie Beach, Bowen, Collinsville and Proserpine with greater densities focused around higher order Centre zones of each township and major public transport corridors. New residential expansion will occur in Cannon Valley (to the west of Airlie Beach), Mount Bramston and Mount Gordon (to the south of Bowen) and Moongunya Springs (to the north of Collinsville).

(2) Limited Accommodation activities and low order Community and convenience Business activities are located within the settlements of Brisk Bay, Conway Beach, Dingo Beach, Gumlu, Guthalungra, Hideaway Bay, Shutehaven, Merinda, Mt Coolon and Wilson Beach.

(3) The community of each major urban area will be supported by a hierarchy of centres. The highest order, Major centres are provided at Paluma Road/Galbraith Avenue (Cannonvale), Herbert Street (Bowen) and Main Street (Proserpine). Communities of the Region are further serviced by a series of lower order, smaller scale centres. Business activities are only located outside of centres if they cannot be practically

located within nominated centres due to their nature, scale, effects or necessary relationship to other activities or particular features, resources or infrastructure.

(4) Primary and/or secondary schools are co-located with existing facilities in Bowen, Cannonvale, Collinsville, Gumlu, Hamilton Island, Hayman Island and Proserpine, with new facilities in Cannon Valley and Mount Gordon and higher order educational facilities, such as a secondary boarding school and a tertiary educational facility located within the established urban area of Proserpine.

(5) A regionally significant health facility is located in Proserpine with supporting health facilities in Airlie Beach, Bowen, Cannonvale, Collinsville and Hamilton Island.

(6) Urban uses are only located away from identified urban areas if they cannot be practically located within the existing settlement pattern due to their nature, scale, effects or necessary relationship to other activities or particular features, resources or infrastructure.

(7) Rural residential areas will continue to occur on the fringes of urban areas and will generally not expand into adjacent rural areas.

(8) Non-resident workers accommodation is only utilised for the workforce associated with the construction phase of a project. This form of accommodation activity is not to be utilised for workers associated with the operational phase of a project. Accommodation activities for an operational workforce are to be integrated into existing urban areas.

3.2.2 Economic growth

3.2.2.1 Strategic outcome

(1) The economic resilience, wealth creating and employment generating capacities of the Region's key sectors are protected and enhanced for present and future generations.

3.2.2.2 Land use strategies

(1) Agricultural land (including stock routes) and existing Rural activities are protected and diversified with Rural activities being intensified in areas to the west of Collinsville, along the Bowen River, west and south-west of Proserpine and between Gumlu and Bowen. Land based marine aquaculture is promoted within Aquaculture Development Areas and protected from incompatible development. The long-term viability of this agricultural land is enhanced through sustainable land management practices, the use of new technology and the improvement and expansion of supporting infrastructure, such as water storage and irrigation infrastructure.

(2) Rural activities are located outside the existing and proposed urban and environmental areas with only Business and Industry activities that support or supplement the primary Rural activity being located within rural areas. Development in rural areas does not create unacceptable biosecurity risks, such as the spread of pest and weed species, to current or future potential agriculture within our Region.

(3) The integrity and functionality of the mining and extractive resource industry, including within the Abbot Point and Galilee Basin State Development Areas, are maintained and protected to reduce potential conflict with incompatible uses.

(4) Major industrial expansion is appropriately accommodated where the scale, intensity and nature of the Industry activity can be adequately supported. New expansion will predominantly occur within the Abbot Point State Development Area, around the Delta intersection, between Collinsville and the mines to the south, east of Proserpine and within the vicinity of the Whitsunday Coast Airport.

(5) Bulk loading and supporting multi-commodity port facilities are established at the Port of Abbot Point. High impact industry is primarily located adjacent to Port of Abbot Point within the Abbot Point State Development Area, particularly where Industry activities value-add to commodities being exported or imported through the Port of Abbot Point.

(6) Marine industry servicing the fishing and recreational boating fleet of Central and North Queensland is primarily located within the Bowen Boat Harbour with limited facilities of a smaller nature and scale located at Coral Sea Marina and Port of Airlie. A public passenger ferry facility servicing the Whitsunday Islands is primarily located at the Port of Airlie with supplementary facilities at Coral Sea Marina and Shute Harbour. Commercial vessels supporting the tourism industry predominately operate from Coral Sea Marina and Port of Airlie, with opportunity for expansion within Shute Harbour. A freight (barge) facility servicing the Whitsunday Islands is primarily located at Shute Harbour.

(7) Tourism development is located within the established island resorts on Daydream, Hayman, Hook, Long, Dent and South Molle Islands. A new major regional function facility is located within Airlie Beach. New or expanded tourist accommodation and ancillary Business activities are located at Airlie Beach, Bowen Front Beach, Bowen Marina, Funnel Bay, Hamilton Island, Horseshoe Bay, Murray Bay, Rose Bay, Stone Island and Shute Harbour with Nature-based tourism at the northernmost point of Cape Gloucester, Lake Proserpine surrounds and in rural areas where appropriate. Tourism development is only located away from these areas if their nature, scale and effects are minor and they have a necessary relationship to other activities or areas of high natural amenity. Tourism development supports drive tourism routes and focuses tourism support and services in existing towns to provide economic diversity, choice and enhanced visitor experience.

3.2.3 Environment and heritage

3.2.3.1 Strategic outcome

(1) The cultural heritage of the Region, including the Ngaro, Gia, Juru, Jangga, Birriah peoples and early European settlements, is preserved and treasured. Ecological systems, including air, soil, water, flora and fauna habitats are conserved or enhanced through development to ensure sustainability for future generations.

3.2.3.2 Land use strategies

(1) The key ecological values of the Great Barrier Reef, Brigalow Belt, Central Queensland Coast and Einasleigh Uplands and the fauna and flora they support are protected. The protection of key endangered species such as the Black-throated Finch (White-rumped subspecies), Leatherback Turtle, Loggerhead Turtle, Olive Ridley Turtle and Proserpine Rock-wallaby and the habitat on which they rely continues to be enhanced as development and environmental pressures increase.

(2) The core landscape values within the Region are protected and, if practical, enhanced. The core landscape values include the urban gateways to Airlie Beach, Bowen, Collinsville, Proserpine and the Whitsunday Coast Airport, as well as the significant visual backdrops as viewed from major scenic routes of the Bowen Development Road, Bruce Highway, Lascelles Avenue, Shute Harbour Road and the boating routes along the coastline and throughout the Whitsunday Islands.

(3) Development, within Ngaro Country around the Town of Whitsunday and Islands, Gia Country around Proserpine and Gloucester surrounds, Juru Country around Bowen and Gumlu surrounds, Jangga Country around Mount Coolon surrounds and Birriah Country around Collinsville surrounds is designed sympathetically in response to

cultural traditions and protected areas and, where possible, development incorporates local Aboriginal art and storytelling.

(4) Places and objects of Aboriginal cultural significance, such as sites for story telling or other cultural activities, scarred trees, stone extraction sites, ceremonial sites, fireplaces, ochre, axe grinding grooves, rock art, fish traps, graves, old growth vegetation, including culturally significant flora and fauna, shell middens, artefact scatters and traditional foods are appropriately preserved for current and future generations to maintain important connections to Country, lore and ancestry.

(5) All places of cultural significance that reflect historic traditions, culture and early settlement forms are appropriately preserved and promoted to enhance community identity and maintain important connections to the past for the benefit of current and future generations.

3.2.4 Safety and resilience to hazards

3.2.4.1 Strategic outcome

(1) The safety of the community, property and infrastructure is protected and enhanced for present and future generations and the community's resilience to hazards is enhanced.

3.2.4.2 Land use strategies

(1) Risks to people and property are minimised in areas within or adjacent to natural hazard areas, particularly escarpments behind Airlie Beach and Hideaway Bay (landslide); Bells Gully, Campbell Creek, Don River, and Proserpine River (flooding); and Bowen Front Beach, Cannonvale Beach, Conway Beach, Greys Bay, Rose Bay, Queens Beach, Queens Bay and Wilson Beach (coastal erosion and storm surge).

(2) Community health and safety, sensitive land uses and the natural environment are appropriately planned and managed to avoid or mitigate potential adverse impacts of emissions (air, noise and odour) and hazardous activities, whilst ensuring the long-term viability of such activities (Industry and Recreation activities).

3.2.5 Infrastructure

3.2.5.1 Strategic outcome

(1) The service-supporting capacities of infrastructure are coordinated, efficient and orderly. Infrastructure provision and operation are financially sustainable.

3.2.5.2 Land use strategies

(1) An international airport (runway and terminal), remote mine operations centre, air freight and supporting education and Industry activities are located within the vicinity of the Whitsunday Coast Airport, with a secondary regional airport (runway and terminal) at Hamilton Island. Smaller scale and supplementary facilities are provided at Bowen, Collinsville, Flametree and Mount Coolon Airports.

(2) Existing road and rail corridors are protected and operate efficiently. New road connections are established from Cannonvale to Gregory-Cannon Valley Road as a parallel network to Shute Harbour Road, from Collinsville to Proserpine and between Abbot Point State Development Area and the North-West Minerals Province. New railway connections are established from Abbot Point State Development Area to the North Bowen Basin, the Galilee Basin State Development Area and the North-West Minerals Province.

(3) Significant power generation facilities are established and expanded near Collinsville (base-load power station) and the Burdekin Falls Dam (hydro-electric) connecting to the north-south transmission lines which traverse the Region. Large scale Renewable energy facilities are promoted in rural areas around existing and future major electrical infrastructure in the Region, where they do not affect quality agricultural land for present and future productivity. Small scale renewable energy facilities are only located in rural areas where functioning as ancillary power generation to support a primary use. Existing transmission corridors are protected and new corridors are provided from the Collinsville Power Station to the Galilee Basin and the North-West Minerals Province. Gas pipeline(s) are established from gas fields in the Bowen Basin to the Collinsville Power Station and, where practical, new development aligns with existing or future linear corridors.

(4) The water resource catchments of the Bowen River Weir, Burdekin Falls Dam, Peter Faust Dam (Lake Proserpine) and the potential water resource catchments of the Andromache River and Urannah Creek are protected for future use. Water pipelines are established from Lake Dalrymple and the Burdekin River to Bowen and Abbot Point State Development Area, and from the Bowen River catchment to the Galilee Basin State Development Area.

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Part 4 Local government infrastructure plan

4.1 Preliminary

(1) This local government infrastructure plan (LGIP) has been prepared in accordance with the requirements of the *Planning Act 2016*.

(2) The purpose of the local government infrastructure plan is to:

(a) integrate infrastructure planning with the land use planning identified in the Planning Scheme;

(b) provide transparency regarding a local government's intentions for the provision of trunk infrastructure;

(c) enable a local government to estimate the cost of infrastructure provision to assist its long term financial planning;

(d) ensure that trunk infrastructure is planned and provided in an efficient and orderly manner; and

(e) provide a basis for the imposition of conditions about infrastructure on development approvals.

(3) The local government infrastructure plan:

(a) states in Section 4.2 (Planning assumptions) the assumptions about future growth and urban development including the assumptions of demand for each trunk infrastructure network;

(b) identifies in Section 4.3 (Priority infrastructure area) the prioritised area to accommodate urban growth up to 2031;

(c) states in Section 4.4 (Desired standards of service) for each trunk infrastructure network the desired standard of performance;

(d) identifies in Section 4.5 (Plans for trunk infrastructure) the existing and future trunk infrastructure for the following networks:

(i) water supply;

(ii) sewerage;

(iii) stormwater;

(iv) transport; and

(v) parks and land for community facilities.

(e) provides a list of supporting documents that assist in the interpretation of the local government infrastructure plan in the Editor's note – Extrinsic material at the end of Section 4.

4.2 Planning assumptions

(1) The planning assumptions state the assumptions about:

(a) population and employment growth; and

(b) the type, scale, location and timing of development including the demand for each trunk infrastructure network.

(2) The planning assumptions together with the desired standards of service form a basis for the planning of the trunk infrastructure networks and the determination of the priority infrastructure area.

(3) The planning assumptions have been prepared for:

(a) the base date 2016 and the following projection years to accord with future Australian Bureau of Statistics census years:

(i) mid 2021;

(ii) mid 2026;

(iii) mid 2031; and

(iv) Ultimate development.

(b) the LGIP development types in column 2 that include the uses in column 3 of Table 4.2.1; and

(c) the projection areas identified on Local government infrastructure map – PAM – 01:06 (Projection area map) in Schedule 3—Local government infrastructure plan mapping and tables.

Table 4.2.1 Relationship between LGIP development categories, LGIP development types and uses

Column 1 LGIP development category	Column 2 LGIP development type	Column 3 Uses
Residential development	Single dwellings	Caretaker's accommodation Community residence Dwelling house Dwelling unit Home-based business
	Multiple dwellings	Dual occupancy Multiple dwelling Relocatable home park Residential care facility Retirement facility Rooming accommodation Rural workers' accommodation Short-term accommodation
	Other dwellings	Nature-based tourism Non-resident workforce accommodation Resort complex Tourist park
Non-residential development	Retail	Adult store Agricultural supplies store Bulk landscape supplies Car wash

Column 1 LGIP development category	Column 2 LGIP development type	Column 3 Uses
		Food and drink outlet Garden centre Hardware and trade supplies Hotel Outdoor sales Service station Shop Shopping centre
	Commercial	Bar Brothel Club Function facility Health care services Indoor sport and recreation Nightclub entertainment facility Office Sales office Showroom Theatre Tourist attraction Veterinary services
	Community purpose	Cemetery Child care centre Community care centre Community use Crematorium Detention facility Educational establishment Emergency services Funeral parlour Hospital Landing Major sport, recreation and entertainment facility Market Motor sport facility Outdoor sport and recreation Outstation Park Place of worship
	Industry	Air services Extractive industry High impact industry Low impact industry Marine industry Medium impact industry Research and technology industry Rural industry Service industry Special Industry Warehouse
	Other	Animal husbandry Animal keeping Aquaculture Cropping Environment facility Intensive animal industry

Column 1 LGIP development category	Column 2 LGIP development type	Column 3 Uses
		Intensive horticulture Major electrical infrastructure Parking station Permanent plantation Port services Renewable energy facility Roadside stall Substation Telecommunications facility Transport depot Utility installation Wholesale nursery Winery

(4) Details of the methodology used to prepare the planning assumptions are stated in the extrinsic material.

4.2.1 Population and employment growth

(1) A summary of the assumptions about population and employment growth for the Planning Scheme area is stated in Table 4.2.1.1 Population and employment assumptions summary.

Table 4.2.1.1 Population and employment growth assumptions summary

Column 1 Description	Column 2 Assumptions				
	Base date 2016	2021	2026	2031	Ultimate development
Population	36,380	38,380	41,680	44,970	66,460
Employment	16,959	18,246	19,534	20,821	22,109

(2) Detailed assumptions about growth for each projection area and LGIP development type category are identified in the following tables in Schedule 3 Local government infrastructure plan mapping and tables:

(a) for population, Table SC3.1.1—Existing and projected population; and

(b) for employment, Table SC3.1.2—Existing and projected employees.

4.2.2 Development

(1) The developable area is represented by zones relating to urban uses excluding the Environmental zones category identified on Zone maps ZM – 01:29 and not affected by the protected areas identified on Environmental significance overlay maps ES–01:29.

(2) The planned density for future development is stated in Table SC3.1.3 in Schedule 3—Local government infrastructure plan mapping and tables.

(3) A summary of the assumptions about future residential and non-residential development for the Planning Scheme area is stated in Table 4.2.2.1 Residential dwellings and non-residential floor space assumptions summary.

Table 4.2.2.1 Residential dwellings and non-residential floor space assumptions summary

Column 1 Description	Column 2 Assumptions				
	Base date 2016	2021	2026	2031	Ultimate development
Residential dwellings	16,995	17,958	19,556	21,164	30,378
Non-residential floor space (m^2 GFA)	622,199	674,471	726,735	779,003	831,274

(4) Detailed assumptions about future development for each projection area and LGIP development type are identified in the following tables in Schedule 3 Local government infrastructure plan mapping and tables:

(a) for residential development, Table SC3.1.4; and

(b) for non-residential development, Table SC3.1.5.

4.2.3 Infrastructure demand

(1) The demand generation rate for a trunk infrastructure network is stated in Column 4 of Table SC3.1.3 in Schedule 3 Local government infrastructure plan mapping and tables.

(2) A summary of the projected infrastructure demand for each service catchment is stated in:

(a) for the water supply network, Table SC3.1.6;

(b) for the sewerage network, Table SC3.1.7;

(c) for the stormwater network, Table SC3.1.8;

(d) for the transport network Table SC3.1.9; and

(e) for the parks and land for community facilities network, Table SC3.1.10.

4.3 Priority infrastructure area

(1) The priority infrastructure area identifies the area prioritised for the provision of trunk infrastructure to service the existing and assumed future urban development up to 2031.

(2) The priority infrastructure area is identified on Local government infrastructure plan map – PAM – 01:06 (Projection area map).

4.4 Desired standards of service

(1) This section states the key standards of performance for a trunk infrastructure network.

(2) Details of the standard of service for each trunk infrastructure network is identified in the extrinsic material.

4.4.1 Water supply network

(1) Ensure drinking water complies with the National Health and Medical Research Council (NHMRC) Australian Drinking Water Guidelines and Whitsunday Regional Council's Drinking Water Quality Management Plan.

(2) Collect, store, treat and convey potable water from source to consumers in accordance with the *Water Act 2000*.

(3) Minimise non-revenue water loss.

(4) Design the water supply network in accordance with Council's adopted standards identified in the Planning Scheme, including the Equivalent Demands detailed in SC6.8 Whitsunday Regional Council development manual Planning Scheme policy, to provide:

  (a) average day consumption (AD) – 500 l/EP/day;

  (b) Mean Day max Month (MDMM) 1.5 x AD;

  (c) Peak Day (PD) 2.25 x AD;

  (d) Peak Hour (PH) 1/12 x PD;

  (e) minimum and maximum supply pressure of 220 kPa and 800 kPA at each property boundary; and

  (f) fire flow for residential (15 l/s for 2 hours), industrial and commercial (30 l/s for 4 hours) development.

(5) Design water systems to meet the requirements of the *Water Supply (Safety and Reliability) Act 2008* and Water Services Association of Australia (WSAA) guidelines.

4.4.2 Sewerage network

(1) Provide a reliable network that collects, stores, transports, treats and releases sewerage from premises.

(2) Design the sewerage network in accordance with:

(a) Council's adopted standards identified in the Planning Scheme;

(b) WSAA guidelines;

(c) the *Water Act 2000*;

(d) all Environmental Protection Agency (EPA) licence conditions;

(e) key design parameters identified in Table 4.4.2.1; and

(f) Equivalent Demands detailed in SC6.8 Whitsunday Regional Council development manual Planning Scheme policy.

Table 4.4.2.1 Key design parameters for the sewerage network

Column 1 Infrastructure item	Column 2 Design parameters
All (network)	**Average dry weather flow (ADWF)** 270l/EP/day **Peak wet weather flow (PWWF)** 5 x ADWF OR C_1 x ADWF (whichever is greater) $C_1 = 15 \times (EP)^{-0.1587}$ **Peak dry weather flow (PDWF)** C_2 x ADWF $C_2 = 4.7\ (EP)^{-0.105}$
Pump stations	Emergency storage of 4 hours @ ADWF Installed pump capacity ≥ PWWF
Gravity sewers	Air space of at least 75% of pipe diameter at design flow Slope to achieve self-cleansing velocity
Rising mains	Minimum velocity: 0.75 m/s (Preferred 1.5 m/s) Maximum velocity: 2.5 m/s
Sewerage treatment / release	Existing and future DEHP licence conditions

4.4.3 Stormwater network[1]

(1) Collect and convey stormwater flows for both major 100 year flood events and minor low flow year flood events as per the specific land use requirements from existing and future land use in a manner that protects life and does not cause nuisance or inundation of property.

(2) Design the stormwater network to comply with Council's adopted standards identified in the Planning Scheme, which generally accord with the Queensland Urban Drainage Manual or the Transport and Main Roads Road Drainage Design Manual.

(3) Design road crossing structures to provide an appropriate level of flood immunity for a 50 and 10 year flood events for major and minor roads respectively in accordance with Council's adopted standards identified in the Planning Scheme.

(4) Meet water quality objectives for receiving waters at all times.

(5) Design the water quality system to achieve the minimum reductions in mean annual loads from unmitigated development in accordance with State Planning Policy July 2017 and WRC Stormwater Design Guideline.

[1] Drainage elements that form an inherent part of road infrastructure such as culverts and bridge structures can be included with road infrastructure planning.

4.4.4 Transport network

4.4.4.1 Roads

(1) Provide a functional urban hierarchy that supports settlement patterns, commercial and economic activities, and freight movement.

(2) Design the road network to comply with the following:

(a) adopted standards identified in the Planning Scheme;

(b) AUSTROADS guides;

(c) the Department of Transport and Main Roads Interim Guide to Road Planning and Design Practice;

(d) maximum road volume to capacity ratios identified in Table 4.4.4.1.1; and

(e) maximum degree of saturation for intersections identified in Table 4.4.4.1.2.

Table 4.4.4.1.1 Maximum volume to capacity ratios for the road network

Column 1 Infrastructure item	Column 2 Design parameters	
	Residential	Non-residential
Arterial	0.8	0.8
Sub-arterial	0.8	0.8
Major collector	0.8	0.8
Arterial (state-controlled)	0.8	0.8

Table 4.4.4.1.2 Maximum degree of saturation for road intersections

Column 1 Road network item	Column 2 Maximum degree of saturation
Traffic signals	0.9
Roundabout	0.9
Priority controlled	0.8

4.4.4.2 Footpaths and cycle ways

(1) Plan cycle ways and footpaths to provide a safe, attractive and convenient network that links residential areas to major activity nodes and public transport interchanges, thereby encouraging walking and cycling as acceptable travel alternatives.

(2) Design cycle ways (including on-road cycle ways) and footpaths to comply with council's adopted standards identified in the Planning Scheme.

4.4.4.3 Public transport

(1) Ensure development accommodates the integration of public transport services.

(2) Provide bus stops including bus bays, shelters, seating and bus information systems in accordance with adopted standards identified in the Planning Scheme

4.4.5 Public parks and land for community facilities network

(1) Provide an accessible network of parks, open space, and community facilities that meets the needs of residents and visitors in accordance with the rate of provision identified in Table 4.4.5.1 and accessibility standards outlined in Table 4.4.5.2.

(2) Ensure land for public parks and community facilities has:

(a) minimum land size as identified in Table 4.4.5.3;

(b) configuration, slope, and acceptable level of flood immunity in accordance with Table 4.4.5.3 and adopted standards identified in the Planning Scheme; and

(c) embellishments to complement the type and purpose of the public park as identified in Table 4.4.5.4.

Table 4.4.5.1 Rate of land provision for public parks and community facilities

Column 1 Infrastructure item	Column 2 Rate of provision (Ha/1000 people)	
	District	**Regional**
Recreation park	0.5	0.8
Sport park	1.2	1.0

Table 4.4.5.2 Accessibility standards for public parks and land for community facilities

Column 1 Infrastructure item	Column 2 Accessibility standard (km)[1]	
	District	**Regional**
Recreation park	2	25
Sport park	5	10
Notes: 1. 90% of population should be within this distance of a facility		

Table 4.4.5.3 Size of public parks for community facilities

Column 1 Characteristic	Column 2 Recreation park		Column 3 Sports park	
	District	**Regional**	**District**	**Regional**
Average (desired) size (Ha)	4	13	6	18
Shape of land	Preferred square to rectangular aspect ratio no greater than 2:1		Square or rectangle to maximise playing field area	
Minimum desired flood immunity (area)	20% > Q50 10% > Q100	50%> Q50 20% > Q100	Fields and courts > Q50 Built facilities > Q100	
Minimum desired grade	Max grade 1:10 for 80% of park, 1:14 where possible	Average grade 1:20, 1:50 for kick-about areas	Max grade of 1:80 for all playing surfaces	Laser levelling to a maximum gradient of 1:100 for all playing surfaces
Road frontage	30-50% of park perimeter to have direct road frontage, preferably on a collector road		25-50% of the park perimeter to have direct road frontage	

Table 4.4.5.4 Standard facilities/embellishments for public parks

Column 1 Embellishment	Column 2 Recreation park		Column 3 Sports park	
	District	Regional	District	Regional
Playground (activity node)	X	X	X	X
Other activity nodes (half court, rebound wall, skate facility, exercise equipment, etc.)	5 - 7	13	-	-
Fencing – bollards or log and rail to prohibit car access	X	X	X	X
Shade trees clustered near activity area	X	X	X	X
Turf	X	X	X	X
Landscaped garden beds	X	X	X	X
Irrigation	X	X	X	X
Internal pathways and paving	X	X	X	X
Bicycle racks	X	X	X	X
Signage	X	X	X	X
Shade structures	X	X	X[1]	X[1]
Tap / bubbler	X	X	X	X
Bench seating	X	X	X	X
Electric barbeque	X	X	-	-
Picnic shelters	X	X	-	-
Bins	X	X	X	X
Dog off leash area	X	X	-	-
Toilets	X[2]	X	X	X
Internal roads and car parking	-	X	X	X
Public recreation centre	-	-	X	X
Spectator facilities (grandstand)	-	-	X	X
Sports fields	-	-	X	X
Sports courts	-	-	X	X

1. Shade structures should be structures teams can stand under, not shade sails.

2. Only to be provided in certain district recreation parks based on popularity, location and type of use.

4.5 Plans for trunk infrastructure

(1) The plans for trunk infrastructure identify the trunk infrastructure networks intended to service the existing and assumed future urban development at the desired standard of service up to 2031.

4.5.1 Plans for trunk infrastructure maps

(1) The existing and future trunk infrastructure networks are shown on the following maps in Schedule 3—Local government infrastructure plan mapping and tables:

(a) Local government infrastructure plan map – PFTI WN – 01:06 (Water network plans for trunk infrastructure map);

(b) Local government infrastructure plan map – PFTI SN – 01:05 (Sewerage network plans for trunk infrastructure map);

(c) Local government infrastructure plan map – PFTI SWN – 01:05 (Stormwater network plans for trunk infrastructure map);

(d) Local government infrastructure plan map – PFTI TN – 01:05 (Transport network plans for trunk infrastructure map); and

(e) Local government infrastructure plan map – PFTI PCFN – 01:06 (Parks and land for community facilities network plans for trunk infrastructure map).

(2) The State infrastructure forming part of transport trunk infrastructure network has been identified using information provided by the relevant State infrastructure supplier.

4.5.2 Schedules of works

(1) Details of the existing and future trunk infrastructure networks are identified in the electronic Excel schedule of works model which can be viewed here: http://www.whitsunday.qld.gov.au/390/Infrastructure-Planning-and-Charges

(2) The future trunk infrastructure is identified in the following tables in Schedule 3—Local government infrastructure plan mapping and tables:

(a) for the water supply network, Table SC3.2.1;

(b) for the sewerage network, Table SC3.2.2;

(c) for the stormwater network, Table SC3.2.3;

(d) for the transport network, Table SC3.2.4; and

(e) for the parks and land for community facilities network, Table SC3.2.5.

Editor's note – Extrinsic material

The below table identifies the documents that assist in the interpretation of the Local government infrastructure plan and are extrinsic material under the *Statutory Instruments Act 1992.*

List of Extrinsic material

Column 1 Title of document	Column 2 Date	Column 3 Author
Whitsunday Region Economic Analysis: Economic and Population Study	November 2013	Norling Consulting Pty Ltd
Whitsunday Regional Council Urban Growth Study	May 2014	Whitsunday Regional Council
Whitsunday Regional Council Development Manual	28 June 2016	Whitsunday Regional Council
Trunk Infrastructure Definitions	May 2017	Whitsunday Regional Council
Local Government Infrastructure Plan (LGIP) and Schedule of Works Model (SOW) explanatory notes	October 2017	Whitsunday Regional Council
LGIP Checklist	May 2017	Whitsunday Regional Council
Department of Transport and Main Roads Consultation Letter	May 2017	Department of Transport and Main Roads
Whitsunday Regional Council Priority Infrastructure Plan Water and Sewerage Network Model Updates	May 2014	Hyder Consulting
LGIP Interim Review Checklist	October 2020	Whitsunday Regional Council
Whitsunday Regional Council Sewer and Water Network Modelling	March 2020	ARCADIS
W8 Removal Justification Report	October 2020	Whitsunday Regional Council

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Part 5 Tables of assessment

5.1 Preliminary

The tables in this part identify the category of development, and the category of assessment and assessment benchmarks for assessable development in the Planning Scheme area.

5.2 Reading the tables

The tables identify the following:

(1) the category of development:

  (a) prohibited;

  (b) accepted, including accepted with requirements; and

  (c) assessable development, that requires either code or impact assessment;

(2) the category of assessment - code or impact - for assessable development in:

  (a) a zone and, where used, a precinct of a zone;

  (b) a local plan and, where used, a precinct of a local plan; and

  (c) an overlay where used;

(3) the assessment benchmarks for assessable development, including:

  (a) whether a zone code or specific provisions in the zone code apply (shown in the 'assessment benchmarks' column);

  (b) if there is a local plan, whether a local plan code or specific provisions in the local plan code apply (shown in the 'assessment benchmarks' column);

  (c) if there is an overlay;

    (i) whether an overlay code applies (shown in the tables in Section 5.10) ;or

    (ii) whether the assessment benchmarks as shown on the overlay map (noted in the 'assessment benchmarks' column) applies;

  (d) any other applicable code(s) (shown in the 'assessment benchmarks' column);

(4) any variation to the category of assessment (shown as an 'if' in the 'category of assessment' column) that applies to the development.

Note—Development will only be taken to be prohibited development under the Planning Scheme if it is identified as prohibited development in Schedule 10 of the Regulation.

Editors note—Examples of matters that can vary the category of assessment are gross floor area, height, numbers of people or precinct provisions.

5.3 Categories of development and assessment

5.3.1 Process for determining the category of development and the category of assessment for assessable development

The process for determining a category of development and category of assessment is:

(1) for a material change of use, establish the use by reference to the use definitions in Schedule 1;

(2) for all development, identify the following:

(a) the zone or zone precinct that applies to the premises, by reference to the zone map in Schedule 2;

(b) if a local plan or local plan precinct applies to the premises, by reference to the local plan map in Schedule 2 (Mapping); and

(c) if an overlay applies to the premises, by reference to the overlay map in Schedule 2 (Mapping);

(3) determine if the development is accepted development under Schedule 6 of the Regulation;

Editors note—Schedule 6 of the Regulation prescribes development that a Planning Scheme can not state is assessable development where the matters identified in the schedule are met.

(4) determine if the development is assessable development under Schedule 10 of the Regulation by reference to section 5.7 Regulated categories of development and assessment—building work and categories of assessment prescribed by the Regulation.

(5) if the development is not listed in the tables in section 5.4 Regulated categories of development and categories of assessment prescribed under Schedule 6 of the Regulation, determine the initial category of assessment by reference to the tables in:

- section 5.5 Categories of development and assessment—Material change of use
- section 5.6 Categories of development and assessment—Reconfiguring a lot
- section 5.7 Categories of development and assessment—Building work
- section 5.8 Categories of development and assessment—Operational work

(6) a precinct of a zone may change the categories of development or assessment and this will be shown in the 'category of assessment' column of the tables in sections 5.5, 5.6, 5.7 and 5.8;

(7) if a local plan applies refer to the table(s) in section 5.9 Categories of development and assessment—Local plans, to determine if the local plan changes the category of development or assessment for the zone;

(8) if a precinct of a local plan changes the category of development or assessment this is to be shown in the 'category of development and assessment' column of the table(s) in section 5.9;

(9) if an overlay applies, refer to section 5.10 Category of development and assessment—Overlays, to determine if the overlay further changes the category of development or assessment.

5.3.2 Determining the category of development and categories of assessment

(1) A material change of use is assessable development requiring impact assessment:

(a) unless the Tables of assessment state otherwise;

(b) if a use is not listed or defined; and

(c) unless otherwise prescribed in the Act or the Regulation.

(2) Reconfiguring a lot is assessable development requiring code assessment unless the Tables of assessment state otherwise or unless otherwise prescribed in the Act or the Regulation.

(3) Building work and operational work are accepted development, unless the Tables of assessment state otherwise or unless otherwise prescribed in the Act or the Regulation.

(4) Where an aspect of development is proposed on a premises included in more than one zone, local plan or overlay, the category of development or assessment only relates to the part of the premises affected by that zone, local plan or overlays.

(5) Where development is proposed on a premises partly affected by an overlay, the category of development or assessment for the overlay only relates to the part of the premises affected by the overlay.

(6) For the purposes of Schedule 6, Part 2 Material change of use section (2)(2)(d)(i) or (ii) of the Regulation, an overlay does not apply to the premises if the development meets the acceptable outcomes that form the requirements for accepted development in the relevant overlay code.

(7) If development is identified as having a different category of development or assessment under a zone than under a local plan or an overlay, the highest category of development or assessment applies as follows:

(a) accepted development subject to requirements prevails over accepted development;

(b) code assessment prevails over accepted development where subject to requirements and accepted development; and

(c) impact assessment prevails over code assessment, accepted development where subject to requirements and accepted development.

(8) Despite subsections 5.3.2(4) and (7) above, a category of assessment in a local plan overrides a category of assessment in a zone and a category of assessment in an overlay overrides a category of assessment in a zone or local plan.

(9) Provisions of Part 10 (Other plans) may override any of the above.

(10) The category of development prescribed under Schedule 6 of the Regulation overrides all other categories of development or assessment for that development under the Planning Scheme to the extent of any inconsistency.

Editor's note—Schedule 7 of the Regulation also identifies development that the State categorises as accepted development. Some development in the schedule may still be made assessable under the Planning Scheme.

(11) Despite all of the above, if development is listed as prohibited development under Schedule 10 of the Regulation, a development application cannot be made.

Note—Development is to be taken to be prohibited development under the Planning Scheme only if it is identified in Schedule 10 of the Regulation.

5.3.3 Determining the requirements for accepted development and assessment benchmarks and other matters for assessable development

(1) Accepted development does not require a development approval and is not subject to assessment benchmarks. However, certain requirements may apply to some types of development for it to be accepted development. Where nominated in the Tables of assessment, accepted development must comply with the requirements identified as acceptable outcomes in the relevant parts of the applicable code(s) as identified in the relevant column.

(2) Accepted development that does not comply with one or more of the nominated acceptable outcomes in the relevant parts of the applicable code(s) becomes code assessable development, unless otherwise specified.

(3) The following rules apply in determining assessment benchmarks for each category of development and assessment.

(4) Code assessable development:

(a) is to be assessed against all the assessment benchmarks identified in the assessment benchmarks column;

(b) that occurs as a result of development becoming code assessable pursuant to subsection 5.3.3(2), must:

(i) be assessed against the assessment benchmarks for the development application, limited to the subject matter of the required acceptable outcomes that were not complied with or were not capable of being complied with under subsection 5.3.3(2); and

(ii) comply with all required acceptable outcomes identified in subsection 5.3.3(1), other than those mentioned in subsection 5.3.3(2);

(c) that complies with:

(i) the purpose and overall outcomes of the code complies with the code; and

(ii) the performance or acceptable outcomes complies with the purpose and overall outcomes of the code;

(d) is to be assessed against any assessment benchmarks for the development identified in section 26 of the Regulation.

Editors Note—Section 27 of the Regulation identifies the matters code assessment must have regard to.

(5) Impact assessable development:

(a) is to be assessed against all identified assessment benchmarks in the assessment benchmarks column (where relevant);

(b) assessment is to have regard to the whole of the Planning Scheme, to the extent relevant; and

(c) is to be assessed against any assessment benchmarks for the development identified in section 30 of the Regulation.

Note—The first row of each table of assessment is to be checked to confirm if there are assessment benchmarks that commonly apply to general scenarios in the zone, local plan or overlay.

Editor's note—Section 31 of the Regulation identifies the matters that impact assessment must have regard to.

5.4 Regulated categories of development and categories of assessment prescribed by the Regulation

For the development specified in the 'use', 'zone' or 'development' columns, the categories of development and assessment are prescribed.

Table 5.4.1 Development under Schedules 6 of the Regulation: Material change of use

Material change of use		
Use	**Categories of assessment**	**Assessment benchmarks**
Community residence	Accepted subject to requirements Editors note—Refer to the material change of use tables for category of assessment for community residence that do not comply with the requirements for accepted development.	Editors note—requirements for community residence development that may not be made assessable under a Planning Scheme are set out in Schedule 6, Part 2 section 6 of the Regulation.

Table 5.4.2 Regulated categories of development and categories of assessment: Reconfiguring a lot

Reconfiguring a lot		
Zone	**Category of assessment**	**Assessment benchmarks**
Residential zone category or Industry zone category (other than a Rural residential zone)	Code assessment for subdivision of one lot into two lots (and associated operational work) if code assessment is required under Schedule 10, Part 12 of the Regulation	Reconfiguring a lot (subdividing one lot into two lots) and associated operational work code Editors note—Assessment benchmarks for reconfiguring a lot are set out in Schedule 12 of the Regulation.

Table 5.4.3 Regulated categories of development and categories of assessment: Building work

Table not used.

Table 5.4.4 Regulated categories of development and categories of assessment: Operational work

Operational work		
Zone	**Category of assessment**	**Assessment benchmarks**
Residential zone category or Industry zone category	Code assessment for operational work associated with reconfiguring a lot requiring code assessment under Schedule 10, Part 12 Division 2 of the Regulation	Editors note—Assessment benchmarks for reconfiguring a lot and associated operational works are set out in Schedule 12 of the Regulation.

Table 5.4.5 Regulated development: Overlays

Table not used.

5.5 Categories of development and assessment – Material change of use

The following tables identify the categories of development and assessment for development in a zone for making a material change of use.

Table 5.5.1 Community facilities zone

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Community facilities zone code Infrastructure code
Community residence	Code assessment if : (a) for the reuse of an existing building used for a residential purpose; and (b) involving no building work; or (c) only minor building work.	Dwelling house code Community facilities zone codeInfrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Residential care facility	Code assessment	Residential care facility and retirement facility code Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Retirement facility	Code assessment	Residential care facility and retirement facility code Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Healthy waters code Market code Community facilities zone code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Club	Code assessment	Business activities code Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Cemetery	Accepted development if undertaken by or on behalf of Council	Community facilities zone code Transport and parking code
	Otherwise code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Child care centre	Code assessment	Child care centre zone Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Crematorium	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Educational establishment	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Funeral parlour	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Health care services	Code assessment	Business activities code Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hospital	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Place of worship	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Code assessment	Business activities code Community facilities zone code Healthy waters code Landscaping code Transport and parking code
Outdoor sport and recreation	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Air services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Detention facility	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Parking station	Code assessment	Community facilities zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Substation	Code assessment	Community facilities zone code Healthy waters code Landscaping code Transport and parking code

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Telecommunications facility	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Telecommunications facility code
	Otherwise code assessment	Telecommunications facility code Community facilities zone code Healthy waters code Infrastructure code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1(Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.2 District centre zone

District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code District centre zone code Infrastructure code
Dual occupancy	Code assessment	Dual occupancy code District centre zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code District centre zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code District centre zone code Infrastructure code
Multiple dwelling	Code assessment	Short-term accommodation and multi-unit uses code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Residential care facility and retirement facility code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	Short-term accommodation and multi-unit uses code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Short-term accommodation	Code assessment	Short-term accommodation and multi-unit uses code District centre zone code Healthy waters code Transport and parking code Landscaping code

District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Agricultural supplies store	Code assessment if complying with the acceptable outcome AO4.1 of the Business activites code.	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Garden centre	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Market code District centre code Healthy waters code Transport and parking code
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code

District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code District centre zone code Healthy waters code Infrastructure code
Service station	Code assessment	Service station code District centre code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shopping centre	Code assessment if: (a) having a maximum GLFA of 5,000m2; and (b) not exceeding a maximum building height of 12m above ground level.	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Veterinary services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme

District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Entertainment activities		
Bar	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Club	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Function facility	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hotel	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Theatre	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	Code assessment for a micro-brewery or coffee roasting, only where ancillary to a Food and drink outlet.	Industry activities code District centre zone code Infrastructure code Landscaping code Transport and parking code Healthy waters code
	Otherwise impact assessment.	The Planning Scheme
Service industry	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code District centre zone code Healthy waters code Infrastructure code

District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Child care centre	Code assessment	Child care centre zone District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Health care services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Code assessment	Business activities code District centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		

District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.3 Emerging community zone

Emerging community		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Emerging community zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Emerging community zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Emerging community zone code Healthy waters code Infrastructure code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme

Emerging community		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.4 Environmental management and conservation zone

Environmental management and conservation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
All Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
All Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
All Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development If: (a) located on Council owned or controlled land; and (b) undertaken by or on behalf of the Council.	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.5 High impact industry zone

High impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code High impact industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	Code assessment if: (a) having a gross floor area not exceeding 150m2; and (b) not involving a drive-through facility.	Business activities code Healthy waters code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Office	Code assessment if ancillary to an Industry activity on the premises.	Business activities code High impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Service station	Code assessment	Service station code Healthy waters code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
High impact industry	Code assessment	Industry activities code Healthy waters code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
Medium impact industry	Accepted development if complying with the acceptable outcomes of the applicable code(s) and on a premises less than 2,500m²	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Healthy waters code High impact industry zone code Infrastructure code

High impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Crematorium	Code assessment	Healthy waters code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Air services	Code assessment if: (a) the premises is used for the housing, serving, refuelling, maintenance and repair of aircraft; or (b) associated training and education facilities; or (c) aviation facilities.	Healthy waters code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Major electricity infrastructure	Code assessment	Healthy waters code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
Substation	Code assessment	Healthy waters code High impact industry zone code Landscaping code Transport and parking code
Telecommunications facility	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Telecommunications facility code
	Otherwise code assessment	Healthy waters code Telecommunications facility code High impact industry zone code Infrastructure code
Utility installation	Accepted development if undertaken by or on behalf of the Council	

High impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.6 Industry investigation zone

Industry investigation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
All Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Healthy waters code Industry investigation zone code Infrastructure code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.7 Local centre zone

Local centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Local centre zone code Infrastructure code
Dual occupancy	Code assessment	Dual occupancy code Local centre zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Local centre zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Local centre zone code Infrastructure code
Multiple dwelling	Code assessment	Short-term accommodation and multi-unit uses code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Residential care facility and retirement facility code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	Short-term accommodation and multi-unit uses code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Short-term accommodation	Code assessment	Short-term accommodation and multi-unit uses code Local centre zone code Healthy waters code Infrastructure code Landscaping code

Local centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Agricultural supplies store	Code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Garden centre	Code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Healthy waters code Market code Local centre zone code Transport and parking code
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code

Local centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Local centre zone code Healthy waters code Infrastructure code
Service station	Code assessment	Service station code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shopping centre	Code assessment if having a maximum GLFA of 1,500m2	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Veterinary services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme

Local centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Service industry	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Child care centre	Code assessment	Child care centre zone Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Health care services	Accepted development if involving no building work or only minor building work	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Local centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Code assessment	Business activities code Local centre zone code Healthy waters code

Local centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.8 Low density residential zone

Low density residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment if complying with the acceptable outcome AO1.2 of the Dwelling house code	Dwelling house code Low density residential zone code
	Otherwise impact assessment	The Planning Scheme
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Low density residential zone code Infrastructure code
Residential care facility	Code assessment	Residential care facility and retirement facility code Low density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Retirement facility	Code assessment	Residential care facility and retirement facility code Low density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Low density residential zone code Healthy waters code Infrastructure code
Shop	Code assessment if for a corner store	Business activities code Low density residential zone code Healthy waters code Infrastructure code Landscaping code

Low density residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Transport and parking code
	Otherwise impact assessment	The Planning Scheme
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Child care centre	Code assessment	Child care centre code Low density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Low density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above levels of assessment apply unless otherwise prescribed within the Act or the Regulation.

Table 5.5.9 Low impact industry zone

Low impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Low impact industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Agricultural supply store	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Bulk landscape supplies	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Car wash	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Food and drink outlet	Code assessment if: (a) having a GFA not exceeding 150m2; and (b) not involving a drive-through facility.	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Low impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise impact assessment	The Planning Scheme
Garden centre	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Office	Code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Outdoor sales	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Low impact industry zone code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Service station	Code assessment	Service station code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Showroom	Code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Low impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Veterinary services	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	Accepted development if complying with the acceptable outcomes of the applicable code(s) and on a premise less than 2,500m².	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Medium impact industry	Code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Research and technology	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Service industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code

Low impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Warehouse	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Funeral Parlour	Code assessment	Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Code assessment	Business activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
Rural industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code Transport and parking code

Low impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise code assessment	Rural activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Aquaculture	Code assessment	Rural activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Rural activities	Impact assessment	The Planning Scheme
Other activities		
Substation	Code assessment	Low impact industry zone code Infrastructure code Landscaping code Healthy waters code Transport and parking code
Telecommunications facility	Code assessment if complying with AO1.1 of the Telecommunications facilities code	Telecommunications facility code Low impact industry zone code Healthy waters code Infrastructure code
	Otherwise impact assessment	The Planning Scheme
Transport depot	Code assessment	Industry activities code Low impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.10 Low-medium density residential zone

Low-medium density residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Dual occupancy	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dual occupancy code
	Otherwise code assessment if complying with the acceptable outcome AO3.1 of the Dual occupancy code	Dual occupancy code Low-medium density residential zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment if complying with the acceptable outcome AO1.2 of the Dwelling house code	Dwelling house code Low-medium density residential zone code
	Otherwise impact assessment	The Planning Scheme
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Low-medium density residential zone code Infrastructure code
Multiple dwelling	Code assessment	Short-term accommodation and multi-unit uses code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Relocatable home park	Code assessment	Relocatable home park and tourist park code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Residential care facility and retirement facility code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Low-medium density residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Retirement facility	Code assessment	Residential care facility and retirement facility code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	Short-term accommodation and multi-unit uses code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Short-term accommodation	Code assessment	Short-term accommodation and multi-unit uses code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Tourist park	Code assessment	Relocatable home park and tourist park code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Low-medium density residential zone code Healthy waters code Infrastructure code
Shop	Code assessment if for a corner store	Business activities code Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
All other Business activities	Impact assessment	The Planning Scheme

Low-medium density residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Child care centre	Code assessment	Child care centre zone Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Low-medium density residential zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.11 Major centre zone

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Major centre zone code Infrastructure code
Dual occupancy	Code assessment	Dual occupancy code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Major centre zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Major centre zone code Infrastructure code
Multiple dwelling	Code assessment	Short-term accommodation and multi-unit uses code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Residential care facility and retirement facility code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	Short-term accommodation and multi-unit uses code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Short-term accommodation	Code assessment	Short-term accommodation and multi-unit uses code Major centre zone code Healthy waters code Infrastructure code

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Agricultural supplies store	Code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Garden centre	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise impact assessable	The Planning Scheme
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Major centre zone code Healthy waters code Infrastructure code
Service station	Code assessment	Service station code Major centre code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shopping centre	Code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Veterinary services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Bar	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Club	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Function facility	Code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hotel	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Nightclub entertainment facility	Code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Theatre	Code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Tourist attraction	Impact assessment	The Planning Scheme
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	Code assessment for a micro-brewery or coffee roasting, only where ancillary to a Food and drink outlet.	Industry activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code Healthy waters code
	Otherwise impact assessment.	The Planning Scheme
Service industry	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Child care centre	Code assessment	Child care centre zone Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Community care centre	Code assessment	Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Educational establishment	Code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Health care services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hospital	Code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Code assessment	Business activities code Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		

Major centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Parking station	Accepted development if undertaken by or on behalf of the Council	
	Otherwise code assessment	Major centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.12 Medium impact industry zone

Medium impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Medium impact industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Agricultural supply store	Accepted development if: (a) if involving no building work or only minor building work; and (b) complying with the acceptable outcomes of the applicable code(s).	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Bulk landscape supplies	Code assessment	Industry activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Car wash	Code assessment	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Food and drink outlet	Code assessment if: (a) having a gross floor area not exceeding 150m2; and (b) not involving a drive-through facility.	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme

Medium impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Garden centre	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment.	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Office	Code assessment if ancillary to an Industry activity on the premises	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Outdoor sales	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business use code Transport and parking code
	Otherwise code assessment	Business use code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Service station	Code assessment	Service station code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Medium impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Showroom	Code assessment	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Veterinary services	Code assessment	Business activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Medium impact industry	Accepted development if complying with the acceptable outcomes of the applicable code(s) and on a premises less than 2,500m².	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Research and technology	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Healthy waters code

Medium impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Infrastructure code Landscaping code Transport and parking code
Service industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Warehouse	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Crematorium	Code assessment	Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Funeral Parlour	Code assessment	Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		

Medium impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Rural industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code Transport and parking code
	Otherwise code assessment	Rural activities code Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Rural activities	Impact assessment	The Planning Scheme
Other activities		
Air services	Code assessable if the premises is used for: (a) the housing, serving, refuelling, maintenance and repair of aircraft; or (b) associated training and education facilities; or (c) aviation facilities.	Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Major electricity infrastructure	Code assessment	Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Substation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Medium impact industry zone code Transport and parking code
	Otherwise code assessment	Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Telecommunications facility	Code assessment if complying with AO1.1 of the Telecommunications facilities code.	Telecommunications facility code Medium impact industry zone code Healthy waters code Infrastructure code
	Otherwise impact assessment	The Planning Scheme
Transport depot	Code assessment	Industry activities code Medium impact industry zone code Healthy waters code

Medium impact industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Infrastructure code Landscaping code Transport and parking code
Utility installation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Medium impact industry zone code Transport and parking code
	Otherwise code assessment	Medium impact industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.13 Mixed use zone

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Mixed use zone code Infrastructure code
Dual occupancy	Code assessment if complying with the acceptable outcome AO3.1 of the Dual occupancy code	Dual occupancy code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment if complying with the acceptable outcome AO1.2 of the Dwelling house code	Dwelling house code Mixed use zone code
	Otherwise impact assessment	The Planning Scheme
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Mixed use zone Infrastructure code
Multiple dwelling	Code assessment	Short-term accommodation and multi-unit uses code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Residential care facility and retirement facility code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	Short-term accommodation and multi-unit uses code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Short-term accommodation	Code assessment	Short-term accommodation and multi-unit uses code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Market code Mixed use zone code Healthy waters code Transport and parking code
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Mixed use zone code Healthy waters code Infrastructure code

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Bar	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Club	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Function facility	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Hotel	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Nightclub entertainment facility	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Theatre	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Tourist attraction	Impact assessment	The Planning Scheme
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	Code assessment for a micro-brewery or coffee roasting, only where ancillary to a Food and drink outlet.	Industry activities code Mixed use zone code Infrastructure code Landscaping code Transport and parking code Healthy waters code
	Otherwise impact assessment.	The Planning Scheme
All Industry activities	Impact assessment	The Planning Scheme
Community activities		

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Health care services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Code assessment	Business activities code Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Parking station	Code assessment	Mixed use zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note— he above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.14 Neighbourhood centre zone

Neighbourhood centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Neighbourhood centre zone code Infrastructure code
Dual occupancy	Code assessment	Dual occupancy code Neighbourhood centre zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Neighbourhood centre zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Neighbourhood centre zone code Infrastructure code
Multiple dwelling	Code assessment	Multi-unit uses code Neighbourhood centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Neighbourhood centre zone code Healthy waters code Infrastructure code

Neighbourhood centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Landscaping code Transport and parking code
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Neighbourhood centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Neighbourhood centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Service industry	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Neighbourhood centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All Industry activities	Impact assessment	The Planning Scheme
Community activities		

Neighbourhood centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Child care centre	Code assessment	Child care centre zone Neighbourhood centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Neighbourhood centre zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.15 Recreation and open space zone

Recreation and open space		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Recreation and open space zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Market code Recreation and open space zone code Healthy waters code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	Code assessment if associated with a Recreation activity conducted on the same site	Business activities code Recreation and open space zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Function facility	Code assessment if associated with a club conducted on the same site	Business activities code Recreation and open space zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	Accepted development if undertaken by or on behalf of the Council	

Recreation and open space		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	Accepted development if: (a) conducted by or on behalf of the council and does not include licensed premises; or (b) involving no building work; or (c) only minor building work.	
	Otherwise code assessment.	Business activities code Recreation and open space zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Outdoor sport and recreation	Accepted development if: (a) conducted by or on behalf of the council and does not include licensed premises; or (b) involving no building work; or (c) only minor building work.	
	Otherwise code assessment	Recreation and open space zone code Healthy waters code Infrastructure code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.16 Rural zone

Rural		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's Accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Rural zone code Infrastructure code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Rural zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Rural zone code Infrastructure code
Nature-based tourism	Code assessment	Rural tourism code Rural zone code Business activities code Healthy waters code Landscaping code Transport and parking code
Rural workers accommodation	Code assessment	Short-term accommodation and multi-unit uses code Rural zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Short-term accommodation	Code assessment if for Short-term accommodation (Dwelling)	Dwelling house code Short-term accommodation and multi-unit uses code Rural zone code Healthy waters code Transport and parking code
	Otherwise Impact assessment	The Planning Scheme
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Bulk landscape supplies	Code assessment	Industry activities code Rural zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Rural		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Food and drink outlet	Accepted development if: (a) ancillary to a Rural activity, Environment facility or Nature-based tourism; and (b) complying with the acceptable outcomes of the applicable code(s).	Rural tourism code Transport and parking code
	Otherwise code assessment	Rural tourism code Rural zone code Business activities code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) ancillary to a Rural activity, Environment facility or Nature-based tourism; and (b) complying with the acceptable outcomes of the applicable code(s).	Rural tourism code Transport and parking code
	Otherwise code assessment	Rural tourism code Rural zone code Business activities code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Veterinary services	Code assessment	Business activities code Rural zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	Code assessment for a micro-brewery or coffee roasting, only where ancillary to a Food and drink outlet.	Industry activities code Rural zone code Rural tourism code Infrastructure code Landscaping code Transport and parking code Healthy waters code
	Otherwise impact assessment.	The Planning Scheme
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		

Rural		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
Environment Facility	Code assessment	Rural tourism code Rural zone code Business activities code Infrastructure code Landscaping code Transport and parking code
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
Animal husbandry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code
	Otherwise code assessment	Rural activities code Rural zone code
Animal keeping	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural uses code
	Otherwise code assessment	Healthy waters code Rural activities code Rural zone code
Aquaculture	Code assessment	Healthy waters code Rural activities code Rural zone code
Cropping	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code Forestry for wood production code (where applicable)
	Otherwise code assessment	Healthy waters code Rural activities code Forestry for wood production code (where applicable) Rural zone code
Intensive animal industry	Code assessment if involving: (a) 1,000 or less birds of poultry; or (b) 400 or less standard pig units; or (c) 150 or less standard cattle units; or (d) 1,000 or less standard sheep units.	Healthy waters code Rural activities code Rural zone code

Rural		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise impact assessment	The Planning Scheme
Intensive horticulture	Code assessment	Healthy waters code Rural activities code Rural zone code
Roadside stall	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural uses code
	Otherwise code assessment	Healthy waters code Rural activities code Rural zone code
Rural industry	Code assessment if no part of the use area is within: (a) 250m of premises in the Rural residential zone; or (b) 500m of premises in a residential zone.	Healthy waters code Rural activities code Rural zone code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Wholesale nursery	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code Transport and parking code
	Otherwise code assessment	Healthy waters code Rural activities code Rural zone code Transport and parking code
All other Rural activities	Impact assessment	The Planning Scheme
Other activities		
Landing	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Renewable energy facility	Code assessment if for a Solar panel farm, and: (a) development footprint is less than 4ha; or (b) within 20km of a Collinsville substation, and development footprint is less than 40ha.	Renewable energy facilities code Rural zone code Infrastructure code Landscaping code Transport and parking code Healthy waters code
	Otherwise impact assessment	The Planning Scheme
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.17 Rural residential zone

Rural residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Rural residential zone code
Home based business	Accepted developmentif complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Rural residential zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Sales office	Accepted developmentif complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Rural residential zone code Healthy waters code Infrastructure code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
Animal husbandry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code

Rural residential		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise code assessment	Rural activities code Rural residential zone code
Cropping	Accepted developmentif complying with the acceptable outcomes of the applicable code(s)	Rural activities code
	Otherwise code assessment	Healthy waters code Rural activities code Rural residential zone code
Roadside stall	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code
	Otherwise code assessment	Rural activities code Rural residential zone code
All other Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.18 Special industry zone

Special industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Special industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
All Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
High impact industry	Code assessment	Industry activities code Special industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Special industry	Code assessment	Industry activities code Special industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Major electricity infrastructure	Code assessment	Special industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Substation	Code assessment	Special industry zone code Healthy waters code

Special industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Infrastructure code Landscaping code Transport and parking code
Telecommunications facility	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Telecommunications facility code
	Otherwise code assessment	Telecommunications facility code Special industry zone code Healthy waters code Infrastructure code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.19 Tourist Accommodation zone

Tourist accommodation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment if complying with the acceptable outcomes of AO1.2 of the Dwelling house code	Dwelling house code Tourist accommodation zone code
	Otherwise impact assessment	The Planning Scheme
Relocatable home park	Code assessment	Relocatable home park and tourist park code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Resort complex	Code assessment	Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	Short-term accommodation and multi-unit uses code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Short-term accommodation	Code assessment	Short-term accommodation and multi-unit uses code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Tourist Park	Code assessment	Relocatable home park and tourist park code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		

Tourist accommodation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Food and drink outlet	Code assessment if complying with AO13.1 and AO13.3 of the Business activities code	Business activities code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Office	Code assessable if in a building consisting of both Accommodation and Business activities	Business activities code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Shop	Code assessment if complying with AO13.2 and AO13.3 of the Business activities code	Business activities code Tourist accommodation zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme

Tourist accommodation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.5.20 Waterfront and marine industry zone

Waterfront and marine industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Waterfront and marine industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	Code assessment if: (a) having a gross floor area not exceeding 150m2; and (b) not involving a drive-through facility.	Business activities cod Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Outdoor sales	Code assessment if for the sale of marine vehicles and equipment	Business activities code Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Service station	Code assessment if primarily servicing marine industry and ancillary uses within the zone	Service station code Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Marine industry	Code assessment	Industry activities code Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Warehouse	Code assessment	Industry activities code Waterfront and marine industry zone code Healthy waters code

Waterfront and marine industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Infrastructure code Landscaping code Transport and parking code
Medium impact industry	Code assessment if for the processing, distribution and wholesale of seafood products	Industry activities code Waterfront and marine industry code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	Accepted development	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
Aquaculture	Code assessment	Rural activities code Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Rural activities	Impact assessment	The Planning Scheme
Other activities		
Landing	Code assessment	Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Major electricity infrastructure	Code assessment	Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Parking station	Code assessment	Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Waterfront and marine industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Port services	Code assessment	Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Substation	Code assessment	Waterfront and marine industry zone code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Telecommunications facility	Code assessment if complying with AO1.1 of the Telecommunications facilities code	Telecommunications facility code Waterfront and marine industry zone code Healthy waters code Infrastructure code
	Otherwise impact assessment	The Planning Scheme
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

5.6 Categories of development and assessment – Reconfiguration of a lot

The following table identifies the categories of development and assessment for reconfiguring a lot.

Table 5.6.1 Reconfiguring a lot

Reconfiguration of a lot		
Zone	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
All zones	Code assessment if for a boundary realignment or creation of an access easement.	Relevant zone code Reconfiguring a lot code Excavation and filling code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Residential Zones, Centre Zones, Industrial Zones, Emerging Communities Zone, Mixed Use Zone, Rural Zone and Rural Residential Zone.	Code assessment (where not for an access easement or boundary realignment) if complying with: (a) The minimum lot size and dimensions set out in Table 9.4.7.3.2 (Minimum lot sizes and dimensions) of the Reconfiguring a lot code; and (b) AO2.1 of the Reconfiguring a lot code.	Relevant zone code Reconfiguring a lot code Excavation and filling code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Community facilities, or Environmental management and conservation, or Recreation and open space	Code assessment (where not for an access easement or boundary realignment)	Relevant zone code Reconfiguring a lot code Excavation and filling code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

5.7 Categories of development and assessment – Building work

There is no building work regulated under the planning scheme in respect to zones. Building work is however regulated under 5.10 Categories of development and assessment – Overlays (Table 5.10.1) where triggering an assessment under the applicable overlays.

5.8 Categories of development and assessment – Operational work

The following table identifies the categories of development and assessment for operational work.

Table 5.8.1 Operational work

Operational work		
Development	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Extracting gravel, rock, sand or soil from the place where it occurs naturally	Accepted development if undertaken by or on behalf of the Council	
Conducting a forest practice	Accepted development	
Excavating or filling that materially affects premises or their use	Accepted development if: (a) there would be a change of no greater than 1m in the level of any part of the site; and (b) less than 100m^3 of material is imported to or removed from the site.	Excavation and filling code
	Otherwise code assessment	Construction management code Excavation and filling code Healthy waters code
All operational works involving landscaping work where associated with the Reconfiguring of a lot or Material change of use	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Construction management code Landscaping code
	Otherwise code assessment	
All operational works involving landscaping work where not associated with the Reconfiguring of a lot or Material change of use; and on land owned, or to be owned, by Council.	Accepted development if undertaken by or on behalf of the Council.	Construction management code Landscaping code
	Otherwise code assessment	
Operational works involving engineering work	Accepted development if: (a) undertaken by or on behalf of the Council; or (b) if involving parking or vehicular access that complies with the acceptable outcomes applicable codes.	Construction management code Excavation and filling code Healthy waters code Transport and parking code

Operational work		
Development	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	Otherwise Code assessment	Construction management code Excavation and filling code Healthy waters code Infrastructure code Transport and parking code
Placing an advertising device on a premise	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Advertising devices code
	Otherwise code assessment	Advertising devices code Construction management code
Prescribed tidal works	Code assessment	Construction management code Excavation and filling code Healthy waters code
Construction of a non-tidal artificial waterway	Code assessment	Construction Management code
Undertaking roadworks on a local government road	Accepted development if undertaken by or on behalf of the Council	
	Otherwise code assessment	Construction management code Excavation and filling code Healthy waters code Transport and parking code
Undertaking roadwork's on a local government road for a driveway	Accepted development	

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

5.9 Categories of development and assessment – Local plans

5.9.1 Airlie Beach local plan categories of development and assessment

The following tables identifies the categories of development and assessment for development in the local plan.

Table 5.9.1.1 Airlie Beach local plan - Community facilities zone

Airlie Beach local plan - Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Airlie Beach local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Educational establishment	No change	Airlie Beach local plan code
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	No change	Airlie Beach local plan code
Outdoor sport and recreation	No change	Airlie Beach local plan code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Parking station	No change	Airlie Beach local plan code
Telecommunications facility	No change	Airlie Beach local plan code (where code assessable)
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		

Airlie Beach local plan - Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.9.1.2 Airlie Beach local plan - District centre zone

Airlie Beach local plan - District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	
Home based business	No change	Airlie Beach local plan code (where code assessment)
Rooming accommodation	No change	Airlie Beach local plan code
Short-term accommodation	No change	Airlie Beach local plan code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	No change	Airlie Beach local plan code (where code assessment)
Market	No change	Airlie Beach local plan code (where code assessment)
Office	No change	Airlie Beach local plan code (where code assessment)
Sales office	No change	Airlie Beach local plan code (where code assessment)
Shop	No change	Airlie Beach local plan code (where code assessment)
Shopping centre	No change	Airlie Beach local plan code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Bar	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise no change	Airlie Beach local plan code
Club	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise no change	Airlie Beach local plan code
Function facility	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or	Business activities code Transport and parking code

Airlie Beach local plan - District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	(c) only minor building work.	
	Otherwise no change	Airlie Beach local plan code
Hotel	No change	Airlie Beach local plan code
Nightclub entertainment facility	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	District centre zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Theatre	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise no change	Airlie Beach local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	No change	Airlie Beach local plan code
Service industry	No change	Airlie Beach local plan code (where code assessment)
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Emergency services	No change	
Health care services	No change	Airlie Beach local plan code (where code assessment)
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	No change	Airlie Beach local plan code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	No change	
Parking station	Code assessment	District centre zone code Airlie Beach local plan code

Airlie Beach local plan - District centre		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above levels of assessment apply unless otherwise prescribed within the Act or the Regulation.

Table 5.9.1.3 Airlie Beach local plan – Mixed use zone

Airlie Beach local plan - Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	
Home based business	No change	Airlie Beach local plan code (where code assessment)
Multiple dwelling	No change	Airlie Beach local plan code
Rooming accommodation	No change	Airlie Beach local plan code
Short-term accommodation	No change	Airlie Beach local plan code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	No change	Airlie Beach local plan code (where code assessment)
Market	No change	Airlie Beach local plan code (where code assessment)
Office	No change	Airlie Beach local plan code (where code assessment)
Sales office	No change	Airlie Beach local plan code (where code assessment)
Shop	No change	Airlie Beach local plan code (where code assessment)
Shopping centre	Code assessment	Business activities code Mixed use zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Bar	No change	Airlie Beach local plan code (where code assessment)
Club	No change	Airlie Beach local plan code (where code assessment)
Function facility	No change	Airlie Beach local plan code (where code assessment)
Hotel	No change	Airlie Beach local plan code (where code assessment)
Nightclub entertainment facility	No change	Airlie Beach local plan code (where code assessment)
Theatre	No change	Airlie Beach local plan code (where code assessment)
Tourist attraction	Code assessment	Mixed use zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code

Airlie Beach local plan - Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	No change	Airlie Beach local plan code
Service industry	Code assessment	Industry activities code Mixed use zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Child care centre	Code assessment	Child care centre code Mixed use zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Community use	No change	
Educational establishment	Code assessment	Mixed use zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Emergency services	No change	
Health care services	No change	Airlie Beach local plan code (where code assessment)
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	No change	Airlie Beach local plan code
Outdoor sport and recreation	Code assessment	Business activities code Mixed use zone code Airlie Beach local plan code Healthy Waters code Infrastructure code Landscaping code Transport and parking code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Parking station	No change	Airlie Beach local plan code
Landing	Code assessment	Mixed use zone code Airlie Beach local plan code

Airlie Beach local plan - Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Healthy waters code Infrastructure code Landscaping code Transport and parking code
Port services	Code assessment	Mixed use zone code Airlie Beach local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.9.1.4 Airlie Beach local plan – Recreation and open space zone

Airlie Beach local plan – Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
All uses	No change	

Editor's note—The above levels of assessment apply unless otherwise prescribed within the Act or the Regulation.

5.9.2 Bowen local plan categories of development and assessment

The following tables identifies the categories of development and assessment for development in the local plan.

Table 5.9.2.1 Bowen local plan - Precinct A – Community facilities zone

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
Residential care facility	No change	Bowen local plan code
Retirement facility	No change	Bowen local plan code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Market	No change	Bowen local plan code (where code assessable)
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Bowen local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Child care centre	No change	Bowen local plan code
Community care centre	No change	Bowen local plan code
Community use	No change	Bowen local plan code
Educational establishment	No change	Bowen local plan code
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Environment facility	Code assessment	Business activities code Mixed use zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Indoor sport and recreation	No change	Bowen local plan code
Outdoor sport and recreation	No change	Bowen local plan code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Air services	No change	
Parking station	No change	Bowen local plan code
Telecommunications facility	No change	Bowen local plan code (where code assessable)
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1(Definitions)	Impact assessment	The Planning Scheme

Table 5.9.2.2 Bowen local plan - Precinct A – Mixed use zone

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
Home based business	No change	Bowen local plan code (where code assessable)
Multiple dwelling	No change	Bowen local plan code
Residential care facility	No change	Bowen local plan code Residential care facility and retirement facility code
Retirement facility	Code assessment	Multi-unit uses code Mixed use zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	No change	Bowen local plan code
Short-term accommodation	No change	Bowen local plan code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	No change	Bowen local plan code (where code assessable)
Market	No change	Bowen local plan code (where code assessable)
Office	No change	Bowen local plan code (where code assessable)
Sales office	No change	Bowen local plan code (where code assessable)
Shop	No change	Bowen local plan code (where code assessable)
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Bar	No change	Bowen local plan code (where code assessable)
Club	No change	Bowen local plan code (where code assessable)
Function facility	No change	Bowen local plan code (where code assessable)
Hotel	No change	Bowen local plan code (where code assessable)
Nightclub entertainment facility	No change	Bowen local plan code (where code assessable)
Theatre	No change	Bowen local plan code (where code assessable)
Tourist attraction	Code Assessment	Business activities code Mixed use zone code Bowen local plan code

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Low impact industry	No change	Bowen local plan code
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Emergency services	No change	
Health care services	Code assessment: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Mixed use zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Environment facility	Code assessment	Business activities code Mixed use zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Indoor sport and recreation	No change	Bowen local plan code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Parking station	No change	Bowen local plan code
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Table 5.9.2.3 Bowen local plan - Precinct A - Recreation and open space zone

Recreation and open space		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Market	No change	Bowen local plan code (where code assessable)
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Bowen local plan code
Function facility	No change	Bowen local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Educational establishment	Code assessment if related to a Landing, Marine industry or Port services use	Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Environment facility	Code assessment	Business activities code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Indoor sport and recreation	No change	Bowen local plan code (where code assessable)
Outdoor sport and recreation	No change	Bowen local plan code (where code assessable)
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The Planning Scheme
All other activities	Impact assessment	The Planning Scheme
Undefined uses		

Recreation and open space		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Precinct B

Table 5.9.2.4 Bowen local plan - Precinct B - Community facilities zone

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Market	No change	Bowen local plan code (where code assessable)
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Bowen local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Educational establishment	No change	Bowen local plan code
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Environment Facility	Code assessable	Community facilities zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Indoor sport and recreation	No change	Bowen local plan code
Outdoor sport and recreation	No change	Bowen local plan code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Air services	No change	
Landing	Accepted development if undertaken by or on behalf of the Council	
	Otherwise code assessment	Community facilities zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Parking station	No change	Bowen local plan code

Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Telecommunications facility	No change	Bowen local plan code (where code assessable)
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1(Definitions)	Impact assessment	The Planning Scheme

Table 5.9.2.5 Bowen local plan - Precinct B - Mixed use zone

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
Home based business	No change	Bowen local plan code (where code assessable)
Multiple dwelling	No change	Bowen local plan code
Residential care facility	No change	Bowen local plan code Residential care facility and retirement facility code
Retirement facility	No change	Bowen local plan code
Rooming accommodation	Code assessment if associated with an Educational establishment or Coastal dependent development within the Bowen Local plan area or Bowen Major centre zone	Short-term accommodation and multi-unit uses code Mixed use zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise Impact assessment	The Planning Scheme
Short-term accommodation	No change	Bowen local plan code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	No change	Bowen local plan code (where code assessable)
Market	No change	Bowen local plan code (where code assessable)
Office	No change	Bowen local plan code (where code assessable)
Sales office	No change	Bowen local plan code (where code assessable)
Shop	No change	Bowen local plan code (where code assessable)
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Bar	No change	Bowen local plan code (where code assessable)
Club	No change	Bowen local plan code (where code assessable)
Function facility	No change	Bowen local plan code (where code assessable)
Hotel	No change	Bowen local plan code (where code assessable)
Nightclub entertainment facility	No change	Bowen local plan code (where code assessable)
Theatre	No change	Bowen local plan code (where code assessable)
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Research and technology industry	Code Assessment if related to a Landing, Marine industry or Port services use.	Industry activities code Mixed use zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Service industry	Code Assessment	Industry activities code Mixed use zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Low impact industry	No change	Bowen local plan code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Educational establishment	Code assessment if related to a Landing, Marine industry or Port services use	Mixed use zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
	Otherwise Impact assessment	The Planning Scheme
Emergency services	No change	
Health care services	No change	Bowen local plan code (where code assessable)
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Environment facility	Code assessment	Business activities code Mixed use zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Indoor sport and recreation	No change	Bowen local plan code
Outdoor sport and recreation	Code assessment	Business activities code Mixed use zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Landing	Code assessment	Mixed use zone code Bowen local plan code Infrastructure code Landscaping code

Mixed use zone		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
		Transport and parking code
Parking station	No change	Bowen local plan code
Port services	Code assessment	Industry activities code Mixed use zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Table 5.9.2.6 Bowen local plan - Precinct B - Recreation and open space zone

Recreation and open space		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Market	No change	Bowen local plan code (where code assessable)
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Bowen local plan code (where code assessable)
Function facility	No change	Bowen local plan code (where code assessable)
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Educational establishment	Code assessment if related to a Landing, Marine industry or Port services use	Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Environment facility	Code assessment	Business activities code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Indoor sport and recreation	No change	Bowen local plan code (where code assessable)
Outdoor sport and recreation	No change	Bowen local plan code (where code assessable)
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Table 5.9.2.7 Bowen local plan - Precinct C – Waterfront and marine industry zone

Waterfront and marine industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Bowen local plan code (where code assessable)
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
Food and drink outlet	No change	Bowen local plan code
Office	Code assessment if associated with a Landing, Marine industry or Port services use	Business activities code Waterfront and marine industry zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The Planning Scheme
Outdoor sales	No change	Bowen local plan code
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
Marine industry	No change	Bowen local plan code
Warehouse	Code assessment if associated with a Landing, Marine industry or Port services use	Industry activities code Waterfront and marine industry zone code Bowen local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The Planning Scheme
Community activities		
Educational establishment	Code assessable if associated with a Landing, Marine industry or Port services use	Waterfront and marine industry zone code Bowen local plan code Infrastructure code Landscaping code Transport and parking code
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
Aquaculture	No change	Bowen local plan code
Rural industry	No change	Bowen local plan code
All other Rural activities	Impact assessment	The Planning Scheme

Waterfront and marine industry		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Other activities		
Landing	No change	Bowen local plan code
Major electricity infrastructure	No change	Bowen local plan code
Parking station	No change	Bowen local plan code
Port services	No change	Bowen local plan code
Substation	No change	Bowen local plan code
Telecommunications facility	No change	Bowen local plan code
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Reconfiguring a Lot - All Precincts, All zones under the Bowen Local Plan

Table 5.9.2.8 Bowen local plan - Reconfiguring a lot

Reconfiguration of a lot		
Zone	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Community facilities, or Environmental management and conservation, or Recreation and open space	Impact assessment	The Planning Scheme
All other zones	No change	Bowen local plan code

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

5.9.3 Hamilton Island local plan categories of development and assessment

The following tables identifies the categories of development and assessment for development in the local plan.

Table 5.9.3.1 Hamilton Island local plan - Community facilities zone

Hamilton Island local plan - Community facilities		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Hamilton Island local plan (where code assessment)
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Hamilton Island local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Educational establishment	No change	Hamilton Island local plan code
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	No change	Hamilton Island local plan code
Outdoor sport and recreation	No change	Hamilton Island local plan code
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Air services	No change	
Telecommunications facility	No change	Hamilton Island local plan code (where code assessable)
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.9.3.2 Hamilton Island local plan - Recreation and open space zone

Hamilton Island local plan - Recreation and open space		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	No change	Hamilton Island local plan code (where code assessment)
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
All other Business activities	Impact assessment	The Planning Scheme
Entertainment activities		
Club	No change	Hamilton Island local plan code
Function facility	No change	Hamilton Island local plan code
All other Entertainment activities	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Impact assessment	The Planning Scheme
Community activities		
Community use	No change	
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Indoor sport and recreation	No change	Hamilton Island local plan code (where code assessment)
Outdoor sport and recreation	No change	Hamilton Island local plan code (where code assessment)
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	Impact assessment	The Planning Scheme
Other activities		
Utility installation	No change	
All other activities	Impact assessment	The Planning Scheme
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.9.3.3 Hamilton Island local plan – Tourist accommodation

Hamilton Island local plan – Tourist accommodation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Accommodation activities		
Caretaker's accommodation	Code assessment	Caretaker's accommodation code Hamilton Island local plan code Tourist accommodation zone code Landscaping Code Transport and parking code
Dual occupancy	Code assessment	Dual occupancy code Hamilton Island local plan code Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Code assessment	Dwelling House Code Hamilton Island local plan code Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
Home based business	Code assessment	Home based business code Tourist accommodation zone code Hamilton Island local plan code
Resort complex	No change	Hamilton Island local plan code
All other Accommodation activities	Impact assessment	The Planning Scheme
Business activities		
All other Business activities	Code assessment if associated with a Resort complex and complying with the acceptable outcomes of the applicable codes	Business activities code Tourist accommodation zone code Hamilton Island local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Impact assessment	The Planning Scheme
Entertainment activities		
All Entertainment activities	Code assessment if associated with a Resort complex and complying with the acceptable outcomes of the applicable codes	Tourist accommodation zone code Hamilton Island local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Impact assessment	The Planning Scheme
Industry activities		
All Industry activities	Code assessment if associated with a Resort complex and complying with the acceptable	Industry activities code Tourist accommodation zone code

Hamilton Island local plan – Tourist accommodation		
Use	**Categories of development and assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
	outcomes of the applicable codes	Hamilton Island local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Impact assessment	The Planning Scheme
Community activities		
Community use	Code assessment if associated with a Resort complex and complying with the acceptable outcomes of the applicable codes	Tourist accommodation zone code Hamilton Island local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
	Impact assessment	The Planning Scheme
Emergency services	No change	
All other Community activities	Impact assessment	The Planning Scheme
Recreation activities		
Park	No change	
All other Recreation activities	Impact assessment	The Planning Scheme
Rural activities		
All Rural activities	No change	
Other activities		
Utility installation	No change	
All other activities	Code assessment if associated with a Resort complex and complying with the acceptable outcomes of the applicable codes	Tourist accommodation zone code Hamilton Island local plan code Healthy waters code Infrastructure code Landscaping code Transport and parking code
Undefined uses		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The Planning Scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

5.10 Categories of development and assessment – Overlays

The following tables identify where an overlay changes the category of assessment from that stated in a zone or local plan and the relevant assessment benchmarks.

Note—Some overlays may only be included for information purposes. This should not change the category of assessment or assessment benchmarks in the Planning Scheme.

Table 5.10.1 Acid sulfate soils overlay

Acid sulphate soils overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Any development if on land subject to the Acid sulfate soils overlay as identified in the Acid sulfate soils map and within: (a) a high risk area, involving: (i) any excavation; or (ii) filling of over 500m³; (b) a medium risk area, involving: (i) excavation greater than 1m; or (ii) filling of over 500m³; (c) a low risk area, involving: (i) excavation greater than 2m; or (ii) filling of over 500m³; or (d) a Potential acid sulphate soils area and involving: (i) filling of over 500m^3 below 5m AHD; or (ii) excavation of greater than 100m^3 of soil below 5m AHD.	No change	Acid sulfate soils overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.2 Agricultural land overlay

Agricultural land overlay		
Development	**Category of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land subject to the Agricultural land overlay as identified in the Agricultural land overlay map	No change	Agricultural land overlay code
Reconfiguring a lot if on land subject to the Agricultural land overlay as identified in the Agricultural land overlay map	No change	Agricultural land overlay code
Operational work if on land: (a) subject to the Agricultural overlay as identified in the Agricultural land overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving engineering work; or (d) prescribed tidal works; or (e) undertaking roadwork's on a local government road.	No change	Agricultural land overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.3 Airport environs overlay

Airport environs overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land: (a) subject to the Airport environs overlay; and (b) resulting in work encroaching into the operational airspace and is at least 12m high; or (c) within a public safety area; or (d) within the existing lighting area buffer zone; or (e) within the wildlife hazard buffer zone; or (f) resulting in work encroaching into the building restricted area.	No change if complying with the acceptable outcomes of Table 8.2.1.3.1 (Benchmarks for accepted and assessable development) for the Airport Environs overlay code	Airport environs overlay code
	Otherwise code assessment	Airport environs overlay code
Reconfiguring of a lot if on land: (a) subject to the Airport environs overlay; and (b) within the 20 ANEF contour for an airport; or (c) within a public safety area of an airports identified on the Airport environs overlay map.	No change	Airport environs overlay code
Operational works only where not associated with a Material change of use or a Reconfiguration of a lot.	No change	Airport environs overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.4 Biodiversity, waterways and wetlands overlay

Biodiversity, waterways and wetlands overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land subject to the Biodiversity, waterways and wetlands overlay as identified in the Biodiversity, waterways and wetlands overlay map	No change if complying with acceptable outcomes of Table 8.2.4.3.1 (Benchmarks for accepted and assessable development) of the Biodiversity, waterways and wetlands overlay code	Biodiversity, waterways and wetlands overlay code
	Otherwise code assessment	Biodiversity, waterways and wetlands overlay code
Reconfiguring a lot if on land subject to the Biodiversity, waterways and wetlands overlay as identified in Biodiversity, waterways and wetlands overlay map	No change	Biodiversity, waterways and wetlands overlay code
Operational works if on land subject to the Biodiversity waterways and wetlands overlay as identified in the Biodiversity, waterways and wetlands overlay map and involves: (a) excavation or filling that materially affects premises or their use; (b) landscaping work where associated with a Reconfiguration of a lot or Material change of use; (c) engineering work; (d) prescribed tidal works; or (e) undertaking roadwork's on a local government road.	No change	Biodiversity, waterways and wetlands overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.5 Building heights overlay

Building heights overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land subject to Building heights overlay map.	No change if complying with acceptable outcomes of Table 8.2.5.3.6 (Benchmarks for accepted and assessable development) of the Building heights overlay code	Building heights overlay code
	Otherwise impact assessment	The Planning Scheme

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.7 Bushfire hazard overlay

Bushfire hazard overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land subject to the Bushfire hazard overlay, excluding buffer zones, as identified in the Bushfire hazard overlay map and: (a) is not wholly contained within an existing building; (b) involving building work of greater than 50m^2; (c) there would be a change in level of greater than 0.5m of any part of the site; or (d) greater than 50m^3 of material is imported to or removed from the site.	No change if complying with acceptable outcomes of Table 8.2.6.3.1 (Benchmarks for accepted and assessable development) of the Bushfire hazard overlay code	Bushfire hazard overlay code
	Otherwise code assessment	Bushfire hazard overlay code
Reconfiguring a lot if on land subject to the Bushfire hazard overlay, excluding buffer zones, as identified in the Bushfire hazard overlay map	No change	Bushfire hazard overlay code
Operational works if on land subject to the Bushfire hazard overlay, excluding buffer zones, as identified in the Bushfire hazard overlay map and involves: (a) excavation or filling that materially affects premises or their use; (b) landscaping work where associated with the Reconfiguration of a lot or Material change of use; or (c) engineering work.	No change	Bushfire hazard overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.8 Coastal hazard overlay

Coastal environment overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land: (a) subject to the Coastal hazard overlay as identified in the Coastal hazard overlay map; and (b) where not wholly contained within an existing building; or (c) involving building work of greater than $50m^2$;or (d) there would be a change in level of greater than 0.5m of any part of the site; or (e) greater than $50m^3$ of material is imported to or removed from the site.	No change if complying with acceptable outcomes of Table 8.2.7.3.1 (Benchmarks for accepted and assessable development) of the Coastal hazard overlay code	Coastal hazard overlay code
	Otherwise code assessment	Coastal hazard overlay code
Reconfiguring a lot if on land subject to the Coastal hazard overlay as identified in the Coastal hazard overlay map	No change	Coastal hazard overlay code
Operational works if on land: (a) subject to the Coastal hazard overlay as identified in the Coastal hazard overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving engineering work; or (d) prescribed tidal works; or (e) undertaking roadwork's on a local government road.	No change	Coastal hazard overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.9 Extractive resources overlay

Extractive resources overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land subject to the Extractive resources overlay as identified in the Extractive resources overlay map	No change if complying with acceptable outcomes of Table 8.2.8.3.1 (Benchmarks for accepted and assessable development) of the Extractive resources overlay code	Extractive resources overlay code
	Otherwise code asssment	Extractive resources overlay code
Reconfiguring a lot, if on land subject to the Extractive resources overlay as identified in the Extractive resources overlay map	No change	Extractive resources overlay code
Operational works, if on land: (a) subject to the Extractive resources overlay as identified in the Extractive resources overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving engineering work; or (d) prescribed tidal works; or (e) undertaking roadwork's on a local government road.	No change	Extractive resources overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.10 Flood hazard overlay

Flood hazard overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land: (a) subject to the Flood hazard overlay as identified in the Flood hazard overlay map; and (b) where not wholly contained within an existing building; or (c) involving building work of greater than $50m^2$.	No change if complying with acceptable outcomes of Table 8.2.9.3.1 (Benchmarks for accepted and assessable development) of the Flood hazard overlay code	Flood hazard overlay code
	Otherwise code assessment	Flood hazard overlay code
Reconfiguring a lot if on land subject to the Flood hazard overlay as identified in the Flood hazard overlay map	No change	Flood hazard overlay code
Operational works if on land: (a) subject to the Flood hazard overlay as identified in the Flood hazard overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving excavation or filling exceeding a total of $100m^3$; or (d) there would be a change of greater than 1m in the level of any part of the site; or (e) involving engineering work; or (f) prescribed tidal works; or (g) undertaking roadwork's on a local government road.	No change: (a) if complying with acceptable outcomes of Table 8.2.9.3.1 (Benchmarks for accepted and assessable development) of the Flood hazard overlay code; or (b) if undertaken by or on behalf of the Council	Flood hazard overlay code
	Otherwise code assessment	

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.11 Heritage overlay

Heritage overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land subject to the Heritage overlay as identified in the Heritage overlay map	Code assessment if development will not result in building work involving demolition, relocation or removal of a heritage place	Heritage overlay code
	Otherwise impact assessment	The Planning Scheme
Reconfiguration of a lot if on land subject to the Heritage overlay as identified in the Heritage overlay map.	No change	Heritage overlay code
Operational works if on land: (a) subject to the Heritage overlay as identified in the Heritage overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving landscaping work where associated with the Reconfiguration of a lot or Material change of use; or (d) involving engineering work; or (e) placing an advertising device on a premise; or (f) prescribed tidal works; or (g) undertaking roadwork's on a local government road.	No change if development will not result in building work involving demolition, relocation or removal of a Heritage place	Heritage overlay code
	Otherwise code assessment	Heritage overlay code
Building Works, if on land subject to the Heritage overlay as identified in the Heritage overlay map.	Code assessment if the building work will not result in building work involving demolition, relocation or removal of a Heritage place.	Heritage overlay code
	Otherwise impact assessment	The Planning Scheme

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.12 Infrastructure overlay

Infrastructure overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land subject to the Infrastructure overlay as identified in the Infrastructure overlay map	No change if complying with acceptable outcomes of Table 8.2.11.3.1 (Benchmarks for accepted and assessable development) of the Infrastructure overlay code	Infrastructure overlay code
	Otherwise code assessment	Infrastructure overlay code
Reconfiguration of a lo, if on land subject to the Infrastructure overlay as identified in the Infrastructure overlay map	No change	Infrastructure overlay code
Operational works if on land: (a) subject to the Infrastructure overlay as identified in the Infrastructure overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving landscaping work where associated with the Reconfiguration of a lot or Material change of use; or (d) involving engineering work; or (e) placing an advertising device on a premise; or (f) prescribed tidal works; or (g) undertaking roadwork's on a local government road.	No change	Infrastructure overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

Table 5.10.13 Landslide hazard overlay

Landslide hazard overlay		
Development	**Categories of assessment**	**Assessment benchmarks for assessable development and requirements for accepted development**
Material change of use if on land: (a) subject to the Landslide hazard overlay as identified in the Landslide hazard overlay map or on land with a slope of 15% or greater; and (b) where not wholly contained within an existing building; or (c) involving building work of greater than 50m^2 ;or (d) there would be a change in level of greater than 0.5m of any part of the site; or (e) greater than 50m^3 of material is imported to or removed from the site.	No change if complying with acceptable outcomes of Table 8.2.12.3.1 (Benchmarks for accepted and assessable development) of the Landslide hazard overlay code	Landslide hazard overlay code
	Otherwise code assessment	Landslide hazard overlay code
Reconfiguring a lot if on land subject to the Landslide hazard overlay as identified in the Landslide hazard overlay map or on land with a slope of 15% or greater.	No change	Landslide hazard overlay code
Operational works if on land: (a) subject to the Landslide hazard overlay as identified in the Landslide hazard overlay map or on land with a slope of 15% or greater; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving landscaping work where associated with the Reconfiguration of a Lot or Material change of use; or (d) involving engineering work; or (e) prescribed tidal works; or (f) undertaking roadwork's on a local government road.	No change	Landslide hazard overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

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Table 6.1.1 Precincts and corresponding zones

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Zoning map

Part 6 Zones

6.1 Preliminary

(1) Zones organise the Planning Scheme area in a way that facilitates the location of preferred or acceptable land uses.

(2) Zones are mapped and included in Schedule 2 (Mapping).

(3) The categories of development and assessment for development in a zone are in Part 5 (Tables of assessment).

(4) Assessment benchmarks for zones are contained in a zone code.

(5) A precinct may be identified for part of a zone – Table 6.1.1 lists the precincts and their corresponding zones.

Table 6.1.1 Precincts and corresponding zones

Precinct	Zone
Airlie Beach Precinct A	Mixed use
Airlie Beach Precinct B	Low-medium density residential
Airlie Beach Precinct C	Mixed use
Airlie Beach Precinct D	District centre
Airlie Beach Precinct E	District centre
Airlie Beach Precinct F	Mixed use
Airlie Beach Precinct G	Mixed use

(6) Precinct provisions are contained in the corresponding zone codes.

(7) Each zone code identifies the following:

(a) the purpose of the code; and

(b) the overall outcomes that achieve the purpose of the code.

(8) The following are the zone codes for the Planning Scheme:

Residential zones category

(a) Low density residential zone code;

(b) Low-medium density residential zone code; and

(c) Tourist accommodation zone code.

Centre zones category

(a) Major centre zone code;

(b) District centre zone code;

(c) Local centre zone code; and

(d) Neighbourhood centre zone code.

Industry zones category

(a) Low impact industry zone code;

(b) Medium impact industry zone code;

(c) High impact industry zone code;

(d) Special industry zone code;

(e) Waterfront and marine industry zone code; and

(f) Industry investigation zone code.

Recreation zones category

(a) Recreation and open space zone code.

Environmental zones category

(a) Environmental management and conservation zone code.

Other zones category

(a) Community facility zone code;

(b) Emerging community zone code;

(c) Mixed use code;

(d) Rural zone code; and

(e) Rural residential zone code.

6.2 Zone codes

6.2.1 Community facilities zone code

6.2.1.1 Application

This code applies to assessable development:

(a) within the Community facilities zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Community facilities zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.1.2 Purpose and overall outcomes

(1) The purpose of the Community facilities zone code is to provide for community related activities and facilities whether under public or private ownership. These may include the provision of municipal services, public utilities, government installations, hospitals, schools, transport and telecommunications networks and community infrastructure of an artistic, social or cultural nature.

(2) The purpose of the Community facilities zone code in the local government area is to provide for a range of accessible Community, Recreation and Other activities at varying degrees of scale and intensity, which operate effectively and meet the social, educational, spiritual, cultural or health needs of the Whitsunday Region's existing and future communities.

(3) The purpose of the Community facilities zone code will be achieved through the following overall outcomes:

(a) development in the zone caters primarily for specified uses, facilities and works, which include:

(i) land used, owned or operated by Federal, State or Local government for Community and Other activities, such as cemeteries, community uses, emergency services, hospitals, air services, substations, major electricity infrastructure and utility installations; or

(ii) uses, facilities and works, which by virtue of their location, intensity, combination of uses, operations or site characteristics are best managed in a use-specific land use allocation; or

(iii) private Community activities and facilities, including community uses, educational establishments, hospitals and places of worship;

(b) a range of allied and compatible activities may also be established in this zone. These include Recreational activities, such as indoor/outdoor sport and recreation uses;

(c) Community activities and associated uses are located to optimise their accessibility, operational efficiency and benefit to the public;

(d) development accommodates the specific operational, functional and locational needs of the particular use, whilst maintaining a low rise built form compatible with the intended development in the surrounding area;

(e) development provides a high level of amenity, maintains the safety of people, buildings and works, and effectively manages the potential for land use conflict with existing and intended surrounding development;

(f) uses, buildings and works are located, designed and operated to minimise adverse impacts on the amenity of any adjacent properties, nearby residential or public spaces, having regard to:

  (i) traffic conditions;

  (ii) noise or vibration;

  (iii) dust, odour or similar emissions:

  (iv) privacy;

  (v) safety and security;

  (vi) illumination;

  (vii) access to natural light and ventilation; and

  (viii) drainage.

(g) existing and planned Community activities and associated uses are protected from the intrusion of incompatible uses that could limit the ongoing operation of existing Community activities or prejudice appropriate new activities;

(h) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(i) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, permeability and ease of movement within and to the site;

(j) development is provided with a level of infrastructure and essential services that is commensurate with the location, nature, scale and intensity of the use;

(k) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(l) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.2 District centre zone code

6.2.2.1 Application

This code applies to assessable development:

(a) within the District centre zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the District centre zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.2.2 Purpose and overall outcomes

(1) The purpose of the District centre zone code is to provide for a mix of uses and activities. It includes a concentration of land uses, including retail, commercial, residential, offices, administrative and health services, community, small-scale entertainment and recreational facilities capable of servicing a district.

(2) The purpose of the District centre zone code in the local government area is to provide for a range of activities that complement but do not compete with the role and function of the major activity centres. The District centre zone serves the needs of district level catchments and distinct communities in centres that are highly accessible and well connected to the catchment areas. District centres are developed as well-designed, safe and visually attractive business, community and employment centres, predominantly in a low-rise building format, where significant off-site impacts are avoided.

(3) The purpose of the District centre zone code will be achieved through the following overall outcomes:

(a) development provides for a range of Business and Entertainment activities that service the district level needs of surrounding smaller centres and residential areas. These uses include, but are not limited to, food and drink outlets, offices, shops, shopping centres, theatres, clubs and function facilities;

(b) development provides for a range of complementary Community activities in appropriate locations to encourage community interaction and support the health, safety and wellbeing of residents. Such uses include community uses, child care centres, emergency services, health care services and places of worship;

(c) Recreation, Industry and Other activities, such as indoor sport and recreation, service industries and utility installations, may be established where they are compatible with the character and amenity of surrounding development;

(d) beyond existing uses, development provides for a limited range of Accommodation activities, including caretaker's accommodation, dual occupancies, multiple dwellings, rooming accommodation and short-term accommodation, where such uses are ancillary to and support the predominant business functions of the zone;

(e) development of Business activities is of a scale and intensity that is consistent with the intended role and function of the particular activity centre and the Whitsunday hierarchy of centres[1]. For development in the District centre zone, this includes consideration of the following:

[1] Development within the District centre zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(i) the function and role of existing Business activities in district centres is maintained;

(ii) shopping centres have a maximum retail and commercial GLA in the order of 5,000m^2;

(iii) not more than one full-line supermarket is established in each allocated district centre, unless there is a demonstrated need and there are no adverse impacts on the major activity centre; and

(iv) higher order shopping facilities, including department stores and discount department stores, are not established in the District centre zone

(f) development has a low to medium-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area;

(g) development may provide for Accommodation activities as part of mixed use premises to encourage and facilitate urban consolidation;

(h) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;

(i) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with demonstrated connectivity to surrounding land uses;

(j) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(k) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(l) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(m) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities;

(n) development demonstrates that an appropriate level of transport infrastructure is available and will not unreasonably interfere with the safe and efficient operation of the surrounding road network[2];

(o) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;

(p) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

[2] Development within the District centre zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

(q) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.3 Emerging community zone code

6.2.3.1 Application

This code applies to assessable development:

(a) within the Emerging community zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Emerging community zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.3.2 Purpose and overall outcomes

(1) The purpose of the Emerging community zone code is to:

(a) identify land that is suitable for urban purposes and conserve land that may be suitable for urban development in the future;

(b) manage the timely conversion of non-urban land to urban purposes; and

(c) prevent or discourage development that is likely to compromise appropriate longer-term land uses.

(2) The purpose of the Emerging community zone code in the local government area is to ensure that development is designed and coordinated to achieve safe, healthy and sustainable new urban communities, which are well integrated with existing communities and provided with services and infrastructure.

(3) The purpose of the Emerging community zone code will be achieved through the following overall outcomes:

(a) prior to the granting of development approvals in accordance with any strategic planning undertaken by the Council:

(i) interim land uses and other development is predominantly limited to existing uses to ensure that the future potential of land to be used for urban purposes is not compromised; and

(ii) development avoids the sporadic or premature creation of additional lots[3];

(b) development is undertaken in accordance with any strategic plans, prepared or approved master plan or a preliminary approval pursuant to the Act, demonstrating that:

(i) development occurs in accordance with any strategic planning undertaken by the Council;

(ii) unless otherwise specified in a local plan code, development within the zone co-ordinates with existing or future planned development through logical planning of the full extent of the Emerging community zone and neighbouring communities[4];

[3] Development within the Emerging community zone may be requested to provide a Development needs assessment report in accordance with PSP SC6.7 (Growth management).
[4] Development within the Emerging community zone may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).

(iii) development provides for a low-rise building form that is compatible with the character of the surrounding area,;

(iv) development sensitively responds to scenic values and landscape character elements, particularly prominent ridgelines, foreshores, coastal landforms, significant landmarks, prominent stands of vegetation and rural and coastal views and vistas;

(v) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(vi) the scale, density and layout of development facilitates an efficient land use pattern that:

(A) is well connected to other parts of the urban fabric and planned future development;

(B) supports walkable neighbourhoods that are well connected to employment nodes, centres, open space and recreation areas, community services and educational opportunities; and

(C) encourages public transport accessibility and use;

(vii) a mix of land uses and housing types is provided;

(viii) a high level of residential amenity, personal health and safety and protection for property is provided;

(ix) a sense of character and community inclusion is promoted;

(x) communities are supported by interconnected open space networks and local centres incorporating attractive, comfortable, safe and convenient public spaces;

(xi) development provides for pedestrian and bicycle movement networks that maximise connectivity, permeability and ease of movement within emerging community areas and to existing urban areas;

(xii) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities;

(xiii) development demonstrates that an appropriate level of transport infrastructure is available and will not unreasonably interfere with the safe and efficient operation of the surrounding road network[5];

(xiv) conflicts with the existing or potential productive use of adjoining or nearby rural lands are avoided or appropriately managed;

(xv) development occurs in a logical sequence and facilitates the efficient and timely provision of infrastructure and services prior to, or in conjunction with, the initial stages of the development;

(xvi) development is provided with the full range of urban services, including parks, reticulated water, sewerage, stormwater drainage,

[5] Development within the Emerging community zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

sealed roads, pathways, electricity and telecommunications infrastructure;

(xvii) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(xviii) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.4 Environmental management and conservation zone code

6.2.4.1 Application

This code applies to assessable development:

(a) within the Environmental management and conservation zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Environmental management and conservation zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.4.2 Purpose and overall outcomes

(1) The purpose of the Environmental management and conservation zone code is to provide for the protection and maintenance of areas identified as supporting significant biological diversity and ecological integrity.

(2) The purpose of the Environmental management and conservation zone code in the local government area is to provide for the protection and rehabilitation of land to maintain biological diversity, ecological processes, coastal processes, water quality, landscape character, scenic amenity, cultural heritage significance and community wellbeing.

(3) The purpose of the Environmental management and conservation zone code will be achieved through the following overall outcomes:

(a) areas identified as having significant environmental values for environmental diversity and functioning, water catchment, beach protection or coastal management and historical or cultural significance are:

(i) protected for their importance in contributing to environmental sustainability; and

(ii) appropriately managed to the general exclusion of most forms of development;

(b) Recreation activities, limited to parks, may be established in the zone where such development:

(i) supports environmental values and provides opportunities for appreciation or study of those values;

(ii) is compatible with and has a direct connection with the environmental values; and

(iii) provides opportunities for recreational pursuits that have a direct connection with the environmental values of the land;

(c) to maintain the intended character and amenity of the zone, development integrates with and compliments the natural landscape and has a low-rise built form;

(d) Other activities, limited to utility installations, may be provided where such activities are located, designed and operated to avoid significant impacts on environmental systems and processes;

(e) green and open space corridor networks are established across the region providing movement opportunities for people and wildlife between the coast

and hinterland and access to the Region's cultural heritage and environmental significant features;

(f) development maintains and protects the scenic values and landscape character of the zone, particularly coastal views and vistas, prominent ridgelines, escarpments, foreshores, coastal landforms and significant landmarks that are in both public and private ownership;

(g) natural features, such as creeks, gullies, waterways, wetlands, flora and fauna communities, habitats, vegetation and bushland, are protected and buffered from activities in the zone and adjoining land uses;

(h) development provides for infrastructure and services that are commensurate with the very limited range of small scale and low-key activities that are expected to occur in the zone. Such infrastructure and services are designed and operated to maintain public safety and environmental health; and

(i) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.5 High impact industry zone code

6.2.5.1 Application

This code applies to assessable development:

(a) within the High impact industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the High impact industry zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.5.2 Purpose and overall outcomes

(1) The purpose of the High impact industry zone code is to provide for high impact industry uses. It may include non-industrial and business uses that support the industrial activities where they do not compromise the long-term use of the land for industrial purposes. Activities considered appropriate in this zone are defined as high impact industry in the schedule of definitions.

(2) The purpose of the High impact industry zone code in the local government area is to provide for a range of Industry activities at a larger scale and higher intensity relative to the Medium impact industry zone.

(3) The purpose of the High impact industry zone code will be achieved through the following overall outcomes:

(a) uses in the zone are predominantly for higher intensity, higher impact Industry activities that have the potential to generate significant offsite impacts, including medium impact industry and high impact industry uses;

(b) development of ancillary Accommodation and Business activities may be established only where directly supporting the ongoing Industry activities of the zone. These uses are limited to caretaker's accommodation, food and drink outlets, offices and service stations. Such uses must be appropriately located and designed to ensure that they do not compromise the ongoing operation and viability of Industry activities[6];

(c) development of limited Community and Other activities, compatible with this zone, may also be established. Such uses are limited to crematoriums, emergency services, air services, substations, telecommunications facilities and utility installations;

(d) existing and planned Industry activities are protected from the intrusion of incompatible uses that may compromise or conflict with the primary use of premises for industry purposes;

(e) development provides for a range of lot sizes, including an appropriate proportion of larger lots to cater for larger format and land consumptive Industry activities;

(f) development has a built form that is compatible with the intended scale and character of the streetscape and surrounding area whilst accommodating industry operating requirements;

[6] Development within the High impact industry zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(g) Industry activities integrate with the locality by providing a high quality of built form and landscaping in keeping with the expectations of a modern, safe, and attractive industrial environment;

(h) development ensures that uses and works for industrial purposes are located, designed and managed to maintain public health and safety, avoid significant adverse effects on the natural environment and minimise impacts on non-industrial land and sensitive uses;

(i) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(j) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use[7];

(k) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities;

(l) development is provided with the full range of urban services to support industry and employment needs, including reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(m) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(n) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[7] Development within the High impact industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.6 Industry investigation zone code

6.2.6.1 Application

This code applies to assessable development:

(a) within the Industry investigation zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Industry investigation zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.6.2 Purpose and overall outcomes

(1) The purpose of the Industry investigation zone code is to identify and protect land that may be suitable for Industry activities where further detailed planning, investigations and studies are required to determine the suitability of the Industry investigation zone for use as an industry zone.

(2) The purpose of the Industry investigation zone code in the local government area is to ensure that development is designed and coordinated to support Industry activities of a nature and scale that is compatible with the surrounding area and provided with services and infrastructure.

(3) The purpose of the Industry investigation zone code will be achieved through the following overall outcomes:

(a) prior to the granting of development approvals in accordance with strategic planning undertaken by Council or approved State Development Area Development Schemes:

(i) interim land uses and other development is predominantly limited to existing uses to ensure that the future potential of land to be used for urban purposes is not compromised; and

(ii) development avoids the sporadic or premature creation of additional lots[8];

(b) development is undertaken in accordance with any strategic plan, prepared and approved master plan or a preliminary approval pursuant to the Act, demonstrating that:

(i) development occurs in accordance with any strategic planning undertaken by the Council;

(ii) unless otherwise specified in a local plan code, development within the zone co-ordinates with existing or future planned development through logical planning of the full extent of the Industry investigation zone and neighbouring communities[9];

(iii) development provides for a low-rise building form that is compatible with the character of the surrounding area;

(iv) development sensitively responds to scenic values and landscape character elements, particularly prominent ridgelines, foreshores,

[8] Development within the Industry investigation zone may be requested to provide a Development needs assessment report in accordance with PSP SC6.7 (Growth management).
[9] Development within the Industry investigation zone may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).

coastal landforms, significant landmarks, prominent stands of vegetation and rural and coastal views and vistas;

(v) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(vi) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(vii) the scale, density and layout of development facilitates an efficient land use pattern that:

(A) is well connected to other parts of the urban fabric and planned future development; and

(B) encourages public transport accessibility and use;

(viii) Industry activities are adequately separated from sensitive uses to minimise the likelihood of environmental harm or environmental nuisance occurring;

(ix) development is sited or co-located having regard to its servicing capabilities in terms of infrastructure, road, rail, proximity to sea, airports, other associated industries and work forces;

(x) development provides for pedestrian and bicycle movement networks that maximise connectivity, permeability and ease of movement within industry investigation areas and to existing urban areas;

(xi) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities;

(xii) conflicts with the existing or potential productive use of adjoining or adjacent non-industrial land are avoided or appropriately managed;

(xiii) interim land uses and other development is predominantly limited to existing uses to ensure that the future potential of land to be used for urban purposes is not compromised;

(xiv) development occurs in a logical sequence and facilitates the efficient and timely provision of infrastructure and services prior to, or in conjunction with, the initial stages of the development;

(xv) the viability of both existing and future Industry activities are protected from the intrusion of incompatible uses;

(xvi) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(xvii) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(xviii) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission

infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.7 Local centre zone code

6.2.7.1 Application

This code applies to assessable development:

(a) within the Local centre zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Local centre zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.7.2 Purpose and overall outcomes

(1) The purpose of the Local centre zone code is to provide for a limited range of land uses and activities to service local needs. It includes local shopping, local employment nodes, commercial uses, cafes and dining, entertainment, community services and residential development, where it can integrate and enhance the fabric of the activity centre but is not the predominant use.

(2) The purpose of the Local centre zone code in the local government area is to provide for a range of Business and Community activities that complement, but do not compete with, the role and function of higher order activity centres. The zone meets the convenience service needs of smaller rural, coastal townships or discrete residential areas and provides local employment opportunities. Local centres are developed as well-designed, safe and visually attractive centres, predominantly in a low-rise building format, where significant off-site impacts are avoided.

(3) The purpose of the Local centre zone code will be achieved through the following overall outcomes:

(a) development provides for a range of Business activities that service the local level convenience needs of residents and surrounding tourism or primary production industries and offers locally-based employment opportunities. These uses include, but are not limited to, food and drink outlets, offices, shops, shopping centres and veterinary services;

(b) development provides for a range of complementary Community activities in appropriate locations to encourage community interaction and support the health, safety and wellbeing of local residents. These uses include child care centres, community uses, emergency services and health care services;

(c) Recreation, Industry and Other activities may be established where they are compatible with the character and amenity of surrounding development. Such uses include indoor sport and recreation, service industries and utility installations;

(d) beyond existing uses, development provides for a limited range of Accommodation activities, including caretaker's accommodation, dual occupancies and multiple dwellings, where such uses are ancillary and support the predominant business functions of the zone;

(e) development of Business activities is of a scale and intensity that is consistent with the intended role and function of the particular activity centre and the Whitsunday hierarchy of centres[10]. For development in the Local centre zone, this includes consideration of the following:

[10] Development within the Local centre zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(i) the function and role of existing Business activities in the zone is maintained and not significantly expanded;

(ii) shopping centres have a maximum retail and commercial GLA in the order of 1,500m^2; and

(iii) higher order shopping facilities, including full-line supermarkets, department stores and discount department stores are not established in the zone;

(f) development has a low-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area;

(g) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;

(h) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with demonstrated connectivity to surrounding land uses;

(i) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters, such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(k) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(l) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities;

(m) development demonstrates that an appropriate level of transport infrastructure is available and will not unreasonably interfere with the safe and efficient operation of the surrounding road network[11];

(n) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;

(o) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(p) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[11] Development within the Local centre zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.8 Low density residential zone code

6.2.8.1 Application

This code applies to assessable development:

(a) within the Low density residential zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Low density residential zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.8.2 Purpose and overall outcomes

(1) The purpose of the Low density residential zone code is to provide for predominantly dwelling houses supported by community uses and small-scale services and facilities that cater for local residents.

(2) The purpose of the Low density residential zone code in the local government area is to provide for predominantly low density, low-rise Accommodation activities on a range of lot sizes. Whilst primarily intended to accommodate dwelling houses, limited other Accommodation activities may also be established in the zone where compatible with the prevailing residential character and amenity.

(3) The purpose of the Low density residential zone code will be achieved through the following overall outcomes:

(a) development provides for low density housing types, primarily in the form of dwelling houses that promote variety in housing size and choice;

(b) limited other Accommodation activities, such as community residences, residential care facilities and retirement facilities, may be established in the zone, where such uses are compatible with the prevailing scale and residential character of surrounding development;

(c) home based businesses that are compatible with local residential amenity may be established in the zone;

(d) development may provide for limited Business, Community and Other activities, including sales offices, shops (limited to corner stores), community uses, emergency services and utility installations, which:

(i) directly support the day to day needs of the immediate residential community;

(ii) are a small-scale and low intensity;

(iii) are compatible with the local residential character and amenity of the area;

(iv) wherever possible, are co-located with similar activities within the zone;

(v) are accessible to the population they serve and are located on the major road network rather than local residential streets; and

(vi) do not have a significant detrimental impact on the amenity of surrounding residents, having regard to hours of operation, generation of odours, noise, waste products, dust, traffic, electrical interference, lighting and visual impacts;

(e) development occurring in residential neighbourhoods takes place in a planned, orderly manner that promotes certainty and maintains a high level of residential amenity for existing residents, in terms of the type, design and density of development that may occur over time;

(f) development in the zone provides for an attractive, open and low density form of urban residential living that promotes a sense of character and community inclusion;

(g) development provides for a range of lot sizes;

(h) to maintain the low density character and residential amenity of the zone, development has a low-rise built form;

(i) the scale, density and layout of development facilitates an efficient land use pattern that:

  (i) is well connected to other parts of the urban fabric and planned future development;

  (ii) supports walkable neighbourhoods that are well connected to employment nodes, centres, open space and recreation areas, community services and educational opportunities; and

  (iii) encourages public transport accessibility and use;

(j) development is designed and located in a manner which makes a positive contribution to the streetscape and is sympathetic to the intended scale and character of surrounding development;

(k) development incorporates a high level of residential amenity, personal health and safety and protection for property;

(l) communities are supported by interconnected open space networks and local centres incorporating attractive, comfortable, safe and convenient public spaces;

(m) development provides for pedestrian and bicycle movement networks that maximise connectivity, permeability and ease of movement within emerging community areas and to existing urban areas;

(n) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities;

(o) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network[12];

(p) development sensitively responds to scenic values and landscape character elements, particularly prominent ridgelines, foreshores, coastal landforms, significant landmarks, prominent stands of vegetation and rural and coastal views and vistas;

(q) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

[12] Development within the Low density residential zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

(r) development is provided with the full range of urban services to support the needs of the community, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(s) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(t) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.9 Low impact industry zone code

6.2.9.1 Application

This code applies to assessable development:

(a) within the Low impact industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Low impact industry zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.9.2 Purpose and overall outcomes

(1) The purpose of the Low impact industry zone code is to provide for service and low impact industry uses. It may include non-industrial and business uses that support Industrial activities where they do not compromise the long-term use of the land for industrial purposes. Activities considered appropriate in this zone are defined as low impact industry or service industry in the schedule of definitions.

(2) The purpose of the Low impact industry zone code in the local government area is to provide for low intensity Industry activities of a nature and scale that are compatible with intended development in the surrounding area.

(3) The purpose of the Low impact industry zone code will be achieved through the following overall outcomes:

(a) uses in the zone are predominantly for low intensity, low impact Industry activities, including bulk landscape supplies, low impact industry, research and technology industry, service industry and warehouse uses;

(b) development of ancillary Accommodation activities may be established only where directly supporting the ongoing Industry activities of the zone. These uses are limited to caretaker's accommodation;

(c) development of Business, Rural and Other activities, which are not ancillary but are compatible with Industry activities, may be established in the zone. These uses include, but are not limited to, agricultural supplies stores, hardware and trade supplies, offices, outdoor sales, showrooms, rural industries, transport depots and utility installations. Such uses must be appropriately located and designed to ensure that they do not compromise the ongoing operation and viability of Industry activities[13];

(d) development of limited Community and Recreation activities compatible with this zone may also be established. Such uses are limited to community uses, emergency services, funeral parlours and indoor sport and recreation;

(e) existing and planned Industry activities are protected from the intrusion of incompatible uses that may compromise or conflict with the primary use of premises for industry purposes;

(f) development provides for a range of lot sizes to cater for varying industry needs and user requirements;

(g) development has a predominantly low-rise built form that is sympathetic to the intended scale and character of the streetscape and surrounding area;

[13] Development within the Low impact industry zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(h) Industry activities integrate with the locality by providing a high quality of built form and landscaping in keeping with the expectations of a modern, safe and attractive industrial environment;

(i) development ensures that uses and works for industrial purposes are located, designed and managed to maintain public health and safety, avoid significant adverse effects on the natural environment and minimise impacts on non-industrial land and sensitive uses;

(j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(k) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use[14];

(l) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities;

(m) development is provided with the full range of urban services to support industry and employment needs, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(n) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(o) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[14] Development within the Low impact industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.10 Low-medium density residential zone code

6.2.10.1 Application

This code applies to assessable development:

(a) within the Low-medium density residential zone code as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Low-medium density residential zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.10.2 Purpose and overall outcomes

(1) The purpose of the Low-medium density residential zone code is to provide for a range and mix of dwelling types, including dwelling houses and multiple dwellings supported by community uses and small-scale services and facilities that cater for local residents.

(2) The purpose of the Low-medium density residential zone code in the local government area is to provide for low-medium density Accommodation activities in a low to medium-rise format, comprising of a range of single and multiple residential uses for permanent residents.

(3) The purpose of the Low-medium density residential zone code will be achieved through the following overall outcomes:

(a) development provides for a compatible mix of low and medium density residential dwelling choices and forms, predominantly for permanent living, including dwelling houses, dual occupancies and multiple dwellings (such as townhouses, villas, terraces and row houses);

(b) other low-medium density Accommodation activities, such as community residence, relocatable home parks, residential care facilities, retirement facilities, short-term accommodation and tourist parks, may also be provided. The operation and scale of these uses are compatible with, but do not detract from, the intended residential character and amenity of the zone;

(c) home based businesses that are compatible with local residential amenity may be established in the zone;

(d) development may provide for limited Business, Community and Other activities including sales offices, shops (limited to corner stores), community uses, emergency services and utility installations which:

(i) directly support the day to day needs of the immediate residential community;

(ii) are small-scale and low intensity;

(iii) are compatible with the local residential character and amenity of the area;

(iv) wherever possible, are co-located with similar activities within the zone;

(v) are accessible to the population they serve and are located on the major road network rather than local residential streets; and

(vi) do not have a significant detrimental impact on the amenity of surrounding residents, having regard to hours of operation, generation of odours, noise, waste products, dust, traffic, electrical interference, lighting and visual impacts;

(e) residential development encourages and facilitates urban consolidation;

(f) development has a low to medium-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area;

(g) the scale, density and layout of development facilitates an efficient land use pattern that:

(i) is well connected to other parts of the urban fabric and planned future development;

(ii) supports walkable neighbourhoods that are well connected to employment nodes, centres, open space and recreation areas, community services and educational opportunities; and

(iii) encourages public transport accessibility and use;

(h) multi-storey development ensures that there is no unreasonable loss of amenity for surrounding development, having regard to:

(i) microclimate impacts, including the extent and duration of any overshadowing;

(ii) privacy and overlooking impacts;

(iii) impacts upon views and vistas; and

(iv) building massing and scale relative to its surroundings;

(i) development is designed and located in a manner which makes a positive contribution to the streetscape and is sympathetic to the intended scale and character of surrounding development;

(j) development incorporates a high level of residential amenity, personal health and safety and protection for property;

(k) communities are supported by interconnected open space networks and local centres incorporating attractive, comfortable, safe and convenient public spaces;

(l) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(m) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities;

(n) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network[15];

[15] Development within the Low-medium density zone may be requested to provide a Traffic assessment report in accordance with PSP SC6.7 (Growth management).

(o) development sensitively responds to scenic values and landscape character elements, particularly prominent ridgelines, foreshores, coastal landforms, significant landmarks, prominent stands of vegetation and rural and coastal views and vistas;

(p) development avoids or mitigates adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location design, operation and management;

(q) development is provided with the full range of urban services to support the needs of the community, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(r) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(s) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.11 Major centre zone code

6.2.11.1 Application

This code applies to assessable development:

(a) within the Major centre zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Major centre zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.11.2 Purpose and overall outcomes

(1) The purpose of the Major centre zone code is to provide for a mix of uses and activities. It includes concentrations of higher order retail, commercial, offices, residential, administrative and health services, community, cultural and entertainment facilities and other uses capable of servicing a sub-region in the Planning Scheme area.

(2) The purpose of the Major centre zone code in the local government area is to accommodate a wide range of Business, Entertainment, Accommodation and Community activities in an active and vibrant mixed use environment. The scale and intensity of such development is consistent with the intended role and function of the Whitsunday hierarchy of centres.

(3) The purpose of the Major centre zone code will be achieved through the following overall outcomes:

(a) development supports the role of the zone as the regional focus and location of the highest order and intensity of Business and Entertainment activities. Such uses include, but are not limited to, food and drink outlets, offices, shops, shopping centres, clubs, function facilities, hotels, theatres and tourist attractions;

(b) development provides the highest order of Community activities to service the regional needs of the centre and to encourage community interaction, health and wellbeing. These Community activities include child care centres, community uses, educational establishments, emergency services, health care services and hospitals and places of worship;

(c) Recreation, Industry and Other activities, such as indoor sport and recreation, service industries and utility installations may be established where they are compatible with the character and amenity of surrounding development;

(d) a mix of low-medium density Accommodation activities, such as dual occupancies, multiple dwellings, rooming accommodation and short-term accommodation uses are provided that are complementary to the predominant business functions of the zone, with residential buildings incorporating non-accommodation activities at street level to activate the public realm;

(e) development of Business activities is of a scale and intensity that is consistent with the intended role and function of the particular activity centre and the Whitsunday hierarchy of centres[16];

[16] Development within the Major centre zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(f) Development has a low to medium-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area;

(g) development provides for an efficient pattern of land use where the greatest mix of uses and highest intensity of development is located in areas with relatively high levels of access to public transport facilities. All development has a clear connection to the pedestrian, bicycle, public transport and road transport networks and infrastructure;

(h) wherever possible, Business and Community activities are co-located and designed to contribute to safety, security and vitality of the centre;

(i) the built form and urban design of development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places, in keeping with the primary role and focus of the zone as a major hub;

(j) development contributes to the creation of an active, safe and legible public realm and, where appropriate, incorporates significant public open spaces including plazas, parks and gardens;

(k) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with connectivity to surrounding land uses;

(l) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding development, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(m) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(n) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(o) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities;

(p) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network[17];

(q) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;

(r) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(s) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[17] Development within the Major centre zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.12 Medium impact industry zone code

6.2.12.1 Application

This code applies to assessable development:

(a) within the Medium impact industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Medium impact industry zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.12.2 Purpose and overall outcomes

(1) The purpose of the Medium impact industry zone code is to provide for medium impact industry uses. It may include non-industrial and business uses that support the Industrial activities where they do not compromise the long-term use of the land for industrial purposes. Activities considered appropriate in this zone are defined as medium impact industry in the schedule of definitions.

(2) The purpose of the Medium impact industry zone code in the local government area is to provide for a wide range of Industry activities at a larger scale and higher intensity relative to the Low impact industry zone.

(3) The purpose of the Medium impact industry zone code will be achieved through the following overall outcomes:

(a) uses in the zone are predominantly for low to medium intensity and low to medium impact Industry activities, including bulk landscape supplies, low impact industry, medium impact industry, research and technology industry, service industry and warehouse uses;

(b) development of ancillary Accommodation may be established only where directly supporting the ongoing Industry activities of the zone. These uses are limited to caretaker's accommodation;

(c) development of Business, Rural and Other activities, which are not ancillary but are compatible with Industry activities, may be established in the zone. These uses include, but are not limited to, agricultural supplies stores, hardware and trade supplies, offices, outdoor sales, showrooms, rural industries, transport depots, transport depots and utility installations. Such uses must be appropriately located and designed to ensure that they do not compromise the ongoing operation and viability of Industry activities[18];

(d) development of limited Community activities, compatible with this zone may also be established. Such uses are limited to crematoriums, emergency services and funeral parlours;

(e) existing and planned Industry activities are protected from the intrusion of incompatible uses that may compromise or conflict with the primary use of premises for industry purposes;

(f) development provides for a range of lot sizes to cater for varying industry needs and user requirements;

(g) development has a predominantly low-rise built form that is sympathetic to the intended scale and character of the streetscape and surrounding area;

[18] Development within the Medium impact industry zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(h) Industry activities integrate with the locality by providing a high quality of built form and landscaping in keeping with the expectations of a modern, safe, and attractive industrial environment;

(i) development ensures that uses and works for industrial purposes are located, designed and managed to maintain public health and safety, avoid significant adverse effects on the natural environment and minimise impacts on non-industrial land and sensitive uses;

(j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(k) Industry activities provide for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use[19];

(l) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities;

(m) development is provided with the full range of urban services to support industry and employment needs, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(n) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(o) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[19] Development within the Medium impact industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.13 Mixed use zone code

6.2.13.1 Application

This code applies to assessable development:

(a) within the Mixed use zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Mixed use zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.13.2 Purpose and overall outcomes

(1) The purpose of the Mixed use zone code is to provide for a mixture of development that may include business, retail, residential, tourist accommodation and associated services, service industry and low impact uses.

(2) The purpose of the Mixed use zone code in the local government area is to provide for an appropriate mix of uses that take advantage of and support the development of key mixed use activity areas.

(3) The purpose of the Mixed use zone code will be achieved through the following overall outcomes:

(a) development provides for a range of activities that are compatible with the intent of the zone;

(b) Community and Other activities established in the zone are appropriately designed and located to assist in maintaining public health, contribute to the comfort and safety of residents and visitors and integrate with the built form and character of the zone. Such uses include community uses, emergency services, health care services and utility installations;

(c) the range, scale and intensity of Business, Recreation and Entertainment activities provided within this zone service the needs of surrounding residents and visitors, not compromising the role and function of existing centres within the region. These activities include but are not limited to food and drink outlets, offices, shops, indoor sport and recreation, bars, clubs, hotels, nightclub entertainment facilities, micro-breweries, coffee roasteries and tourist attractions;

(d) development provides for a range of Accommodation activities consistent with the mixed use environment intended in this zone. Such Accommodation activities include multiple dwellings, resort complexes, rooming accommodation and short-term accommodation;

(e) the scale, character and built form of development contributes to a high standard of amenity in keeping with the intended role and function of the particular precinct[20];

(f) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;

[20] Development within the Mixed use zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(g) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with connectivity to surrounding land uses;

(h) development has a low to medium-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area;

(i) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding development, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(k) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network[21];

(l) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(m) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;

(n) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(o) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[21] Development within the Mixed use zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.14 Neighbourhood centre zone code

6.2.14.1 Application

This code applies to assessable development:

(a) within the Neighbourhood centre zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Neighbourhood centre zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.14.2 Purpose and overall outcomes

(1) The purpose of the Neighbourhood centre zone code is to provide for a small mix of land uses to service residential neighbourhoods. It includes small-scale convenience shopping, professional offices, community services and other uses that directly support the immediate community.

(2) The purpose of the Neighbourhood centre zone code in the local government area is to provide for a limited range of small-scale Business and Community activities that support the basic convenience needs of local neighbourhoods.

(3) The purpose of the Neighbourhood centre zone code will be achieved through the following overall outcomes:

(a) development provides for the convenience and day to day Business needs of localised residential catchments, with uses including small-scale food and drink outlets, offices and shops;

(b) Community, Industry and Other activities, such as child care centres, community uses, emergency services, service industries and utility installations, may be established in the zone where they are compatible with the amenity of surrounding residential development;

(c) development provides for a limited range of Accommodation activities, including caretaker's accommodation, dual occupancies and multiple dwellings where such uses are ancillary to and support the predominant business functions of the zone;

(d) Business and Community activities are of a small-scale and limited intensity to maintain and reinforce the role and function of higher order activity centres as the preferred location for Business activities in the region, as demonstrated in the Whitsunday hierarchy of centres;

(e) development of Business activities in the Neighbourhood centre zone includes consideration of the following:

(i) the function and role of existing Business activities in the zone is maintained[22];

(ii) any commercial or retail component of development does not exceed 150m^2 GLA; and

(iii) site cover of the entire development does not exceed 50%;

[22] Development within the Neighbourhood centre zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

(f) development has a low-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area;

(g) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;

(h) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with connectivity to surrounding land uses;

(i) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding development, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(j) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(k) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities;

(l) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network[23];

(m) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(n) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;

(o) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(p) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[23] Development within the Neighbourhood centre zone may be requested to provide a Traffic assessment report in accordance with PSP SC6.7 (Growth management).

6.2.15 Recreation and open space zone code

6.2.15.1 Application

This code applies to assessable development:

(a) within the Recreation and open space zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Recreation and open space zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.15.2 Purpose and overall outcomes

(1) The purpose of the recreation and open space zone code is to provide for a range of sporting, recreation, leisure, cultural and educational activities. It may provide for local, district and regional scale parks that serve the recreation needs of residents and visitors and may include areas for conservation. Areas, such as parks, playing fields and playgrounds, are generally accessible to the public, however, access may be limited in certain areas at certain times. When required to meet community needs, development may include built structures, such as shelters, amenity facilities, picnic tables, clubhouses, gymnasiums, public swimming pools and tennis courts and other infrastructure to support the activities, provide safe access and support the management of these essential built structures.

(2) The purpose of the Recreation and open space zone code in the local government area is to provide for Recreation activities, open space and park functions and ancillary uses and infrastructure which are associated with the public use of those areas.

(3) The purpose of the Recreation and open space zone code will be achieved through the following overall outcomes:

(a) development provides for a range of passive and active Recreation activities that provide for the recreational needs of residents and visitors, including indoor/outdoor sport and recreation and park uses. The zone accommodates both formal and informal Recreation activities, including playing fields, equestrian facilities, outdoor cultural activities, educational activities, public swimming pools and outdoor courts;

(b) development may provide for limited other Community and Entertainment activities where they provide support for the predominant Recreation activity. Such uses include community uses, emergency services, clubs and function facilities as well as further supporting infrastructure, such as amenities blocks, shelters, spectator stands and picnic tables. Lighting infrastructure may be established in the zone where it supports the ongoing safe, comfortable and efficient operation of Recreation activities;

(c) recreation and open space areas may be used for temporary or periodical Business activities, such as markets or outdoor entertainment events, where these uses are of a scale that can be reasonably accommodated by the existing recreation and open space facilities and do not unduly impact on the amenity and character of the surrounding area;

(d) to maintain the intended character and amenity of the zone, development integrates with and compliments the streetscape and has a low-rise built form;

(e) development in the zone encourages personal safety and property security through the design of buildings and spaces, allowing for casual surveillance and the clear definition of public and private spaces;

(f) the co-location and multiple use of sport and recreation fields and facilities by complementary Recreation activities is encouraged;

(g) areas used for Recreation activities and open space complement and, where possible, are connected to other parts of the broader regional open space network, including land in the Environmental management and conservation zone;

(h) development in the zone provides a high level of amenity and mitigates the potential for land use conflicts with existing and planned development in the locality;

(i) existing and planned Recreation activities and open space areas are protected from the intrusion of incompatible land uses that may compromise or conflict with the primary use of the land for recreation and open space purposes;

(j) foreshores provide high quality recreation areas and are protected from further encroachment by incompatible development;

(k) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through location, design, operation and management;

(l) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(m) development is provided with an appropriate level of services and infrastructure that maintains public health, avoids negative impacts on the natural environment and ensures the safety of buildings and works;

(n) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(o) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.16 Rural zone code

6.2.16.1 Application

This code applies to assessable development:

(a) within the Rural zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Rural zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.16.2 Purpose and overall outcomes

(1) The purpose of the Rural zone code is to:

(a) provide for a wide range of rural uses, including cropping, intensive horticulture, intensive animal industries, animal husbandry, animal keeping and other primary production activities;

(b) provide opportunities for non-rural uses that are compatible with agriculture, the environment and the landscape character of the rural area, where they do not compromise the long-term use of the land for rural purposes; and

(c) protect and manage significant natural features, resources, and processes, including the capacity for primary production.

(2) The purpose of the Rural zone code in the local government area is to provide for a wide range of Rural activities and a limited range of non-rural activities, which complement or provide a service to rural areas. Activities in rural areas are sustainably managed to protect, maintain and enhance the productivity, character, visual amenity and ecological sustainability of the area.

(3) The purpose of the Rural zone code will be achieved through the following overall outcomes:

(a) development provides for a broad range of Rural activities, including animal husbandry, cropping, roadside stalls and wholesale nurseries, animal keeping, aquaculture, intensive animal industry, intensive horticulture, renewable energy facilities and rural industry, provided that adverse environmental and amenity impacts are avoided or appropriately managed;

(b) permanent Accommodation activities are limited to dwelling houses and caretaker's accommodation on existing lots. Home based businesses, nature-based tourism, Short-term accommodation (Dwelling), rural workers accommodation and tourist parks may also be established where the scale, intensity and nature of the use integrates with the rural landscape, rural activities and promotes the sustainable use of rural land;

(c) Business, Industry, Recreation and Community activities that are compatible with a rural setting and support rural enterprise and community wellbeing are facilitated where they do not compromise the use of the land for Rural activities. Such uses include agricultural supply stores, veterinary services, bulk landscaping supplies, community uses, emergency services and, where supporting the tourism industry, indoor sport and recreation, outdoor sport and recreation, environment facility, shop or food and drink outlet;

(d) non-rural activities are located, designed and operated to minimise conflicts with existing and future Rural activities on the surrounding rural lands;

(e) intensive Rural activities are not located adjacent to sensitive uses and are designed and operated to maintain the rural character and amenity of the zone;

(f) development encourages the continued operation of existing agri-business and continued development of new agri-business opportunities;

(g) development for extractive industry or a renewable energy facility is appropriately designed, operated and managed to minimise significant nuisance and environmental impacts on surrounding premises;

(h) development does not alienate or fragment agricultural land for current or future productivity unless:

  (i) there is an overriding need for the development in terms of public benefit; and

  (ii) no other site is suitable for the particular purpose;

(i) the built form of development in the zone integrates with and complements the predominant rural character and scale of the zone and sensitively responds to the environmental and topographical features of the landscape;

(j) to maintain the rural character and amenity of the locality, development of Business or Accommodation activities have a low-rise built form with a maximum building height of 8.5m above ground level, or 10.0m above ground level, where located on slopes exceeding 15%;

(k) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(l) development is provided with an appropriate level of services and infrastructure that maintains public health, avoids negative impacts on the natural environment and ensures the safety of buildings and works;

(m) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(n) the safety and efficiency of existing and future infrastructure (including road, rail, telecommunications and electrical infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.17 Rural residential zone code

6.2.17.1 Application

This code applies to assessable development:

(a) within the Rural residential zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Rural residential zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.17.2 Purpose and overall outcomes

(1) The purpose of the Rural residential zone code is to provide for residential development on large lots where local government infrastructure and services may not be provided and where the intensity of residential development is generally dispersed.

(2) The purpose of the Rural residential zone code in the local government area is to ensure that development is low density and semi-rural in nature, developed as a logical extension, infill or consolidation of existing rural residential zoned land. These areas occur on land considered unsuitable for agricultural production with Rural activities limited to small-scale activities that do not impact on the rural residential amenity of the zone.

(3) The purpose of the Rural residential zone code will be achieved through the following overall outcomes:

(a) development provides for low density Accommodation activities, in the form of dwelling houses on a range of relatively large lots within a semi-rural setting. Home based businesses may be established in the zone, where the scale, intensity and nature of the activity does not disturb the rural residential character and amenity of the surrounding locality;

(b) Rural, Business and Community activities are limited to small-scale and low intensity uses that are compatible with the prevailing rural residential character and amenity of the zone. Such uses are limited to animal husbandry, cropping, roadside stalls, sales offices, community uses and emergency services;

(c) to maintain the low density character and rural residential amenity of the zone, development has a low-rise built form;

(d) the built form of development integrates with and complements the predominant rural residential character and scale of the zone and is sympathetic to the environmental and topographical features of the landscape;

(e) development for Accommodation activities adjacent to rural land does not interfere with the existing or ongoing use of the rural land for productive agricultural purposes;

(f) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(g) development is provided with an appropriate level of services and infrastructure that maintains public health, avoids negative impacts on the natural environment and ensures the safety of buildings and works; and

(h) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

6.2.18 Special industry zone code

6.2.18.1 Application

This code applies to assessable development:

(a) within the Special industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Special industry zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.18.2 Purpose and overall outcomes

(1) The purpose of the Special industry zone code is to provide for specialised industry uses, including those that are noxious and hazardous. It may include non-industrial and business uses that support the Industrial activities where they do not compromise the long-term use of the land for industrial purposes. Activities considered appropriate in this zone are defined as special industry in the schedule of definitions;

(2) The purpose of the Special industry zone in the local government area is to provide for existing and future large scale, high intensity industry, which has the potential to significantly impact sensitive uses;

(3) The purpose of the Special industry zone code will be achieved through the following overall outcomes:

(a) uses in the zone are predominantly for higher intensity, higher impact Industry activities that have the potential to generate significant off-site impacts, including high impact industry and special industry uses;

(b) development of limited Accommodation, Community and Other activities compatible with this zone may also be established. These uses are limited to caretaker's accommodation, emergency services, substations, telecommunications facilities and utility installations. Such uses must be appropriately located and designed to ensure that they do not compromise the ongoing operation and viability of Industry activities[24];

(c) development provides for a range of lot sizes, including an appropriate proportion of larger lots to cater for larger format and land consumptive Industry activities;

(d) development has a built form that is compatible with the intended scale and character of the streetscape and surrounding area whilst accommodating industry operating requirements;

(e) Industry activities integrate with the locality by providing a high quality of built form and landscaping in keeping with the expectations of a modern, safe, and attractive industrial environment;

(f) the viability of both existing and future noxious and hazardous Industry activities are protected from the intrusion of incompatible uses;

(g) uses and works for noxious and hazardous industrial purposes are located, designed and managed to maintain safety to people, avoid significant adverse effects on the natural environment and minimise impacts on adjacent

[24] Development within the Special impact industry zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

non-industrial land, having regard to the inherent risks associated with these types of industries;

(h) Accommodation activities are not located within close proximity to the Industry activities in the zone;

(i) any sensitive uses located in the Special industry zone do not compromise the viability of both existing and future Industry activities;

(j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(k) Industry activities provide for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use[25];

(l) development is provided with the full range of urban services to support industry and employment needs including reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(m) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(n) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[25] Development within the Special industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.19 Tourist accommodation zone code

6.2.19.1 Application

This code applies to assessable development:

(a) within the Tourist accommodation zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Tourist accommodation zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.19.2 Purpose and overall outcomes

(1) The purpose of the Tourist accommodation zone code is to provide for short-term accommodation in locations where there is a strong focus on tourist attractions supported by community uses and small-scale services and facilities.

(2) The purpose of the Tourist accommodation zone code in the local government area is to provide development that meets the needs and expectations of visitors to the Region through the co-location of a range of Accommodation and Business activities.

(3) The purpose of the Tourist accommodation zone code will be achieved through the following overall outcomes:

(a) development provides for Accommodation activities, primarily in the form of relocatable home parks, resort complexes, rooming accommodation, short-term accommodation and tourist parks, that promote variety in visitor accommodation;

(b) development facilitates opportunities for establishing tourist facilities and services in urban, rural, environmental or coastal areas to complement tourist accommodation and enhance the attractiveness of tourist areas;

(c) development may provide for limited Business, Community and Other activities, including food and drink outlets, shops, community uses, emergency services and utility installations, which:

(i) directly support the day to day needs of the immediate visitors and residential community;

(ii) are small-scale and low intensity;

(iii) are compatible with the local residential character and amenity of the area;

(iv) wherever possible, are co-located with similar activities within the zone;

(v) are accessible to the population they serve and are located on the major road network, rather than local residential streets;

(vi) do not undermine the viability of nearby centres[26];

(vii) do not have a significant detrimental impact on the amenity of surrounding residents, having regard to hours of operation,

[26] Development within the Tourist accommodation zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

generation of odours, noise, waste products, dust, traffic, electrical interference, lighting and visual impacts;

(d) to maintain the low intensity character and residential amenity of the zone, development has a low-rise built form;

(e) development enhances and protects the unique local, scenic, environmental, cultural or historic character of the locality;

(f) development is facilitated where it has a direct relationship with local scenic, environmental, recreational, cultural or historic character;

(g) development is designed and located in a manner which makes a positive contribution to the streetscape and is sympathetic to the intended scale and character of surrounding development;

(h) development incorporates a high level of residential amenity, personal health and safety and protection for property;

(i) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(j) development located close to centres, community facilities and open space provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use;

(k) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities;

(l) development demonstrates an appropriate level of transport infrastructure is available and will not unreasonably interfere with the safe and efficient operation of the surrounding road network[27];

(m) development is reflective of, and responsive to, the environmental constraints of the land;

(n) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) that form the basis of the tourist attraction. Any unavoidable impacts are minimised through sensitive location, design, operation and management;

(o) development is provided with an appropriate level of services and infrastructure that maintains public health, avoids negative impacts on the natural environment and ensures the safety of buildings and works;

(o) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(p) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

[27] Development within the Tourist accommodation zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

6.2.20 Waterfront and marine industry zone code

6.2.20.1 Application

This code applies to assessable development:

(a) within the Waterfront and marine industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Waterfront and marine industry zone code by the tables of assessment in Part 5 (Tables of assessment).

6.2.20.2 Purpose and overall outcomes

(1) The purpose of the Waterfront and marine industry zone code is to provide for waterfront, marine and business industry uses that require land near, or adjoining the waterfront. It may include non-industrial and business uses that support the Industrial activities, where they do not compromise the long-term use of the land for industrial purposes.

(2) The purpose of the Waterfront and marine industry zone code in the local government area is to provide a dedicated area for the establishment of waterfront and marine Industry activities as well as a limited range of non-industry activities that are compatible.

(3) The purpose of the Waterfront and marine industry zone code will be achieved through the following overall outcomes:

(a) the Waterfront and marine industry zone is predominantly used for marine industry uses, including ship and boat building, marine equipment manufacturing, marine and maritime service providers, storage, marine vessel refitting and marine vessel maintenance operations;

(b) other Industry activities may be established in the zone where they require access to a navigable waterway or provide support or complementary services to marine industry uses;

(c) development of ancillary Accommodation and Business activities may be established only where directly supporting the ongoing Industry activities of the zone. These uses are limited to caretaker's accommodation, food and drink outlets, outdoor sales and service station;

(d) Rural and Other activities may also be established in the zone where they are ancillary to and directly support the ongoing viability and operation of marine industry uses. These uses include rural industries (including wholesale and distribution of seafood products), aquaculture, landings and port services;

(e) compatible non-maritime uses should be co-located within the site allowing for good pedestrian access and permeability;

(f) the zone is protected from the intrusion of incompatible land uses that may compromise or conflict with the primary use of premises for Industry activities;

(g) the first stage of development incorporates a single integrated area for marine services and repair infrastructure for use by all existing and future operators located in the zone, comprising of:

(i) a canal basin;

(ii) a boat ramp into the canal basin;

(iii) a straddle lift for vessels up to 30m in length;

(iv) hardstand area (with a minimum area of approximately 2 hectares);

(v) equipment for the removal, treatment and disposal of sewage and other solid and liquid waste from vessels, including bilge water;

(vi) equipment for the removal and storage of fuel from vessels;

(vii) a vessel wash down facility designed and constructed to industry best practice standards;

(viii) a location for an enclosed pressure sand blasting and painting facility; and

(ix) a waste treatment system for the containment, treatment and removal of waste materials from blasting, painting and surface coating activities. The waste treatment system must be located so that influx of tidal waters is prevented;

(h) development has a built form that meets the functional needs of marine industry uses and is also sympathetic to the non-urban character and amenity of the surrounding area;

(i) development incorporates high quality urban design and landscaping to create an attractive, functional and legible waterfront industry precinct;

(j) development ensures that uses and works for industrial purposes are located, designed and managed to maintain public health and safety, avoid significant adverse effects on the natural environment and minimise impacts on non-industrial land and sensitive uses;

(k) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

(l) Industry activities provide for pedestrian, bicycle and vehicular movement networks that maximise connectivity, safety, permeability and ease of movement in a manner that encourages public transport accessibility and use[28];

(m) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities;

(n) development is provided with the full range of urban services to support industry and employment needs, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

(o) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

(p) the safety and efficiency of existing and future infrastructure (including road, rail, pipelines, telecommunications and transmission infrastructure) is

[28] Development within the Waterfront and marine industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

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Airlie Beach local plan boundary and precinct map

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Part 7 Local Plans

7.1 Preliminary

(1) Local plans address matters at the local or district level and may provide more detailed planning for the zones.

(2) Local plans are mapped and included in Schedule 2 (Mapping).

(3) A precinct may be identified for part of a local plan.

(4) The categories of development and assessment for development in a local plan are in Part 5 (Tables of assessment).

(5) Assessment benchmarks for local plans are contained in a local plan code.

(6) Each local plan code identifies the following:

(a) the application of the local plan code;

(b) the purpose of the local plan code;

(c) the overall outcomes that achieve the purpose of the local plan code;

(d) the purpose and overall outcomes for each precinct;

(e) the performance outcomes that achieve the overall outcomes of the local plan code;

(f) the acceptable outcomes that achieve the performance outcomes of the local plan code; and

(g) the performance and acceptable outcomes of a precinct that achieve the overall outcomes of the precinct.

(7) The following are the local plan codes for the Planning Scheme:

(a) Airlie Beach local plan;
(b) Bowen local plan; and
(c) Hamilton Island local plan.

7.2 Local plan codes

7.2.1 Airlie Beach local plan code

7.2.1.1 Application

This code applies to assessable development within the Airlie Beach local plan area as identified on the Local plan maps contained within Schedule 2 (Mapping).

Editor's note – To the extent of any inconsistency between the Airlie Beach local plan code and any other part of the Planning Scheme, the Airlie Beach local plan code prevails.

7.2.1.2 Purpose and overall outcomes

(1) The purpose of the Airlie Beach local plan code is to provide a development framework that:

(a) promotes the unique attributes of the locality;

(b) facilitates diverse Accommodation, Business and Entertainment activities;

(c) cultivates a hub of activity, social interaction, quality public space and placemaking; and

(d) contributes to the vitality and experience of Airlie Beach, as a tropical coastal tourist destination;

(2) The purpose of the Airlie Beach local plan code will be achieved through the following overall outcomes:

(a) The character of Airlie Beach, which includes its vital, small town scale, tropical climate, pedestrian neighbourhoods, compact Main Street form, blue views to the sea and green views to Airlie Hill, visually penetrable buildings and heights and lush landscape elements, is maintained;

(b) development reduces visual bulk of buildings by utilising podiums, awnings, articulation, materials, colours and landscaping to create visual interest;

(c) development is climate responsive and promotes a 'tropical sense of place', incorporating high quality, adaptable, energy efficient building design that maximises the utility of prevailing breezes, the surrounding natural landscape, open spaces and pedestrian routes;

(d) semi-public spaces, streets, laneways or other public spaces are designed to:

(i) ensure public access is available 24 hours a day; and

(ii) create a safe environment that maximises casual surveillance and discourages anti-social behaviour;

(e) placemaking, wayfinding and landscaping are utilised to promote a strong sense of place, encourage social interaction and activity, guide navigation throughout Airlie Beach and delineate boundaries between public, semi-public and private spaces;

(f) development incorporates permeable pedestrian and cycle movement from the Bicentennial Walkway through to the Whitsunday Transit Terminal and from the Foreshore through Precinct A, Precinct B and Precinct C to Waterson Way via existing and future laneways and pedestrian routes;

(g) pedestrian focused environments are established along Canal Street, Coconut Grove, Main Street and Waterson Way with:

(i) buildings built to the street alignment at ground level;

(ii) predominantly active uses at ground level;

(iii) façades articulated to ensure large, blank walls are not created;

(iv) awnings covering adjoining pedestrian footpaths along the full length of buildings;

(v) driveways avoided where alternate access points are available; and

(vi) undercroft car parking or car parking located to the rear or side of buildings;

(h) car parking is located away from the primary road frontage or screened, at rates that recognise pedestrian and cycle accessibility and cross utilisation within Airlie Beach;

(i) car parking demand is met efficiently, considering linkages and alternating peak demand between uses, with payments for parking in lieu considered in Precinct A and B where required parking cannot be provided on site;

Editor's note – Council is developing a precinct parking plan to inform payments per car park in lieu of development unable to provide on-site and timing of car park delivery. If applicable, contact Council for pre-lodgement advice to determine suitability.

(j) redevelopment in the Main Street and or adjoining the Foreshore is encouraged at higher density to account for existing constraints and encourage further revitalisation, enhancement of existing laneways and development of future laneways;

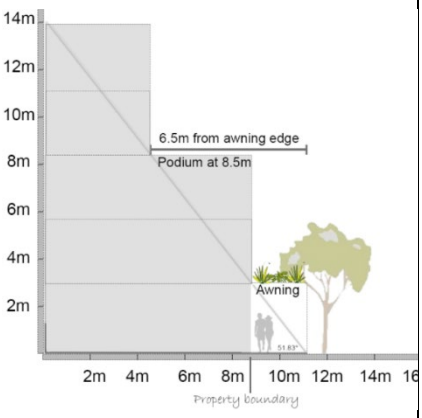
(k) development in Precinct C incorporates an internal road layout, which provides rear of lot access to properties in Precinct B and a vehicular connection across Airlie Creek;

(l) development in Precinct C and Precinct D is sited, orientated and designed to create an integrated, permeable and landscaped area with an active public plaza provided in each precinct to create a social hub and focal point of activity; and

(m) development in Precinct D incorporates a luxury hotel, including function facilities, designed to cater for a premium tourism market.

7.2.1.3 Assessment benchmarks

Table 7.2.1.3.1 Benchmarks for assessable development

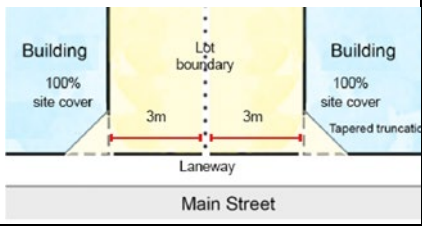
Performance Outcomes		Acceptable Outcomes	
All areas - Built form			
PO1	Development utilises podiums, awnings, articulation, an attractive roofline and landscaping to improve visual interest, visual amenity, reduce wind tunnel effects and reduce building bulk when viewed from a street, laneway or adjoining pedestrian routes.	**AO1.1**	Development exceeding 8.5m in building height, provides a podium and incorporates built form elements that differentiate between the podium and other building levels, including: (a) landscaping; (b) articulation; and (c) variations in building colour, materials and trimmings.
		AO1.2	The building incorporates vertical and horizontal articulation, such that no unbroken façade is longer than 10m.
		AO1.3	On the primary frontage podiums setback the tower 6.5m from the outside edge of the awning or 3m from the building façade, whichever is greater, and may be included at the awning level or any level above, up to 8.5m from ground level. 
		AO1.4	Podiums setback the tower a minimum of 3m from any side or rear boundary and may be included at the awning level or any level above, up to 8.5m from ground level.
PO2	Except where adjoining a laneway, buildings in Precinct A, Precinct B, on Waterson Way in Precinct C or on Canal Street or Coconut Grove in Precinct D create a continuous active street environment at ground level.	**AO2.1**	To promote a continuous active street environment, unless adjoining a laneway, development within Precinct A and Precinct B have front and side setbacks of 0m, at ground level.
		AO2.2	Development on Waterson Way within Precinct C or on Canal Street or Coconut Grove within

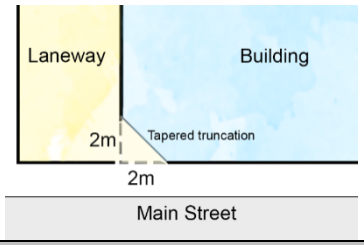
			Precinct D, have a minimum front and side setback of 0m and maximum front setback of 3m, at ground level.
PO3	Where development involves Accommodation activities, communal open space is provided such that residents have sufficient area to engage in communal activities, enjoy private and semi-private spaces and accommodate visitors.	**AO3.1**	Development involving Accommodation activities provides foyers and communal spaces to facilitate social interaction between residents and visitors, which comply with the following minimum areas and dimensions: (a) area equal to at least 20% of the total building footprint; and (b) minimum width of 3m. Editor's note – this acceptable outcome varies AO13.5 in the Short-term accommodation and multi-unit use code. All other parts of that code continue to apply, including private open space, such as balconies, are provided in accordance with Part 9.3.17 Short-term accommodation and multi-unit uses code.
All areas - Site layout and relationship of buildings to site features			
PO4	Development is oriented to the primary street frontage and promotes casual surveillance of public areas.	**AO4.1**	Development is designed to create a safe and attractive pedestrian environment by: (a) orienting the building façade to the primary street frontage; (b) ground level articulation clearly delineating building entry points; and (c) providing balconies, windows and other openings that overlook adjoining streets and public areas to maximise casual surveillance.
PO5	Development promotes a 'tropical sense of place' through the use of: (a) architectural elements that create shade; (b) lightweight and natural building materials and colours; and (c) generous shady landscaping.	**AO5.1**	Development utilises architectural features that create shade at ground level and façade patterns, both composed of building materials and finishes that are muted earth/environmental tones.
		AO5.2	Development incorporates landscaping, including at least three of the following options: (a) ground level planting boxes; (b) deep planting street trees, in keeping with adjoining street tree species; (c) vegetated podiums; (d) green walls; (e) balcony plantings; or (f) green roofs.
PO6	Development considers the position and orientation of windows, balconies and outdoor areas to capture prevailing breezes and views	**AO6.1**	Development is designed and sited to maximise passive cooling to increase the building's efficiency.
		AO6.2	Development overlooks natural landscapes and open spaces to

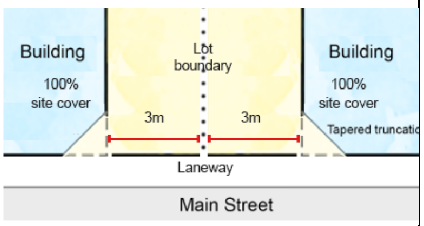
	of the natural landscapes and open spaces.		increase the connection between built form and the environment.
PO7	Active uses are predominant at ground level, where fronting: (a) Canal Street; (b) Coconut Grove; and (c) Waterson Way.	**AO7.1**	Development is sited and designed such that Canal Street, Coconut Grove and Waterson Way comprise active uses or spaces at ground level, which promote casual surveillance and visual interest to adjoining pedestrian pathways.
PO8	Development with a Main Street, Foreshore or plaza frontage stimulates the interaction between private, semi-public and public spaces by establishing active uses at ground level. Editor's note - Where development in Precinct A has a primary frontage to Main Street, the development must also address any secondary frontage to the Foreshore.	**AO8.1**	Development is sited and designed such that Main Street frontages comprise Business and Entertainment activities at ground level that are at least 80% open or transparent to allow internal activities to be visible from the outside and include open recesses to allow ground level activities to interact with the Street without affecting pedestrian movement.
		AO8.2	Development is sited and designed such that Foreshore and plaza frontages with: (a) ground level Accommodation activities, include building access and communal areas; or (b) Business or Entertainment activities, include active frontages that are at least 80% open or transparent to allow internal activities to be visible from the outside.
PO9	Development provides awnings, where fronting: (a) Canal Street; (b) Coconut Grove; (c) Main Street; (d) Waterson Way; and (e) the Foreshore.	**AO9.1**	Buildings provide adequate and appropriate shelter along adjoining streets and pedestrian routes in the form of an awning with a width: (a) that is 3m wide or to within 1m of any kerb, whichever is less; or (b) if awnings on adjoining premises are greater than 3m in width, awnings provided are consistent with the width and height of the adjoining awning, to within 1m of any kerb
PO10	Development reduces the visual impact of car parking areas where fronting: (a) Canal Street; (b) Coconut Grove; (c) Main Street; and (d) Waterson Way.	**AO10.1**	Development: (a) provides undercroft car parking that protrudes above the adjacent ground level by less than 1m; or (b) is sited and designed to locate car parking to the rear or side of the building.
All areas – placemaking, wayfinding, landscaping and CPTED			

PO11	Development ensures that lighting and building design facilitate wayfinding and the security of people and property, having regard to: (a) building entrances, loading and storage areas that are well lit and lockable after hours; (b) exterior building design that promotes safety; (c) minimisation of entrapment locations; and (d) opportunities for casual surveillance and sight lines.	**AO11.1**	Siting and design of lighting: (a) identifies and adequately illuminates building access points, loading or storage areas; (b) improves legibility and safety of entrances, exits and pathways between built form; (c) facilitates safety and casual surveillance by applying CPTED principles; and (d) promotes the visibility of placemaking and wayfinding measures. Editor's note—Applicants should have regard to Crime Prevention through Environmental Design Guidelines for Queensland.
		AO11.2	Development adjoining a laneway, identified on the ABLP Transport map, designs internal laneway frontages to be well lit and: (a) adjoined by active uses; or (b) where laneway frontages are not adjoined by active uses, public art, placemaking measures or landscaping are utilised to create a desirable pedestrian connection.
		AO11.3	The siting and design of built form does not create enclaves, entrapment points or accesses with low visibility from casual surveillance points.
PO12	Development in a Mixed use zone involving the creation of public space includes placemaking elements that contribute to the character and amenity of the area in the form of: (a) educational material about Airlie Beach's natural environment, wildlife, culture or history; (b) artwork, such as sculptures, mosaic tiling or murals; or (c) viewpoints allowing visitors to enjoy significant vistas, where available.	**AO12.1**	Development creating public space includes: (a) educational signage at points of local significance to enhance the resident and visitor experience; (b) artworks with local context, provided at a size and scale appropriate to the public open space area; or (c) where available, vistas from public spaces, including pedestrian routes, that consider natural features and seek to promote connection to the surrounding natural environment. Editor's note – A placemaking concept plan may be required dependent on the scale of the development.

PO13	Development in a Mixed use zone involving the creation of public space provides signage to enhance legibility and ease of navigation.	**AO13.1**	Development creating public space, including pedestrian routes and laneways, provides signage, consistent with existing Airlie Beach signage themes, at junction points providing direction to: (a) surrounding attractions, such as the Bicentennial Walkway, Boathaven Beach, Airlie Lagoon, Airlie Creek Track, Airlie Crescent Lookout and Honeyeater Lookout Trail; (b) nearby services, facilities and amenities; and (c) future plazas identified on the ABLP boundary and precinct map. Editor's note – A signage concept plan may be required dependent on the scale of the development. Editor's note – Contact Council for guidance on commonly themed signage measures.
PO14	Development in a Mixed use zone involving the creation of public space, including pedestrian routes and laneways, provides high quality landscaped areas.	**AO14.1**	Continuous landscaping of pedestrian routes and laneways provides shaded corridors connecting open space areas, natural features, plazas and buildings to each other, Main Street and the Foreshore. Note – A Landscaping plan may be prepared in accordance with the PSP SC6.4 Landscaping. Editor's note – this acceptable outcome is in addition to the Part 9.4.6 Landscaping code. All other parts of that code continue to apply.
		AO14.2	Open space areas are landscaped to create safe, comfortable and attractive pedestrian environments, providing: (a) shading to formal and informal seating areas; and (b) high quality landscaping, including large shade trees. Note – A Landscaping plan may be prepared in accordance with the PSP SC6.4 Landscaping. Editor's note – this acceptable outcome is in addition to the Part 9.4.6 Landscaping code. All other parts of that code continue to apply.
All areas – Laneways and connectivity			

PO15	Future laneways and pedestrian routes, identified on the ABLP Transport map, are available for public use 24 hours a day.	**AO15.1**	Future laneways and pedestrian routes, identified on the ABLP Transport map, must be dedicated to Council as public space.
PO16	Development supports permeable and attractive pedestrian and cycle movement from the Bicentennial Walkway through to the Whitsunday Transit Terminal and from the Foreshore to the plazas, Airlie Creek and Waterson Way.	**AO16.1**	Development establishes the future pedestrian routes and laneways identified on the ABLP Transport map.
		AO16.2	Development maintains and enhances existing pedestrian routes and laneways identified on the ABLP Transport map.
PO17	Pedestrian routes and laneways are created that facilitate permeable movement between Precincts, public plazas and surrounding residential streets, including, but not limited to: (a) Airlie Creek pedestrian spine; (b) connections across Airlie Creek; and (c) future laneways identified on the ABLP Transport map.	**AO17.1**	Development creates a desirable, safe and contiguous pedestrian environment enhanced by shade trees, signage, lighting, landscaping and seating along pedestrian corridors: (a) the length of Airlie Creek riparian corridor, providing visual connection to the creek where possible; (b) across Airlie Creek to connect the pedestrian route on both sides of the Creek; (c) from the plaza in Precinct C to adjoining residential streets, Orana Street, Raintree Place and Seaview Drive; and (d) from the plaza in Precinct C to the Foreshore.
PO18	Laneways accommodate easy movement for a large number of users by providing sufficient width and truncated corners.	**AO18.1**	Where identified on the ABLP transport map as a future laneway and located on a shared lot boundary, development on each adjoining lot provides a laneway width of 3m with no built form above ground level. 

		AO18.2	Buildings adjoining a laneway identified on the ABLP transport map, provide a minimum 2m tapered truncation on corners within the building envelope adjoining the laneway at the entrance/exit. 
Transport and access			
PO19	Development provides sufficient car parking and does not result in any net loss of on-street car parking.	**AO19.1**	Where development is within Precinct A or Precinct B and the existing number of on-site car parks are retained, additional car parking is calculated at the rates provided in Table 9.4.8.3.3 (Minimum on-site parking requirements) applied only to any additional GFA created by the development. Editor's note – Where development does not provide the required number of on-site car parking spaces, an infrastructure agreement may be entered into between the developer and Council, which provides for contributions to a Precinct Parking Plan in lieu of on-site car parking spaces. Editor's note – Contributions toward a precinct parking plan are a preferred option for development within the Main Street to reduce vehicle crossovers impeding pedestrian movement.
		AO19.2	Where development is not within Precinct A or Precinct B, car parking is calculated at the rates provided in Table 9.4.8.3.3 (Minimum on-site parking requirements). Editor's note – Where development does not provide the required number of on-site car parking spaces, an infrastructure agreement may be entered into between the developer and Council, which provides for contributions to a Precinct Parking Plan in lieu of on-site car parking spaces.
		AO19.3	Development does not result in the loss of any on-street car parking spaces or loading bays.
PO20	Development avoids or reduces vehicle crossovers, where fronting: (a) Canal Street; (b) Coconut Grove; and (c) Waterson Way.	**AO20.1**	Development fronting Canal Street, Coconut Grove and Waterson Way utilises side and rear access to buildings or driveways access multiple sites to

			minimise the total number of vehicle crossovers.
Precinct A and Precinct B – Built form			
PO21	Development maximises the development potential of the site to further revitalise Main Street and the Foreshore and encourage use of laneways.	**AO21.1**	The maximum site cover is: (a) 100% excluding any existing laneway, corner truncation or future laneway, as identified on the ABLP Transport map; or  (b) 90%, if not adjoining a laneway.
		AO21.2	Podium levels have a maximum tower footprint of 60% of the lot area, if on a premise that is 1,400m² or more, with no horizontal dimension greater than 50m.
Precinct B & C – Transport and access			
PO22	Development facilitates an internal road layout and vehicular movement across Airlie Creek, generally in accordance with the road layout plan identified on the ABLP transport map, including rear of lot vehicular access to the properties in Precinct B.	**AO22.1**	Development in Precinct C must provide an Airlie Creek vehicular crossing, generally in accordance with the road layout plan identified on the ABLP transport map.
		AO22.2	Development in Precinct C must provide vehicular connectivity, generally in accordance with the road layout plan identified on the ABLP transport map subject to relevant constraints: a) existing access points; b) hazards; c) topography; d) plaza location; e) pedestrian routes; and f) natural features. Note – A Traffic impact assessment report prepared in accordance with PSP SC6.7 Growth management may assist in demonstrating compliance with the performance outcome.
		AO22.3	Where possible, development in Precinct C must provide rear of lot vehicular access to properties in Precinct B, generally in accordance with the road layout plan identified on the ABLP transport map.
PO23	Development removes Main Street vehicle crossovers by utilising rear of lot access.	**AO23.1**	Development in Precinct B, adjoining the indicative internal road layout identified on the

			ABLP transport map, gains rear of lot access from the internal road or, where the indicative road has not yet been formalised, complies with PO24.
PO24	Development does not increase Main Street vehicle crossovers and, where possible, reduces Main Street vehicle crossovers.	**AO24.1**	Development in Precinct B, not adjoining the proposed internal road layout identified on the ABLP transport map, avoids vehicular access to the Main Street, or where this is not possible access is via a maximum of one vehicle crossover that may be shared with adjoining premises.
PO25	Development involving Business, Entertainment or Accommodation activities within Precinct C relocates all bus stops from Main Street to Precinct C.	**AO25.1**	Development that triggers the construction of the internal road network on the ABLP transport map relocates bus stops from Main Street to appropriate locations within Precinct C. Editor's note – Changes in location of the bus stop must occur in accordance with the *Public Transport Infrastructure Manual 2015.* Bus stop locations must be within 400m walking distance from the majority of destinations in Airlie beach. Note – A Traffic impact assessment report prepared in accordance with PSP SC6.7 Growth management may assist in demonstrating compliance with the performance outcome.
Precincts C & D - Public plazas			
PO26	Development in Precincts C and D create hubs of economic, social and cultural activity in the form of plaza(s), identified on the ABLP boundary and precinct map, through the orientation of buildings and direct pedestrian connections from adjoining precincts.	**AO26.1**	Development orientates pathways and built form in a manner that facilitates legible, safe and convenient pedestrian movement from surrounding precincts to the nearest plaza(s), identified on the ABLP boundary and precinct map, utilising the existing and future laneways and pedestrian routes identified on the ABLP transport map.
PO27	Development facilitates the establishment of central plaza(s), available 24 hours a day for public use and generally at locations identified as plaza(s) on the ABLP boundary and precinct map.	**AO27.1**	Plaza(s) identified on the ABLP boundary and precinct map must be dedicated to Council as public space.
PO28	Plaza(s) are designed to create safe, comfortable and attractive pedestrian environments, composed of: (a) Wayfinding maps and signage; (b) active uses; (c) high quality landscaping; (d) shading;	**AO28.1**	Plaza(s) are designed to create safe, comfortable and attractive pedestrian environments, including: (a) shaded formal and informal seating areas; (b) high quality landscaping, including large shade trees;

	(e) seating; and (f) areas of informal public open space.		(c) placemaking elements that promote social interaction and sense of place; and (d) Airlie Beach themed legibility measures including: i. a central map of the broader area; and ii. signage delineating distances to attractions and amenities at key pathway divergences. Editor's note – Contact Council for guidance on commonly themed signage measures.
PO29	Development is designed to maximise the efficient use of the precinct, considering the relevant constraints, opportunities and infrastructure.	**AO29.1**	Development must not detrimentally affect future development or compromise internal pedestrian and vehicle movement within each precinct. Note – Where only a portion of Precinct C or Precinct D is proposed for development, development may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).
Precinct D – Land Use			
PO30	Where development is for a hotel in Precinct D, the hotel must include a function facility.	**AO30.1**	A function facility associated with a hotel must be a minimum of 300m² GFA or 3% of the total GFA, whichever is greater.
All precincts – Reconfiguring a Lot			
PO31	Reconfiguring of a lot is designed to maximise the efficient use of the site, considering the relevant constraints, opportunities and infrastructure.	**AO31.1**	Reconfiguring of a lot within the Mixed use zone must not detrimentally affect future development within the Local Plan area. Note – Development within the Airlie Beach Local Plan area may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).

7.2.2 Bowen local plan code

7.2.2.1 Application

This code applies to assessable development within the Bowen local plan area as identified on the Local plan maps contained within Schedule 2 (Mapping).

Editor's note – To the extent any inconsistency between the Bowen local plan code and any other part of the Planning Scheme, the Bowen local plan code prevails.

7.2.2.2 Purpose and overall outcomes

(1) The purpose of the Bowen local plan code is to provide a development framework that facilitates:

(a) a mixed use marine hub, including marine education, marine industry, diverse business activities and high quality accommodation product, designed in a manner that avoids conflicts between uses in the marina;

(b) development that contributes to, rather than competes with, the Bowen CBD;

(c) marina and foreshore development, which contributes to the vitality and experience of the local plan area incorporating revitalized spaces, high quality landscaping and transport options connected to Bowen Beaches and Bowen CBD; and

(d) a mix of uses and high quality public space areas, which are designed and operated to maximise ocean views and marina access.

Note - Development within the Bowen local plan area may be requested to provide a Structure plan in accordance with PSP SC6.7.5 (Structure plan).

(2) The purpose of the Bowen local plan code will be achieved through the following overall outcomes:

Precinct A: Bowen Foreshore and Starboard Drive

(a) development provides a mix of Business, Entertainment and Accommodation activities that complement existing uses within the Bowen CBD;

(b) Accommodation activities provide for higher density living opportunities above the street level to facilitate active frontages at the street level, contribute to the vibrancy of the local plan area and enhance the development potential of the land;

(c) development provides active and open frontages adjoining Santa Barbara Parade, Herbert Street, Starboard Drive and recreation areas;

(d) development design encourages pedestrian and cycle movement around the precinct and facilitates connectivity between precincts and into wider Bowen;

(e) multi-storey development reduces the bulk of built form through setbacks, podiums, façade articulation, variation in the building footprint, variation in tower footprint and use of natural materials, colours, ground level plantings and vertical landscaping;

(f) placemaking elements, consistent Bowen themed signage, maps, universal symbols and landscaping are utilised at key locations to guide wayfinding that highlights public plazas, attractions and amenities;

Precinct B: Henry Darwen Drive

(g) development activates Henry Darwen Drive with a mix of low intensity, marine oriented:
  i. Business activities;
  ii. Service industry;
  iii. Educational establishment;
  iv. Port services; and
  v. Offices and Accommodation activities that support uses within the other Precincts;

(h) Accommodation activities provide for higher density living opportunities above the street level to facilitate active frontages at the street level, contribute to the vibrancy of the local plan area and enhance the development potential of the land;

(i) Accommodation activities are sited, designed and landscaped to maximise views of McCanes Bay and mitigate amenity impacts from nearby Marine industry uses, Landings and Port services;

(j) signage, pathways and landscaped connections facilitate efficient pedestrian and cycle movement throughout the local plan area and into Bowen CBD;

(k) development incorporates semi-public or, where appropriate, public spaces adjoining water frontages;

(l) development on the Recreation and open space zone land and Community facilities zone land is appropriately designed to be self-contained, responding to the disconnect from the Bowen CBD, and capitalising on the proximity to the water;

(m) development facilitates the public activation of Henry Darwen Drive;

Precinct C: Bowen marine industry

(n) development includes the provision of a regionally significant Marine industry hub, incorporating relevant supporting and ancillary functions;

(o) Industrial activities are designed and sited to mitigate impacts on sensitive land uses outside of the precinct, incorporating landscaping, lighting, fencing and operational controls, which also improve the character of the Marina;

(p) sensitive land uses are not located in the precinct to avoid conflict with the marine industry uses and supporting activities;

(q) access and manoeuvring for heavy vehicles is safe and avoids conflicts with vehicle and pedestrian movement, and is appropriately linked with the surrounding heavy vehicle network;

(r) development on the Open space zone land and Community facilities zone land is appropriately designed to be self-contained, responding to the disconnect from the Bowen CBD, and capitalising on the proximity to the water; and

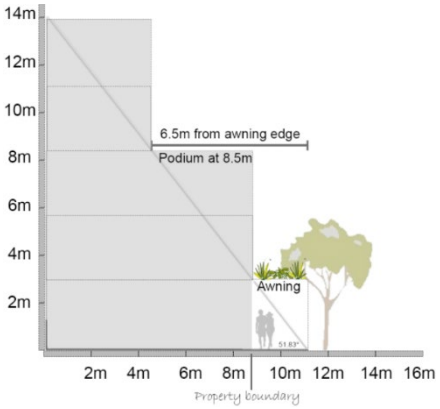
(s) water access for boats is safe and avoids conflicts with boats in the Marina.

7.2.2.3 Assessment Benchmarks

Table 7.2.2.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Pedestrian and cycle movement			
PO1	Development within the Marina creates pedestrian and cycle pathways to service the development and provide linkages throughout the locality, enhance water frontage activation and maximize vistas of the water where possible.	**AO1.1**	Development creates a desirable, contiguous pedestrian environment enhanced by shade trees, lighting, landscaping and seating along pedestrian pathways: (a) along all water frontages of Starboard Drive Marina arm; (b) along south-west water frontages of Henry Darwen Drive; and (c) connecting Henry Darwen Drive to the Bowen CBD via Santa Barbara Parade and Herbert Street.
PO2	Marina development creates landscaped entrance statements at key junctions and appropriate signage that provides legibility for users for the destinations within each entrance.	**AO2.1**	Suitably landscaped entrance statements are located: (a) at the entrance to each Marina arm, being the intersection of Santa Barbara Parade with Starboard Drive and Henry Darwen Drive; and (b) adjoining Peter Wyche Drive, to screen marine industry uses and pay tribute to Flagstaff Hill multi-purpose facility through placemaking design.
		AO2.2	Each entrance statement must include signage, which clearly identifies the relevant businesses and attractions.
PO3	Development does not create unsafe or restricted conditions for heavy vehicle movement on the heavy vehicle network.	**AO3.1**	Landscaping, vehicular accesses or pedestrian connections avoid conflicts with, and maintains safety along, the heavy vehicle network. Note – Bowen's heavy vehicle network may be viewed within Council's Integrated Transport Strategy.
All precincts – Landscaping			
PO4	Development provides high quality consistent landscaping, which: (a) integrates with existing Herbert Street landscaping; (b) integrates with the Foreshore along Santa Barbara Parade; and (c) provides a visual buffer of Industry activities adjoining Peter Wyche Drive and attractive boulevard for Flagstaff Hill visitors.	**AO4.1**	Development provides high quality streetscape landscaping, including shade street trees, adjoining: (a) Herbert Street to provide a continuation of existing high-quality landscaping; (b) Santa Barbara Parade to integrate with the Foreshore and delineate road crossing locations; and (c) Peter Wyche Drive, at least 3m wide and of adequate density to provide visual buffer to Industry activities within Precinct C.

Performance Outcomes		Acceptable Outcomes	
All precincts – Building heights			
PO5	Development does not dominate the intended streetscape character and, where development exceeds Bowen local plan building heights, the height is necessary for a functional marine industry use or: (a) provides high quality public space on the premises; (b) ensures sensitive building design that responds to view corridors and landscape elements; (c) provides high quality architectural design and building articulation, which reduces the bulk of the building; and (d) avoids overlooking and overshadowing of adjoining uses or land.	**AO5.1**	Development is compatible with the intended scale and character of the streetscape and surrounding area and does not exceed the maximum building height defined within the Building Heights Overlay Code.
All precincts - Other			
PO6	Development is designed to maximise the efficient use of the site, considering the relevant constraints, opportunities and infrastructure.	**AO6.1**	Development within the Mixed use zone on Starboard Drive (Precinct A) or any premises within Precinct B or C must not detrimentally affect future development within the Local Plan area. Note – Development within the Bowen Local Plan area may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).
Precinct A and B – Site layout and relationship of buildings to site features			
PO7	Development within Precinct B ensures an adequate buffer between sensitive uses and anticipated Marine industry uses within Precinct C.	**AO7.1**	Parking areas, Education facilities Industry activities, waste disposal areas, service areas and back-of-house activities within Precinct B are located on land nearest Precinct C and face north-east.
		AO7.2	Vegetation buffers are utilised within Precinct B to provide visual and noise buffers to marine industry uses within Precinct C, commensurate to the intensity of anticipated Marine industry impacts of Precinct C uses.
PO8	Development within Bowen Marina facilitates the creation of: (a) Landing and Port services uses capable of servicing Stone Island and	**AO8.1**	Development facilitates Landing and Port services uses and ancillary car parking within the Bowen Marina. Note – where only a portion of Bowen Marina is proposed for development, development may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth

Performance Outcomes		Acceptable Outcomes	
	commercial marine tourism ventures off of the coast of Bowen; and (b) a maritime orientated Educational establishment use.		management) to identify suitable locations for future Port services.
		AO8.2	Development facilitates the provision of a maritime orientated Educational establishment use.
PO9	Development adjoining public spaces and key pedestrian pathways facilitates casual surveillance of the area.	**AO9.1**	Development adjoining Herbert Street, Santa Barbara Parade, Starboard Drive, Henry Darwen Drive and water fronting walkways are sited and designed to: (a) address and provide an active or semi-active frontage at ground level; and (b) promote casual surveillance of public and semi-public spaces through the location of balconies, al-fresco dining, beer gardens or communal areas.
Precinct A and B – Built form			
PO10	Development utilises podiums, awnings, articulation, an attractive roofline and landscaping to improve visual interest, visual amenity, reduce wind tunnel effects and reduce building bulk when viewed from the street or adjoining pedestrian pathway.	**AO10.1**	Development exceeding 8.5m in building height, provides a podium fronting pedestrian pathways and incorporates built form elements that differentiate between the podium and other building levels, including: (d) landscaping; (e) articulation; or (f) variations in building colour, materials or trimmings.
		AO10.2	Podiums setback the tower 6.5m from the outside edge of the awning on the primary frontage and may be included at the awning level or any level above, up to 8.5m from ground level. 
		AO10.3	Podiums setback the tower a minimum of 3m from any side or rear boundary and may be included at the awning level or any level above, up to 8.5m from ground level.

Performance Outcomes		Acceptable Outcomes	
		AO10.4	The building incorporates vertical and horizontal articulation, such that no unbroken façade is longer than 10m.
PO11	Buildings along Santa Barbara Parade, Herbert Street and Dalrymple Street create an active street environment.	**AO11.1**	To promote a continuous active street environment the maximum front and side setbacks of development which fronts Santa Barbara Parade, Herbert Street or Dalrymple Street is 0m, between ground level and any podium.
PO12	Development adjoining Herbert Street and Santa Barbara Parade: (d) promotes 'sub-tropical sense of place' through the use of natural building materials, colours and vertical landscaping that create a cooler microclimate; and (e) includes architectural features reflective of the built form character of Herbert Street.	**AO12.1**	Development adjoining Herbert Street or Santa Barbara Parade design façade treatments and awnings below podium level to be sympathetic of the predominant characteristics of built form within Herbert Street, including at least three of the following: (a) façade patterning, utilizing timber or natural treatments; (b) timber or muted earth/environmental tones; (c) cornices; (d) decorative battens; (e) balconies fronting streets; and (f) high ceilings at ground level.
		AO12.2	Development adjoining Herbert Street or Santa Barbara Parade utilises vertical landscaping, including at least three of the following options: (a) ground level planting boxes; (b) deep planting street trees, in keeping with adjoining street tree species; (c) vegetated podiums; (d) green walls; (e) balcony plantings; or (f) green roofs.
PO13	Development is sensitively designed in response to view corridors and prevailing breezes by: (a) avoiding large building footprints and building façades; (b) sensitively orientating built form to minimise visual impact on sensitive land uses; and (c) variations in building height, design and mass.	**AO13.1**	Building layout provides variations in building height, design and mass to: (a) step back tower levels where adjoining parks and pedestrian pathways; (b) preserve air flow from prevailing south easterly breezes; (c) facilitate view corridors; and (d) promote natural light to communal and public spaces.
		AO13.2	A single building footprint may not exceed 3,000m².
		AO13.3	Buildings do not exceed 70% total site coverage.

Performance Outcomes		Acceptable Outcomes	
		AO13.4	Any part of the building above the podium level does not exceed a tower footprint of 1,500m², with no horizontal dimension greater than 50m.
PO14	Development without ground level Business or Entertainment activities fronting pedestrian walkways on Santa Barbara Parade or Henry Darwen Drive provide a desirable pedestrian frontage.	**AO14.1**	Development which fronts pedestrian walkways or public spaces locates Business or Entertainment activities along these frontages to facilitate active and desirable pedestrian environments and incorporate: (a) variations in building footprint and ground level articulation; (b) permeable or semi-permeable facades and frontages; (c) high quality landscaping, including shade trees; (d) appropriate lighting; and (e) clearly delineated building accesses at ground level.
Precinct A and B – Accommodation activities			
PO15	Accommodation activities in Precinct A and B maximise the development potential of the site and promote a dynamic mixed use environment.	**AO15.1**	Accommodation activities are consistent with the intent of the Local Plan Precinct A and Precinct B including: (a) Multiple dwelling; (b) Residential care facility; (c) Retirement facility; (d) Rooming accommodation; and (e) Short-term accommodation.
		AO15.2	Rooming accommodation located in Precinct B must be associated with an Educational establishment or Coastal dependent development within the Bowen Local plan area or Bowen Major centre zone.
Precinct C - Site layout and relationship of buildings to site features			
PO16	Industrial activities avoid negative impacts on visual amenity as viewed from Peter Wyche Drive.	**AO16.1**	Industrial activities avoid negative impacts on visual amenity as viewed from Peter Wyche Drive through landscaping, setbacks and variations in built form.
All precincts – Reconfiguring a Lot			
PO17	Reconfiguring of a lot is designed to maximise the efficient use of the site, considering the relevant constraints, opportunities and infrastructure.	**AO17.1**	Reconfiguring of a lot within the Mixed use zone on Starboard Drive (Precinct A) or any premises within Precinct B or C must not detrimentally affect future development within the Local Plan area. Note – Development within the Bowen Local Plan area may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).

7.2.3 Hamilton Island local plan code

7.2.3.1 Application

This code applies to acceptable and assessable development within the Hamilton Island local plan as identified on the Local plan maps contained within Schedule 2 (Mapping).

Note – Applicants should seek guidance from Hamilton Island Enterprises prior to lodging a development application.

Editor's note – To the extent of any inconsistency between the Hamilton Island local plan code and any other part of the Planning Scheme, the Hamilton Island local plan code prevails.

7.2.3.2 Purpose and overall outcomes

(1) The purpose of the Hamilton Island local plan code is to provide a development framework that facilitates growth to sustain and strengthen the tourist centre of Hamilton Island, while retaining its valuable natural assets.

(2) The purpose of the Hamilton Island local plan code will be achieved through the following overall outcomes:

(a) Hamilton Island provides for an integrated tourist resort community, comprising Hamilton and Dent Islands;

(b) Dent Island functions as an integrated part of Hamilton Island;

(c) Dent Island provides low impact, small scale resort Accommodation and Recreational activities, which is less intensively developed then Hamilton Island;

(d) Hamilton Island's role and use as an offshore gateway to the Whitsunday Islands is maintained and enhanced;

(e) development does not compromise the ongoing operation of existing tourist facilities and attractions with uses contributing to the vitality and experience of Hamilton Island as a tourist destination, residential community and a cultural focal point;

(f) development provides for a cluster of appropriately located low and low-medium density Accommodation activities in both traditional neighbourhood and mixed use formats, providing for and supporting the residential and tourist function of the Island, optimising premium hillside views to the ocean and maintaining the privacy of existing residential sites;

(g) development is located on ridgelines and vegetated gullies to remain generally recessive through existing vegetation and foreshore features as viewed from surrounding marine waters by way of suitable aesthetic building design, treatments and colours;

(h) development for Business, Entertainment, Recreation activities provide for both resident and visitor needs to support day and night time economies. Activities are established where they are compatible with the character and amenity of surrounding development, optimise public accessibility to, and visibility of, waterfront areas and natural features or support marina functions and provide services to boats and boat users;

(i) development of Community, Industry and Other activities may be established where they support tourist, marina or aviation functions and services and are compatible with the scale, nature, character and amenity of surrounding development;

(j) the character and individual identity of each development, evident in the style of buildings, landscaping and views to, and from, the surrounding waterbodies and natural features/landscapes is maintained;

(k) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;

(l) development provides for a built form that is predominately low-rise and compatible in theme, scale and character with the existing or desired form of development within the Island;

(m) development provides for an architectural character, which reflects an open and relaxed lifestyle centred on the outdoors that is designed to be responsive to the tropical maritime climate and environment;

(n) development provides and maintains a high level of residential and visitor amenity;

(o) development is linked by a series of circulation and open space networks that are designed to provide pedestrian, cyclists and other resort transport modes with direct, integrated, safe and pleasant access to centres, waterfront, marina and recreation activities;

(p) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters, such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;

(q) the tourism and recreation significance and the environmental and landscape values of Hamilton Island are recognised and protected with the accessibility of the surrounding marine and national parks (or other areas of conservation or scenic value) maintained for visitors and residents;

(r) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance, including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation, through sensitive location, design, operation and management;

(s) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;

(t) development is located and designed to maximise the efficient extension and safe operation of infrastructure;

(u) the safety and efficiency of existing and future infrastructure is protected and the amenity and safety of development is not adversely affected by proximity to such infrastructure; and

(v) risks to people and property as a result of bushfire, coastal and landslide hazards are considered. Development should only be carried out in hazard areas where it is demonstrated that impacts are suitably avoided and managed.

7.2.3.3 Assessment benchmarks

Table 7.2.3.3.1 Benchmarks for acceptable and assessable development

Performance Outcomes		Acceptable Outcomes	
All zones			
Minimum lot size			
PO1	Reconfiguring a lot provides for the size, dimensions and orientation of lots to: (a) be appropriate for their intended use; (b) be compatible with the existing or preferred character and identity of the zone and local area; (c) provide for appropriate landscaping, convenient vehicle access, manoeuvrability and on-site parking; (d) provide for the efficient use of land, whilst including sufficient area for suitable and useable private open space; and (e) take account of, and respond sensitively to, site constraints.	**AO1.1**	Land is retained in lots with a minimum lot size of: (a) 500m^2 within the Mixed use zone; (b) 1,000m^2 within the Low density residential zone; (c) 500m^2 within the Low-medium density residential zone; and (d) 1,000m^2 within the Low impact industry zone.
Built form			
PO2	The height of a building does not unduly: (a) overshadow adjoining dwellings; or (b) obstruct the outlook from adjoining lots; or (c) dominate the intended streetscape character.	**AO2.1**	Development has a maximum building height: (a) consistent with that provided in Local plan - Hamilton Island local plan boundary and precinct map); or (b) where not specified in the Local plan - Hamilton Island local plan boundary and precinct map: (i) 8.5m above ground level; or (ii) 10.0m above ground level where located on slopes exceeding 15%.
		AO2.2	The maximum building height of a garage, carport or shed is: (a) 4.5m above ground level to the highest point; and (b) 3.6m to the eaves.
PO3	Development is sited and designed to: (a) provide amenity for users of the premises, whilst preserving the privacy and amenity of nearby properties; (b) preserve any existing vegetation that will buffer the proposed building;	**AO3.1**	For dwelling houses and dual occupancy buildings the: (a) front boundary is setback a minimum of 3m; and (b) rear boundary is setback a minimum of: (i) 6m; or (ii) 3m where the lot backs onto Recreation and

<table>
<tr><th colspan="2">Performance Outcomes</th><th colspan="2">Acceptable Outcomes</th></tr>
<tr><td></td><td rowspan="4">(c) allow for landscaping to be provided between buildings, street frontages and between neighbouring buildings; and
(d) maintain the visual continuity, pattern of buildings and landscape elements within the street.</td><td></td><td>open space or non-residential areas;
(c) side boundaries are setback:
(i) a minimum of 3m for lots 550m² or less; or
(ii) a minimum of 4m for lots greater than 550m².</td></tr>
<tr><td></td><td>AO3.2</td><td>For all other Accommodation activities the front boundary is setback a minimum of:
(a) 6m from the primary road frontage; or
(b) 3m where fronting an internal private road; and
(c) side and rear boundaries are setback a minimum of 4m.</td></tr>
<tr><td></td><td>AO3.3</td><td>For Accommodation activities fronting a waterbody (including ocean), buildings are setback a minimum of 20m from the waterbody.</td></tr>
<tr><td></td><td>AO3.4</td><td>The integrity of natural vegetation and ground is retained and left predominantly undisturbed within boundary setback areas.</td></tr>
<tr><td>PO4</td><td>Buildings are sited and designed to:
(a) provide adequate building separation distance from adjoining uses; and
(b) optimise visual permeability of the built form.</td><td>AO4.1</td><td>New buildings or any new building levels are separated from any existing building in the following manner:
(a) habitable rooms in any new building are separated from any existing building in accordance with the table below:
<table><tr><td>Building height</td></tr><tr><td>7m</td></tr><tr><td>12</td></tr></table>
(b) non-habitable rooms in an existing building are separated from the existing building in accordance with the table below:
<table><tr><td>Building height</td></tr><tr><td>7m</td></tr><tr><td>9m</td></tr></table></td></tr>
<tr><td>PO5</td><td>The building is sited and designed to:
(a) provide a visibly clear pedestrian entrance to and from the building; and
(b) minimise the potential for pedestrian and vehicular conflict.</td><td>AO5.1</td><td>The building is sited and designed, such that:
(a) the main pedestrian entrance to the building, or group of buildings, is located on the primary street frontage; and
(b) pedestrian access to the entrance of the building(s) or individual dwellings is easily discerned.</td></tr>
</table>

Performance Outcomes		Acceptable Outcomes	
PO6	Buildings are sited and designed in a manner which: (a) minimises visual bulk and scale of the building mass; (b) provides visual interest through building articulation and architectural design features; and (c) allows sufficient area at ground level for communal open space, site facilities, resident and visitor parking, landscaping and maintenance of a residential streetscape where required.	**AO6.1**	The building incorporates most or all of the following design features: (a) vertical and horizontal articulation, such that no unbroken elevation is longer than 15m; or (b) variations in plan shape, such as curves, steps, recesses, projections or splays; or (c) variations in the treatment and patterning of windows, sun protection and shading devices or other elements of façade treatmentt at a finer scale than the overall building structure; or (d) balconies, verandahs or terraces; or (e) planting, particularly on podiums, terraces and low-level roof decks.
		AO6.2	Any projection above the podium level outside the boundaries of the building envelope is limited to balconies that do not project more than 1.5m into the setback.
		AO6.3	Roof forms include pitches or skillions with a substantial portion of the roof plane parallel to the ground slope.
Privacy and amenity			
PO7	Development does not unreasonably impact upon the amenity or environmental quality of its environs, especially any nearby sensitive uses.	**AO7.1**	Undesirable visual, noise and odour impacts on public spaces and sensitive uses, are avoided or reduced by: (a) providing vehicle loading/unloading and refuse storage/collection facilities within enclosed service yards or courtyards; and (b) providing an enclosed, roofed, vermin and fauna proof refuse area, incorporating cross ventilation and enclosing doors located at driveway entries.
PO8	Fencing ensures the protection of new landscaping and existing vegetation from fauna and is designed having regard to: (a) privacy and overlooking; (b) views and vistas; (c) building character and appearance; (d) safety and surveillance of street and entry areas; and	**AO8.1**	Street front fencing: (a) does not exceed 1.5 metres in height and: (i) is screened by landscaping for the entire length; or (ii) where street front fencing is not screened with landscaping, the length of the fence does

Performance Outcomes		Acceptable Outcomes	
	(e) the natural landscape.		not exceed 75% of the frontage or 15 metres.
		AO8.2	Side and rear boundary fencing: (a) does not exceed 1.8 metres in height; (b) is constructed of masonry, timber or chain wire coated in black or grey PVC; and (c) is screened by extensive landscaping.
PO9	Buildings and structures maintain the visual prominence of any significant landmarks and conserve important views and vistas.	**AO9.1**	Development ensures: (a) views from the mainland to Dent Island are of the natural landscape; (b) views from the surrounding waters and Islands of the Whitsundays to both Hamilton and Dent Islands are primarily of the natural landscape; (c) views of development on Hamilton Island are available from Dent Island; and (d) views of development on Dent Island from Hamilton Island are minimised.
PO10	Building and structures do not dominate the natural landscape.	**AO10.1**	Buildings on sloping lots are: (a) orientated so that the longer axis is parallel to the contours; or (b) have a stepped profile following the slope of the site.
		AO10.2	Buildings and structures consist of lightweight and framed construction, including the use of functional elements, such as: (a) shaded verandahs; or (b) balconies; or (c) pergolas.
		AO10.3	Where the underfloor surface, services and foundation structures are visible, these are screened with physical, such as timber battens or landscape elements.
		AO10.4	The design of garages, covered parking areas and storage areas are integrated with the building's architecture, including materials and landscaping.
PO11	The design, size, frequency and location of wayfinding signage does not detract from the character and amenity of the area.	**AO11.1**	Building names and other property identification are prominently displayed and illuminated at night.
		AO11.2	Signage complements the architecture of the development and streetscape.

Performance Outcomes		Acceptable Outcomes	
Open space and landscaping			
PO12	The development provides communal open space, private open space and landscaping, such that residents have sufficient area to engage in communal activities, enjoy private and semi-private spaces and accommodate visitors.	**AO12.1**	Multiple dwellings ensure that: (a) at least 30% of the site area at ground level is provided as communal open space for clothes drying and communal recreation facilities; and (b) at least 50% of this communal open space area is landscaped to achieve total ground cover at maturity.
		AO12.2	Each ground floor dwelling or rooming unit has a courtyard or similar private open space area with: (a) a minimum of 25m^2; (b) a minimum dimension of 4m; and (c) direct access from a main living area.
		AO12.3	Each dwelling or rooming unit above ground floor level has a balcony or similar private open space area with: (a) a minimum area of 10m^2; (b) a minimum dimension of 2m; and (c) direct access from a main living area.
PO13	Landscaping complements the existing or desired character of the Island, contributing to the amenity, accessibility and safety of public areas and is well integrated with the natural landscape.	**AO13.1**	A minimum of 30% of the site is to be landscaped with soft landscaping, exclusive of service areas, pools, paving, retaining structures and driveways.
		AO13.2	Accommodation activities provide for a landscaped area with a minimum width of 3m along all boundaries, exclusive of service areas, pools, paving, retaining structures and driveways.
		AO13.3	Where buildings with elevated or pole construction are proposed, the open ground beneath and immediately surrounding the building is extensively revegetated where light penetrates.
		AO13.4	Landscaped areas are designed to integrate open space networks and the built form through the use of the following: (a) provision of landscaped physical and visual connections through the site; and

Performance Outcomes		Acceptable Outcomes	
			(b) use of a variety of plants and planting structure to provide comfortable use of public and semi-public spaces.
		AO13.5	Existing trees are retained where removal is not required to site new buildings.
		AO13.6	Where significant vegetation is removed, replacement vegetation is advanced in size and maturity to contribute to the character of the surrounding area.
Access and parking			
PO14	Roads, driveways and pathways within residential areas are finished to a high visual standard with sufficient parking facilities provided.	**AO14.1**	Driveways are sealed and constructed of concrete, clay pavers, coloured or exposed aggregate finished concrete.
		AO14.2	On-site parking spaces are provided for a maximum of 2 buggy carts per dwelling unit.

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Biodiversity, waterways and wetlands overlay

Building heights overlay

Bushfire hazard overlay

Coastal hazard overlay: storm tide inundation

Coastal hazard overlay: erosion prone areas and permanent inundation

Extractive resources overlay

Flood hazard overlay

Heritage overlay

Infrastructure overlay: transport infrastructure

Infrastructure overlay: utility infrastructure

Landslide hazard overlay

Part 8 Overlays

8.1 Preliminary

(1) Overlays identify areas in the Planning Scheme that reflect state and local level interests and that have one or more of the following characteristics:

(a) there is a particular sensitivity to the effects of development; or

(b) there is a constraint on land use or development outcomes; or

(c) there is the presence of valuable resources; or

(d) there are particular opportunities for development.

(2) Overlays are mapped and included in Schedule 2 (Mapping).

(3) The changed category of development or assessment, if applicable, for development affected by an overlay are in Part 5 (Tables of assessment).

(4) Some overlays may be included for information purposes only. This should not result in a change to the category of development or assessment or any additional assessment benchmarks.

(5) Assessment benchmarks for an overlay may be contained in one or more of the following:

(a) a map for an overlay; or

(b) a code for an overlay; or

(c) a zone code; or

(d) a local plan code; or

(e) a development code.

(6) Where development is proposed on premises partly affected by an overlay, the assessment benchmarks for the overlay only relates to the part of the premises affected by the overlay.

(7) The overlays for the Planning Scheme are:

(a) Acid sulfate soils;

(b) Agricultural land;

(c) Airport environs;

(d) Biodiversity, waterways and wetlands;

(e) Building heights;

(f) Bushfire hazard;

(g) Coastal hazard;

(h) Extractive resources;

(i) Flood hazard;

(j) Heritage;

(k) Infrastructure; and

(l) Landslide hazard.

8.2 Overlay codes

8.2.1 Acid sulfate soils overlay code

8.2.1.1 Application

This code applies to accepted and assessable development:

(a) subject to the Acid sulfate soils overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Acid sulfate soils overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.1.2 Purpose and overall outcomes

(1) The purpose of the Acid sulfate soils overlay code is to ensure that the generation, or release, of acid and associated metal contaminants from acid sulfate soils does not have significant adverse effects on the natural environment, built environment, infrastructure or human health.

(2) The purpose of the Acid sulfate soils overlay code will be achieved through the following overall outcomes:

(a) development ensures that the release of acid and associated metal contaminants into the environment is avoided by either:

(i) not disturbing acid sulfate soils when excavating or otherwise removing soil or sediment, extracting groundwater or filling land; or

(ii) treating and, if required, undertaking ongoing management of any disturbed acid sulfate soils and drainage waters.

8.2.1.3 Assessment benchmarks

Table 8.2.1.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Avoidance or mitigation of acid sulfate soils			
PO1	Where acid sulfate soils are identified, development: (a) does not disturb acid sulfate soils; or (b) is managed to avoid or minimise the release of acid and metal contaminants, where disturbance of acid sulfate soils is unavoidable.	**AO1.1**	Acid sulfate soils are: (a) not identified on site; or (b) avoided or managed in accordance with the Queensland Acid Sulfate Soils Technical manual (Queensland Government, 2014). Note – This may be demonstrated by undertaking an Acid sulfate soils assessment report in accordance with PSP SC6.2 (Environmental features).

8.2.2 Agricultural land overlay code

8.2.2.1 Application

This code applies to accepted and assessable development:

(a) subject to the Agricultural land overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Agricultural land overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.2.2 Purpose and overall outcomes

(1) The purpose of the Agricultural land overlay code is to ensure that agricultural land is protected from development that may lead to its alienation, fragmentation or diminished productivity.

(2) The purpose of the Agricultural land overlay code will be achieved through the following overall outcomes:

(a) agricultural land is used for Rural activities;

(b) conflict between Rural activities and sensitive uses is avoided;

(c) development avoids adverse impacts on agricultural land from land degradation and stormwater runoff; and

(d) the stock route network is protected.

8.2.2.3 Assessment benchmarks

Table 8.2.2.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Conservation of agricultural land			
PO1	Development ensures that agricultural land is conserved to ensure its long-term availability and productive use for agriculture.	**AO1.1**	Development: (a) is for Rural activities; or (b) will not permanently alienate the ability for land to be used for Rural activities.
		AO1.2	Development that will result in the permanent alienation of land for future Rural activities is not located on agricultural land unless a site investigation confirms that the land is not suitable for that purpose. Note – This may be demonstrated by undertaking an evaluation in accordance with the Guidelines for Agricultural Land Evaluation in Queensland, 2nd edition, prepared by Queensland Government, 2015.
Avoidance or mitigation of land use conflict			

Performance Outcomes		Acceptable Outcomes	
PO2	Development for Accommodation activities and other sensitive uses does not adversely impact on the ongoing operational efficiency and productive use of agricultural land.	**AO2.1**	Any new Accommodation activities or sensitive uses are to be separated and/or buffered appropriately. Note – This may be demonstrated by undertaking a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 (Landscaping).
Realignment of lot boundaries			
PO3	The boundaries of existing lots containing agricultural lands are not realigned, unless it can be demonstrated that a realignment of lot boundaries would: (a) result in a more productive use and management of Agricultural land classification class A or class B land and water for Rural activities; or (b) does not lead to increased fragmentation of Agricultural land classification class A or class B land; or (c) does not increase the potential conflict between Rural and Non-rural activities.	**AO3.1**	The number of new lots, including the balance of the area is equal to or less than the total number of original lots.
		AO3.2	Provision of adequate separation areas between small lots and nearby Rural activities is provided to ensure nearby agricultural land is protected. Note – This may be demonstrated by undertaking a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 (Landscaping).
Sediment and stormwater run-off			
PO4	Development is located, designed and constructed to minimise the impact of sediment and stormwater run-off on agricultural lands.	**AO4.1**	Development is undertaken in accordance with PSP SC6.8 (WRC development manual).
Protection of stock route networks			
PO5	Development does not impact the integrity or connectivity of the stock route network.	**AO5.1**	Development provides for an adequate separation area where adjacent to the stock route network.
		AO5.2	Development ensures the connectivity and capacity of the stock route network.

8.2.3 Airport environs overlay code

8.2.3.1 Application

This code applies to accepted and assessable development:

(a) subject to the Airport environs overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Airport environs overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.3.2 Purpose and overall outcomes

(1) The purpose of the Airport environs overlay code is to protect the safety, efficiency and operational integrity of the Region's airports and associated aviation facilities.

(2) The purpose of the Airport environs overlay code will be achieved through the following overall outcomes:

(a) development does not create incompatible intrusions, or compromise aircraft safety in operational airspace;

(b) development does not adversely affect the functioning of aviation facilities;

(c) development avoids increasing risk to public safety in public safety areas;

(d) development is compatible with forecast levels of aircraft noise within the 20 ANEF contour and greater (as defined by Australian Standard 2021-2000 Acoustics – aircraft Noise intrusion – Building siting and construction (AS 2021) as adopted 7 July 2000); and

(e) sensitive land uses and other incompatible activities are appropriately located and designed, to not impact on airport operations.

8.2.3.3 Assessment benchmarks

Table 8.2.3.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Operational airspace			
PO1	Development does not create a permanent or temporary physical or transient obstruction in an airport's operational airspace.	**AO1.1**	Buildings, structures or temporary equipment, such as cranes, do not encroach into an airport's operational airspace.
		AO1.2	Landscaping does not include vegetation that at maturity will encroach into the airport's operational airspace.
		AO1.3	Transient activities associated with development, such as parachuting, hot air ballooning and hang-gliding, will not occur within an airport's operational airspace. Note – where development intrudes into the airport's operational airspace, the application will be referred to the airport manager for assessment.
Lighting and reflective surfaces			

Performance Outcomes		Acceptable Outcomes	
PO2	Development within the lighting buffer zone does not include external lighting or reflective surfaces that could distract or confuse pilots.	**AO2.1**	Development identified within the lighting buffer zone does not: (a) emit light that will exceed the maximum light intensity specified for the area; or (b) include any of the following types of outdoor lighting: (i) straight parallel lines of lighting 500m to 1000m long; (ii) flare plumes; (iii) upward shining lights; (iv) flashing lights; (v) laser lights; (vi) sodium lights; or (vii) reflective surfaces. Note – *Development which does include type(s) of lighting as listed above will be referred to the airport manager.* Note – *Civil Aviation Safety Authority (CASA) can provide advice to both Council and applicants at pre-lodgement or development assessment stage of development. They also have legislative powers to make directives to modify lighting after it has been installed – this should be avoided.*
Emissions			
PO3	Emissions within an airport's operational airspace do not significantly: (a) increase air turbulence; (b) reduce visibility; or (c) compromise the operation of aircraft engines.	**AO3.1**	Within an airport's operational airspace, development: (a) does not emit: (i) smoke, dust, ash or steam; or (ii) a gaseous plume at a velocity exceeding 4.3m/sec; or (b) where emitting smoke, dust ash, steam or a gaseous plume exceeding 4.3m/sec, is designed and constructed to mitigate adverse impacts of emissions upon operation airspace.
Wildlife hazard			
PO4	Development does not cause wildlife to create a safety hazard within an airport's operational airspace	**AO4.1**	Development located within 3km of an airport's runway: (a) does not involve uses listed in column 1 of Table 8.2.3.3.2 (Land uses associated with increases in wildlife strikes and hazards); and (b) where involving a use listed in column 2 of Table 8.2.3.3.2 (Land uses associated with increases in wildlife strikes and hazards), includes measures to reduce

Performance Outcomes		Acceptable Outcomes	
			the potential to attract birds and bats.
		AO4.2	Development located between 3km and 8km of an airport's runway, involving a use listed in column 1 or column 2 of Table 8.2.3.3.2 (Land uses associated with increases in wildlife strikes and hazards), includes measures to reduce the potential to attract birds and bats
		AO4.3	Development located between 8 km and 13 km of a strategic airport's runway, involving a use listed in column 1 or column 2 of Table 8.2.3.3.2 (Land uses associated with increases in wildlife strikes and hazards), does not increase the potential to attract birds and bats.
Protection of aviation facilities			
PO5	Development within the building restricted area does not interfere with the function of aviation facilities Note—Development complies with this performance outcome where written confirmation from Air Services Australia confirms that the development will not impair the functioning of the aviation facility.	**AO5.1**	Development located within the building restricted area for an aviation facility: (a) does not create: (i) permanent or temporary physical obstructions in the line of sight between antennas; (ii) an electrical or electromagnetic field that will interfere with signals transmitted by the facility; or (iii) reflective surfaces that could deflect or interfere with signals transmitted by the facility; and (b) is designed and constructed to mitigate adverse impacts on the function of the facility. Note—Advice from Air Services Australia should be sought when proposing development within the Aviation facility sub-category. Appendix 2 contained in the SPP Guideline, State interest—infrastructure, Guidance on strategic airports and aviation facilities identifies development likely to impact certain aviation facilities.
Public safety areas			
PO6	Development within an airport's public safety area does not increase the risk to public safety.	**AO6.1**	Development within an airport's public safety area does not: (a) propose greater dwelling density than a dwelling house;

Performance Outcomes		Acceptable Outcomes	
			(b) introduce or intensify Business, Entertainment, Community or Recreational activities; or (c) involve the manufacture, use or storage of flammable, explosive, hazardous or noxious materials.
Aircraft noise			
PO7	Development is appropriately located and designed to prevent adverse impacts from aircraft noise.	**AO7.1**	Development within the 20–40 ANEF contour is: (a) consistent with Table 8.2.3.3.3 (Compatible and incompatible land uses within ANEF contours of the SPP guideline: Strategic airports and aviation facilities); and (b) is designed and constructed to attenuate aircraft noise by achieving the indoor design sound levels specified in Table 8.2.3.3.4 (Desirable indoor sound levels for sensitive land uses of the SPP guideline: Strategic airports and aviation facilities).

Table 8.2.3.3.2 Land uses associated with increases in wildlife strikes and hazards

Column 1: High risk	Column 2: Moderate risk
<u>Areas of environmental significance</u> Conservation estate (wetland) <u>Rural activities</u> Cropping (turf farm) Cropping (fruit tree farm) Intensive animal industry (piggery) Aquaculture (fish processing/packing plant) <u>Recreation activities</u> Major sport, recreation and entertainment facility (showground) <u>Industry activities</u> Low-impact industry (food processing plant) Medium-impact industry (food processing plant) High-impact industry (food processing plant) <u>Other activities</u> Food/organic waste facility Putrescible waste facility (e.g. landfill, transfer station)	<u>Areas of environmental significance</u> Conservation estate (all other) <u>Rural activities</u> Animal husbandry (cattle/dairy farm) Intensive animal industry (poultry farm) <u>Recreation activities</u> Major sport, recreation and entertainment facility (all other) Outdoor sport and recreation Park <u>Other activities</u> Non-putrescible waste facility (e.g. landfill, transfer station) Sewage/wastewater treatment facility

Table 8.2.3.3.3 Compatible and incompatible land uses within ANEF contours

Sensitive land uses	Compatibility of use within ANEF contour of site		
	Compatible	Compatible subject to conditions	Incompatible
Accommodation activity (except Short-term accommodation and Hostel)	Less than 20 ANEF	20–25 ANEF	25–40 ANEF
Short-term accommodation Hotel Hostel	Less than 25 ANEF	25–30 ANEF	30–40 ANEF
Educational establishment Child care centre	Less than 20 ANEF	20–25 ANEF	25–40 ANEF
Hospital Health care service	Less than 20 ANEF	20–25 ANEF	25–40 ANEF
Community use Places of worship	Less than 20 ANEF	20–30 ANEF	30–40 ANEF
Office	Less than 25 ANEF	25–35 ANEF	35–40 ANEF
Low impact industry	Less than 30 ANEF	30–40 ANEF	Greater than 40 ANEF

Note - only considers aircraft noise impacts on indoor spaces specifically, for additional background information refer to AS 2021.

Table 8.2.3.3.4 Desirable indoor design sound levels for sensitive land uses

Land use	Location within development	Indoor design sound level dB(A)
Accommodation activities (except Short-term accommodation)	Sleeping areas	50
	Other habitable	55
Short-term accommodation Hotels	Sleeping areas	55
Educational establishments Child care centres	Libraries Classrooms, study areas Sleeping areas	50
	Teaching area, assembly areas	55
Hospitals Health care services	Wards, theatres, treatment and consulting rooms	50
	Laboratories	65
Community uses Places of worship		50
Offices	Private offices, conference rooms	55
	Open offices	65
Low impact industry	Inspection, analysis, precision work	75
	Light machinery, assembly, bench work	80

Note - only considers aircraft noise impacts on indoor spaces specifically, for additional background information refer to AS 2021.

8.2.4 Biodiversity, waterways and wetlands overlay code

8.2.4.1 Application

This code applies to accepted and assessable development:

(a) subject to the Biodiversity, waterways and wetlands maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Biodiversity, waterways and wetlands overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.4.2 Purpose and overall outcomes

(1) The purpose of the Biodiversity, waterways and wetlands overlay code is to ensure that:

(a) matters of National and State environmental significance including vegetation, wetlands and waterways are protected, maintained, enhanced or rehabilitated;

(b) development in, or adjacent to, wetlands is planned, designed, constructed and operated to prevent the loss, or degradation of, the wetlands and their environmental values; and

(c) ecological connectivity and habitat extent are maintained or enhanced.

(2) The purpose of the Biodiversity, waterways and wetlands overlay code will be achieved through the following overall outcomes:

(a) matters of environmental significance are maintained, protected or rehabilitated;

(b) development protects known populations and supporting habitat of:

(i) matters of National environmental significance, as listed in the *Environment Protection and Biodiversity Conservation Act 1999*;

(ii) endangered, vulnerable and near threatened flora and fauna species, as listed in the *Nature Conservation Act 1992*; and

(iii) regulated vegetation protected under the *Vegetation Management Act 1999*;

(c) development is avoided within environmentally significant areas;

(d) where development cannot be avoided, development:

(i) protects and establishes appropriate buffers to waterways, wetlands, native vegetation and significant fauna habitat;

(ii) ensures that adverse impacts on areas of environmental significance are minimised through design, siting, operation, management and mitigation measures;

(iii) does not cause adverse impacts on the integrity and quality of water in upstream or downstream catchments, including declared fish habitat areas and the Great Barrier Reef World Heritage Area;

(iv) protects and maintains ecological and hydrological functions of waterways, wetlands, waterway corridors and declared fish habitat areas;

(v) the health and resilience of biodiversity is maintained or enhanced to support ecological integrity and biodiversity values of the Whitsunday Region;

(vi) rehabilitates degraded areas to provide improved habitat condition, connectivity, function and extent; and

(vii) protects areas of environmental significance from weeds, pests and invasive species;

(e) development is located, designed and managed to avoid or mitigate adverse impacts on ecological systems and processes;

(f) ecological restoration enhances degraded sites where appropriate; and

(g) development ensures that viable connectivity is maintained or enhanced between flora and fauna identified as matters of environmental significance.

Editor's note—PSP SC6.2 Environmental Features Planning Scheme Policy provides advice and guidance for achieving certain outcomes of this code, including guidance for the preparation of an Ecological assessment report and a Vegetation management plan.

8.2.4.3 Assessment benchmarks

Table 8.2.4.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
All development			
PO1	Development protects, maintains or does not cause adverse impacts on the biodiversity values of ecosystems or, where adverse impacts cannot be reasonably avoided, they are minimised.	**AO1.1**	Development: (a) occurs outside the part of the lot affected by the Biodiversity, waterways and wetlands overlay; (b) occurring on part of the lot affected by the Biodiversity, waterways and wetlands overlay provides a report certified by an appropriately qualified person demonstrating that the development site does not contain any matters of environmental significance; or (c) on existing lots, where new dwelling houses cannot be sited outside the overlay, adverse impacts on matters of environmental significance are limited to the building footprints, access and necessary bushfire buffers. Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features). Note - Matters of National Environmental Significance are to consider the requirements of the *Environment Protection and*

Performance Outcomes		Acceptable Outcomes	
			Biodiversity Conservation Act 1999 and matters of State significance are to consider the requirements of the *Nature Conservation Act 1992, Marine Parks Act 2004, Fisheries Act 1994, Vegetation Management Act 1999* and the *Environmental Protection Act 1994*. Note – Matters of State Environmental Significance, where it is demonstrated that adverse impacts cannot be avoided or minimised, significant residual impacts on matters may require an offset in accordance with the *Environmental Offsets Act 2014*. Note: AO1.1(c) may be demonstrated through site plans and photographic evidence to the satisfaction of Council.
PO2	Development avoids significant impacts on areas designated as Protected or Legally secured offset areas.	**AO2.1**	Development is wholly situated outside of an area designated as Protected or Legally secured offset areas. Editor's Note – For guidance on offset areas refer to the *Environmental Offsets Act 2014*.
PO3	An adequate buffer to waterways, wetlands is provided and maintained for dwelling houses and associated structures.	**AO3.1**	Development provides for buffer(s) from waterways and wetlands in accordance with Table 8.2.4.3.3.

Table 8.2.4.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
All development			
PO1	Development protects and enhances ecological connectivity and/or habitat extent.	**AO1.1**	Development retains vegetation and riparian corridors through appropriate land tenure, such as easements, covenants or reserves for environmental purposes, in areas large enough to maintain ecological values, functions and processes of ecosystems. Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
PO2	An adequate buffer to areas of environmental significance, including waterways, wetlands, protected vegetated areas and wildlife habitat, is provided and maintained.	**AO2.1**	Development provides for buffer(s): (a) from waterways, wetlands, protected areas and wildlife habitat in accordance with Table 8.2.4.3.3; or (b) that are of appropriate dimensions and characteristics to protect the long-term viability of matters of environmental significance located on and/or adjacent to the site.

Performance Outcomes		Acceptable Outcomes	
			Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
		AO2.2	The buffer area is protected through appropriate land tenure, such as easements, covenants or reserves for environmental purposes with the following requirements: (a) cleared, degraded or disturbed waterway or wetland buffer areas within the site are rehabilitated; (b) any remnant vegetation is to be maintained and regenerated with indigenous species; and (c) development does not result in the degradation of environmental values of wetlands and riparian corridors due to edge effects. Note – The appropriate land tenure and extent of the rehabilitation may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
Water quality and environmental value			
PO3	Development does not cause adverse impacts on the quality and integrity of water in upstream or down-stream properties and catchments, including the Great Barrier Reef Marine Park.	**AO3.1**	Development ensures adverse impacts on declared fish habitat area values are avoided by designing, siting, operating and managing development to: (a) contribute to the protection of fish habitat values; and (b) maintain the quality and integrity of declared fish habitat areas and water entering them.
PO4	The development is planned and designed considering the land use constraints of the site, including vegetation, for achieving stormwater design objectives.	**AO4.1**	Except for a Dwelling house, a SQMP is prepared ensuring it: (a) is consistent with any local area stormwater management planning; (b) provides for achievable stormwater quality treatment measures, meeting design objectives listed in the PSP 6.2.7 (Stormwater management) and WRC Stormwater Quality Guidelines; and (c) meets current best practice environmental management, reflecting land use constraints, such as: (i) erosive, dispersive and/or saline soil types;

Performance Outcomes		Acceptable Outcomes	
			(ii) landscape features (including landform); (iii) acid sulfate soil and management of nutrients of concern; and (iv) rainfall erosivity. Editor's Note – Local area stormwater management planning may include Urban stormwater quality management plans, Catchment or waterway management plans, Healthy waters management plans, Water quality improvement plans or Natural resource management plans.
		AO4.2	Stormwater treatment devices are located entirely outside of waterways, waterway buffers, wetland areas and avoid vegetation removal.
PO5	Coastal catchments maintain their ecological and hydrological integrity.	**AO5.1**	Development in coastal catchments avoids or minimises soil disturbance that alters natural hydrology. Note – Compliance with this outcome may be demonstrated by following the management advice in the guideline: Implementing policies and plans for managing nutrients of concern for coastal algal blooms in Queensland by the Department of Environment and Heritage Protection.
PO6	The existing surface water hydrological regime is enhanced or maintained.	**AO6.1**	Development must: (a) provide a net ecological benefit and improvement to the environmental values and functioning of a wetland area; (b) rehabilitate the existing hydrological regime; or (c) restore the natural hydrological regime of the wetland area to enhance the ecological functions and biodiversity values of the wetland.
		AO6.2	Development ensures the: (a) existing surface water hydrological regime of a wetland area does not change, including through channelisation, redirection or interruption of flows; (b) extent of any change to the existing surface water hydrological regime is minimised to ensure wetland values and functioning are protected, the change is minimised if: (i) there is no change to the reference duration high-flow and low-flow

Performance Outcomes		Acceptable Outcomes	
			duration frequency curves, low-flow spells frequency curve and mean annual flow to and from the wetland; or (ii) any relevant stream flows into the wetland comply with the relevant flow objectives of the applicable water resource plan for the area; or (c) for development resulting in an increase to the velocity or volume of stormwater flows into the wetland, the collection and re-use of stormwater occurs in accordance with (a) or (b). Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).
Non-tidal waterways environmental values			
PO7	The establishment of non-tidal artificial waterways must provide a deed of agreement for the management and operation of the waterway.	**AO7.1**	Any non-tidal artificial waterway is managed and operated by a responsible entity for the life of the waterway by deed of agreement that: (a) identifies the waterway; (b) states a period of responsibility for all entities; (c) states a process for any transfer of responsibility for the waterway; (d) states required actions under the agreement for monitoring the water quality of the waterway and all receiving waters; (e) states required actions under the agreement for maintaining the waterway, including any relevant conditions of a development approval; and (f) identifies funding sources for the above, such as bonds or levies.
PO8	Non-tidal artificial waterways are managed and operated by suitably qualified persons to achieve water quality objectives in natural waterways.	**AO8.1**	Any non-tidal artificial waterway is designed, constructed and managed by a suitably qualified Registered Professional Engineer Queensland (RPEQ) with experience in establishing and managing artificial waterways to

Performance Outcomes		Acceptable Outcomes	
			achieve relevant water-quality objectives, including: (a) aquatic weeds are managed in any non-tidal artificial waterway to achieve a low percentage of coverage of the water surface area (less than 10%); and (b) pests and vectors, such as mosquitoes, are managed through avoiding stagnant water areas, establishing native fish predators or any other best practices for monitoring and treatment.
		AO8.2	Wastewater and stormwater discharge in waterways is managed to avoid, or minimise, the release of nutrients of concern to minimise the occurrence, frequency and intensity of coastal algal blooms. Note – nutrients of concern are included in the PSP 6.2.7 (Stormwater Management) and WRC Stormwater Quality Guidelines.
PO9	Non-tidal artificial waterways are designed to protect biodiversity and environmental values.	**AO9.1**	Any non-tidal artificial waterway must be designed and managed for all of the following functions: (a) aesthetic landscaping and recreation; (b) flood management; (c) stormwater harvesting as part of an integrated water cycle management plan; or (d) aquatic habitat.
		AO9.2	The quality and integrity of declared fish habitat areas and water entering them is maintained.
PO10	Non-tidal artificial waterways are located in a way that is compatible with the land use constraints of the site and do not cause adverse impacts on the quality and integrity of water upstream or downstream properties and catchments, including the Great Barrier Reef Marine Park.	**AO10.1**	If the proposed development involves a non-tidal artificial waterway: (a) environmental values in existing downstream waterways and associated habitats are protected; (b) there are no adverse impacts on the long-term stability of the new bed and banks of the waterway; (c) groundwater recharge areas are not affected; (d) the location of the waterway incorporates low lying areas of a catchment connected to an existing waterway;

Performance Outcomes		Acceptable Outcomes	
			(e) existing areas of ponded water are included; and (f) non-tidal artificial waterways are located: (i) outside natural wetlands and any associated buffer areas; (ii) to minimise disturbing soils or sediments; and (iii) to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazard areas.
PO11	Non-tidal artificial waterways are located in a way that is compatible with existing tidal waterways.	**AO11.1**	Where a non-tidal artificial waterway is located adjacent to, or is connected to, a tidal waterway by means of a weir, lock, pumping system or similar: (a) there is sufficient flushing or a tidal range of >0.3m; (b) any tidal flow alteration does not adversely impact on the tidal waterway; or (c) there is no introduction of salt water into freshwater environments.
Management of impacts on matters of environmental significance			
PO12	Development of premises adjoining or containing Regulated vegetation intersecting a watercourse must not adversely affect the integrity of the riparian buffer.	**AO12.1**	Proposed roads and vehicle crossings must not be located within areas designated as Regulated vegetation intersecting a watercourse.
		AO12.2	Development: (a) maintains hydrological processes and the physical integrity of water bodies at a standard commensurate with pre-development environmental conditions; (b) ensures that impacts from works on the long-term sustainable use of the waterbody are avoided; and (c) the stability and function of waterbodies beds and banks is maintained.

Performance Outcomes		Acceptable Outcomes	
PO13	Development on land adjacent to a waterway provides safe public access to waterways and minimises edge effects.	**AO13.1**	Where development is adjacent to a waterway with a stream order of 2 or higher and within the PIA or Emerging community zone, a pedestrian pathway is provided: (a) outside the riparian buffer; (b) between the riparian buffer and the development; (c) in accordance with CPTED principles; and (d) to offer a safe and legible access every 100m from the nearest public space or road.
		AO13.2	Where development is adjacent to a waterway with a stream order of 3 or higher and within the PIA or Emerging community zone, a road and pedestrian pathway is located outside the riparian buffer, between the riparian buffer and the proposed development.

Table 8.2.4.3.3 - Minimum riparian buffers and setbacks for biodiversity, waterways and wetlands

Classification	Riparian buffers and setbacks
Waterways	
Stream order 1 and 2	10m, measured perpendicular from the top of the high bank
Stream order between 3 and 4	25m, measured perpendicular from the top of the high bank
Stream order 5 or above	50m, measured perpendicular from the top of the high bank
Wetlands	
Urban wetland	20m from the edge of the wetland
Non-urban wetland	50m from the edge of the wetland
Biodiversity	
Protected areas and wildlife habitat	25m

8.2.5 Building heights overlay code

8.2.5.1 Application

This code applies to accepted and assessable development:

(a) subject to the Building heights overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Building heights overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.5.2 Purpose and overall outcomes

(1) The purpose of the Building heights overlay code is to ensure that development within the Region meets the expectations of amenity and building height limits for each zone and use type; and

(2) The purpose of the Building heights overlay code will be achieved through the following overall outcomes:

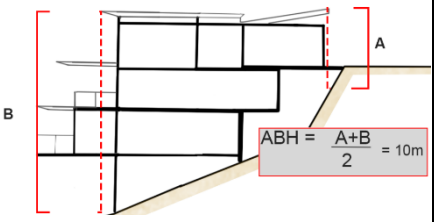
(a) development is generally in accordance with the maximum building heights identified for specific local plan codes, zone codes and building classes; and

(b) development on steep slopes is sited and designed to closely follow the natural contours of the land and utilises landscaping and screening to minimise the visibility of the underside of the building, mechanical equipment, support poles and air conditioning components.

8.2.5.3 Assessment benchmarks

Table 8.2.5.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Building heights			
PO1	The height of a building does not unduly: (a) overshadow adjoining dwellings; or (b) dominate the intended streetscape character.	**AO1.1**	Development on a premises with slope less than 25% and within a Bowen, Hamilton Island or Airlie Beach Precinct does not exceed the applicable precinct building height specified in Table 8.2.5.3.2. Note – Where a conflict occurs between QDC MP1.1; MP1.2; or MP1.3 and the Building heights overlay code, this code prevails. Note – See Schedule 1.2.2 Administrative definitions for definition of building height.
		AO1.2	Development on a premises with slope less than 25% that is not within a Bowen, Hamilton Island or Airlie Beach Precinct does not exceed the applicable zone building height specified in Table 8.2.5.3.3. Note – Where a conflict occurs between QDC MP1.1; MP1.2; or MP1.3 and the Building heights overlay code, this code prevails.

Performance Outcomes		Acceptable Outcomes	
			Note – See Schedule 1.2.2 Administrative definitions for definition of building height.
Building heights on excessive slope			
PO2	Development on sites with excessive slope does not: (a) overshadow adjoining dwellings; (b) dominate the intended streetscape character; or (c) visually dominate the hillside on which they are located.	**AO2.1**	The average building height (ABH) of development on a premises with slope greater than 25% does not exceed 10m, as per the figure below:  Note – Slope is measured using ground level at points A and B expressed as a percentage. Note – Where a conflict occurs between QDC MP1.1; MP1.2; or MP1.3 and the Building heights overlay code, this code prevails. Note – Council will favourably consider setback relaxations on sites with excessive slope.
		AO2.2	Development on a premises with slope greater than 25% is designed to integrate with the hillside and reduce the visibility of the underside of the building, mechanical equipment, support poles and air conditioning components through: (a) decorative features that cast shadows, such as timber battens or lattice screens; (b) retention of mature vegetation where possible; (c) establishing additional landscaping; and (d) building materials and finishes composed of muted earth/environmental tones that blend with the hillside environment. Note – Appropriate colours will depend on the existing native vegetation and backdrop. A colour palette may be requested by Council to ensure built form integration.

Non-habitable building heights			
PO3	The height of a non-habitable building does not unduly: (a) dominate the streetscape; (b) impact on adjoining dwellings; or (c) diminish the scale of any associated dwelling.	**AO3.1**	Where located within the PIA, a Class 10a building does not exceed 5.5m building height. Note – Where a conflict occurs between QDC MP1.1; MP1.2; or MP1.3 and the Building heights overlay code, this code prevails.

Table 8.2.5.3.2 Local Plan building heights

Local Plan area	Local Plan building heights
Airlie Beach local plan area	Maximum building height of: (a) Airlie Beach Precinct A - 14m above ground level; (b) Airlie Beach Precinct B - 18m above ground level; (c) Airlie Beach Precinct C - 21m above ground level; (d) Airlie Beach Precinct D - 18m above ground level; (e) Airlie Beach Precinct E - 18m above ground level; (f) Airlie Beach Precinct F - 14m above ground level; or (g) Airlie Beach Precinct G - 14m above ground level.
Bowen local plan area	Maximum building height of: (a) Bowen Precinct A -18m above ground level; (b) Bowen Precinct B - 12m above ground level; or (c) Bowen Precinct C - 20m above ground level, if associated with manufacturing or repair of vessels, otherwise 12.5m.
Hamilton Island local plan area	Maximum building height of: (a) Hamilton Island Precinct A –14m above ground level; (b) Hamilton Island Precinct B - 12m above ground level; or (c) Hamilton Island Precinct C - 8.5m, or 10m above ground level, where premises slopes between 15% and 25%.

Table 8.2.5.3.3 Building heights for zones outside of a Local Plan area

Zone	Zone building heights
Residential zones category	
Low density residential zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Low-medium residential density zone	Maximum building height of 12m above ground level.
Tourist accommodation zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Centre zones category	
Major centre zone	Maximum building height of 12m above ground level.
District centre zone	Maximum building height of 12m above ground level.
Local centre zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Neighbourhood centre zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Industry zones category	
Low impact industry zone	Maximum building height of 10m above ground level.

Medium impact industry zone	Maximum building height of 15m above ground level.
High impact industry zone	Maximum building height of 20m above ground level.
Special industry zone	Maximum building height of 20m above ground level.
Waterfront industry zone	Maximum building height of 20m above ground level for buildings and structures used for the manufacturing, servicing or repair of vessels, otherwise 12.5m.
Industry investigation zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Recreation zones category	
Recreation and open space zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Environmental zones category	
Environmental management and conservation zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Other zones category	
Community facilities zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Emerging community zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.
Mixed use zone	Maximum building height of 12m above ground level.
Rural residential zone	Maximum building height of: (a) 8.5m above ground level; or (b) 10m above ground level, where premises slopes between 15% and 25%.

8.2.6 Bushfire hazard overlay code

8.2.6.1 Application

This code applies to accepted and assessable development:

(a) subject to the Bushfire hazard overlay map, excluding buffer zones, contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Bushfire hazard overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.6.2 Purpose and overall outcomes

(1) The purpose of the Bushfire hazard overlay code is to:

(a) provide for the assessment of the suitability of development in Bushfire hazard areas to ensure that risk to life, property, community, economic activity and the environment during bushfire events is minimised; and

(b) provide for the assessment of development that maintains the safety of people and property by not exposing them to an unacceptable risk from bushfire events.

(2) The purpose of the Bushfire hazard overlay code will be achieved through the following overall outcomes:

(a) development directly, indirectly and cumulatively avoids an unacceptable increase in severity of the bushfire hazard and does not significantly increase the potential for damage on the site or to other properties;

(b) development is compatible with the level of risk associated with the bushfire hazard;

(c) development location, siting and design responds to the risk of the bushfire hazard and minimises risk to personal safety and property;

(d) development supports the disaster management response or recovery by providing efficient access for evacuation of people, emergency services and water supplies during bushfire events;

(e) where practical, community infrastructure is located and designed to function effectively during and immediately after a bushfire event; and

(f) natural processes and the protective function of landforms and vegetation are maintained, where possible, in potential Bushfire hazard areas.

8.2.6.3 Assessment benchmarks

Table 8.2.6.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
PO1	Development is compatible with the level of risk associated with the bushfire hazard.	**AO1.1**	Development: (a) is not located on land identified in a Bushfire hazard area: or (b) if identified within a Bushfire hazard area, must ensure that people, property and the community are not exposed to an unacceptable or increased

Performance Outcomes		Acceptable Outcomes	
			level of risk from a bushfire event. Note – This may be demonstrated by undertaking a site specific Bushfire hazard assessment report and Bushfire hazard management plan in accordance with PSP SC6.5 (Natural hazards).
PO2	Development is not located on slopes and land forms that expose people or property to an intolerable risk to life or property.	**AO2.1**	Development does not occur along ridgelines, saddles and crests where slopes exceed 14 degrees.
PO3	Development maintains the safety of people and property by establishing appropriate low fuel, bushfire defendable spaces between proposed building envelopes, hazardous vegetation and adjoining buildings to mitigate the spread of bushfires.	**AO3.1**	Buildings or building envelopes, excluding class 10 structures, are separated: (a) by at least 8m where for a material change of use; and (b) by a bushfire defendable space on the premises that provides a buffer from hazardous vegetation by a distance that achieves a radiant heat flux level at any point on the building or envelope that does not exceed: (i) 10kW/m² where involving a vulnerable use, essential service use or hazardous chemical facility use; or (ii) 29kW/m² for all other development. Editor's note – where a bushfire defendable space is proposed to be achieved by utilising existing cleared areas external to the site, certainty must be established (through tenure or other means) that the land will remain cleared of hazardous vegetation. Note - This may be demonstrated by undertaking a site-specific Bushfire hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
		AO3.2	Landscaping, revegetation and rehabilitation areas are designed and managed to achieve: (a) a potential fuel load which is less than eight tonnes/hectare in aggregate; and (b) fuel structure which is discontinuous. Note - This may be demonstrated by undertaking a site-specific Bushfire hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
PO4	Development supports and does not unduly burden disaster management response or recovery capacity and capabilities by providing	**AO4.1**	Private driveways: (a) do not exceed a gradient of 12.5%; (b) serve no more than two buildings; and

Performance Outcomes		Acceptable Outcomes	
	evacuation routes and access for emergency services.		(c) if exceeding 60m, accommodate turning areas for fire-fighting medium rigid vehicles in accordance with *Fire hydrant and Vehicle Access Guidelines for residential, commercial and industrial lots, QFES 2015*.
		AO4.2	Development has access to an evacuation route that is a public road with a potential exposure no greater than 2kW/m^2 fire intensity that does not cross the fire access trail: (a) if by foot, to a safe assembly zone; or (b) if by car, the preferred method, to a road that can enable evacuation from the area. Note – This may be demonstrated by undertaking a site-specific Bushfire hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
PO5	Development provides for firefighting requirements, including: (a) ready access to adequate water supplies; (b) safety considerations for other utilities, including electricity and gas supplies; and avoidance of the release of, or exposure to, hazardous materials, as a result of a bushfire event.	**AO5.1**	Development ensures that: (a) all lots are within 70m of a hydrant with reticulated water supply, fully installed in accordance with AS2419.1-2005 (Fire hydrant installations); or (b) where a reticulated water supply is not available, one tank that is below ground or of non-flammable construction is located within 10m of each building, excluding class 10 structures, and includes the following: (i) for residential buildings, a take-off connection at a level that allows static water supply of 10,000L; (ii) for all other buildings, a volume and design specified in AS 2304-2011 (Water storage tanks for fire protection); (iii) a hardstand area allowing medium rigid fire appliance access within 6m of tank; (iv) fire brigade tank fittings (50mm ball valve & male camlock coupling); (v) above ground water pipes, where fittings are metal; and

Performance Outcomes		Acceptable Outcomes	
			(vi) if underground, the tank has an access hole of 200mm (minimum) to allow access for suction lines. Editor's Note - Plastic tanks are not recommended, however, if they are submerged, they may be acceptable.
		AO5.2	The location of water supplies for firefighting is readily identified from the street frontage with clear identification directing fire fighters to its access point.
		AO5.3	Mains gas supplies are protected in accordance with AS1596-2002 (The storage and handling of LP gas), the requirements of relevant authorities and metal piping is exclusively used.
		AO5.4	Manufacturing or storage of hazardous materials in bulk, as defined in the *Work Health and Safety Act 2011*, does not occur in an identified Bushfire hazard area.
PO6	Development for community infrastructure is located, designed and sited to: (a) function efficiently to protect the safety of people during and immediately after a bushfire event; (b) reduce the exposure of people and vulnerable populations at risk from a bushfire event; and (c) mitigate the impacts of a bushfire on the community and environment.	**AO6.1**	Development of essential services and community infrastructure for vulnerable persons or emergency response does not occur in a Bushfire hazard area.

Table 8.2.6.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
PO1	Development provides a road and fire access layout that enables: (a) safe evacuation of people within bushfire hazard areas; and (b) access for fire fighting vehicles.	**AO1.1**	Development in bushfire hazard areas, outside the urban area or adjoining National Park in an urban area, resulting in multiple buildings and/or lots, provides either of the following firebreaks: (a) a perimeter road that: (i) separates all buildings, structures and/or lots from bushfire hazard areas; (ii) provides or forms part of a minimum cleared width between bushfire hazard areas and buildings or structures of 20m; (iii) includes a constructed public road with a minimum

Performance Outcomes		Acceptable Outcomes	
			carriageway width of 6m; and (iv) is constructed to an all-weather standard; or (b) fire maintenance trails that: (i) separate all buildings, structures and/or lots from bushfire hazard areas; (ii) provide or form part of a minimum cleared width between bushfire hazard areas and buildings/structures of 20m; (iii) have a minimum formed trail width of 4m; (iv) have a maximum gradient of 12.5%; (v) have vehicular access points at each end (not a dead end); (vi) provide passing bays and turning areas (no more than a 3-point turn) for medium rigid vehicles; (vii) are constructed and maintained to be accessible and driveable for fire fighting vehicles at all times, prevent erosion (i.e. erosion control devices) and provide adequate drainage; and (viii) are provided within publicly owned land or establish an access easement in favour of Council and the Queensland Fire and Rescue Service. Note – This may be demonstrated by undertaking a site-specific Bushfire hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
		AO1.2	Cul-de-sacs or non-through roads are not provided in bushfire hazard areas unless the cul-de-sac is provided within an alternative access linking the cul-de-sac to other through roads.
PO2	Development provides for firefighting requirements, with safety considerations for other utilities, including electricity and gas supplies.	**AO2.1**	Electricity supplies and transmission poles in the area are protected and not vulnerable to bushfire events or associated activities (e.g. Falling trees).

8.2.7 Coastal hazard overlay code

8.2.7.1 Application

This code applies to accepted and assessable development:

(a) subject to the Coastal hazard overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Coastal hazard overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.7.2 Purpose and overall outcomes

(1) The purpose of the Coastal hazard overlay code is to ensure that development is designed, constructed and operated to:

(a) protect, conserve, rehabilitate and manage the coast, including its resources and biological diversity;

(b) avoid the social, financial and environmental costs arising from the adverse impacts of coastal hazards, taking into account the predicted effects of climate change;

(c) preferentially use land on the coast for coastal-dependent development; and

(d) ensure development maintains the safety of people and property.

(2) The purpose of the Coastal hazard overlay code will be achieved through the following overall outcomes:

(a) wherever possible, development within a Coastal hazard area avoids:

(i) intensification of existing uses;

(ii) new permanent built structures; and

(iii) seaward extensions to existing built structures;

(b) development maintains and enhances natural processes, including those below tidal waters;

(c) development location, siting and design responds to the risk of storm tide and tidal inundation and minimises risk to personal safety and property;

(d) development supports, and does not compromise, the ability of the disaster management response or recovery capacity and capabilities;

(e) development provides for

(i) efficient evacuation and emergency services access during coastal hazard events; or

(ii) plans for the prospect and impact of isolation or hindered evacuation due to flooding from storm-tide and tidal inundation;

(f) development ensures that urban services are designed, located and operated to minimise damage to property, disruption to building function and the recovery time after a storm-tide or tidal inundation event;

(g) development does not cause or increase adverse impacts on other premises within the coastal environment from flooding and does not impede the ability of neighbouring sites to implement future coastal hazard mitigation measures;

(h) development in areas subject to coastal hazards protects biodiversity, the loss of environmental networks and the scenic amenity of important coastal areas, landscapes and views;

(i) development minimises the private use of land prone to permanent inundation;

(j) development maintains public access to the coast;

(k) development preserves opportunities for locating coastal-dependent land uses in areas adjoining tidal waters; and

(l) development and infrastructure avoids or mitigates the impacts of predictable future coastal hazard due to increase in sea-level rise and cyclonic activity.

8.2.7.3 Assessment Criteria

Table 8.2.7.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
PO1	Development involving a building is: (a) located and designed to ensure the safety of all persons and buildings from coastal hazards; and (b) located to minimise amenity impacts, disruptions to residents, recovery time, rebuilding and restoration costs after a coastal hazard event.	**AO1.1**	Development of a habitable building: (a) is not located on land identified in a Coastal hazard area; (b) ensures the finished floor level of a new building is located at a minimum 500mm above the defined storm tide event (DSTE), if within the inundation area, or 1m above DSTE, if within the wave run-up area; or (c) where involving an extension no greater than 75m² to an existing building, habitable room(s) are not less than the floor level of existing habitable rooms and non-habitable rooms at ground level below the DSTE allow for the flow through of water. Note – Where a premise is mapped by both flood and coastal hazards, the assessment benchmark that provides the highest level of protection from any source of inundation applies. Editor's Note – Refer to Council's detailed Coastal hazard overlay map for further detail. Contact Council for information regarding DSTE and freeboard heights.
		AO1.2	Structures are only located within a Coastal hazard area, if: (a) a registered professional engineer Queensland

Performance Outcomes		Acceptable Outcomes	
			(RPEQ) certifies that the development is structurally designed to be able to resist hydrostatic and hydrodynamic loads associated with flooding up to and including the DSTE; or (b) a non-habitable structure within an inundation area that is designed to allow the flow through of water up to the DSTE and suits class H soil classification with 100kpa bearing capacity. Editor's Note – if part of the site is outside the Coastal hazard overlay, this is the preferred location for all buildings. Contact Council for information regarding DSTE and freeboard heights.
		AO1.3	Development on land identified within a Coastal hazard area ensures storage of hazardous materials is located above the DSTE. Editor's Note - Contact Council for information regarding DSTE and freeboard heights.
PO2	Marina development provides facilities for the handling and disposal of ship-sourced pollutants.	**AO2.1**	Marina development involving six or more berths provides common user facilities for the handling and disposal of ship-sourced pollutants, including oil, garbage and sewage and: (a) is provided at a suitable location at the marina; (b) is designed and operated to ensure the risk of spillage from operations is minimised; (c) provides appropriate equipment to contain and remove spillages, stored in a convenient location near the facility and available for immediate use; and (d) is able to be used by boats visiting the marina. Editor's note: Refer to Australian and New Zealand Environment and Conservation Council (ANZECC), 1997, Best Practice Guidelines for Waste Reception Facilities at Ports, Marinas and Boat Harbours in Australia and New Zealand.

Performance Outcomes		Acceptable Outcomes	
		AO2.2	Where practical, the ship-sourced pollutant reception facility is connected to sewerage or other waste reception infrastructure. Editor's note: Reception facilities require compliance assessment under the *Plumbing and Drainage Act 2018*. The plumbing compliance assessment process will ensure that the proposed facilities address 'peak load'.
Erosion prone areas and permanent inundation			
PO3	Except in limited circumstances, development is located outside of an Erosion prone or Permanent inundation area.	**AO3.1**	Unless for Recreation activities or building extensions, development is situated wholly outside of Erosion prone and Permanent inundation areas, except where it is demonstrated that buildings or structures are: (a) located within a Maritime development area; (b) part of redevelopment that intensifies the use of a site in an urban area, if the development mitigates any increase in risk to people and property from adverse coastal erosion impacts; (c) able to be decommissioned, disassembled and relocated either on the site or to another site; or (d) Dwelling houses in an urban area where: (i) landward or equal to the seaward alignment of any buildings on neighbouring properties; or (ii) there are no neighbouring properties, are at least 12m from the seaward property boundary of the site. Note – Coastal building lines identified by State DA mapping may also apply to some development in Queens Beach and Brisk Bay triggering referral for State Assessment.

Table 8.2.7.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
All development in Coastal hazard areas			
PO1	Development: (a) maintains coastal dune height; or (b) where a reduction in coastal dune height cannot be avoided, mitigates risk to development from wave overtopping and storm-tide inundation.	**AO1.1**	Development avoids, or where this is not feasible, minimises reductions in coastal dune height..
PO2	Development maintains or enhances coastal ecosystems and natural features, such as mangroves and coastal wetlands, between development and tidal boulders, where they protect or buffer communities and infrastructure from sea level rise and coastal inundation impacts.	**AO2.1**	Development ensures that: (a) existing natural environmental features, such as mangroves and wetlands, are maintained as much as possible; or (b) where changes to these natural features cannot be avoided, alternate methods are used to mitigate risks to development from coastal hazards. Note – Removal of vegetation within a Coastal hazard area may trigger referral to the State Assessment and Referral Agency (SARA).
PO3	Development maintains or enhances the scenic amenity and natural character of the coastal landscape, views and vistas from the foreshore or significant viewpoints.	**AO3.1**	Development is located, scaled and designed to be sympathetic to the coastal scenic amenity: (a) maintaining or restoring vegetation buffers between development and coastal waters; or (b) where impacts on the coastal scenic amenity cannot be avoided, alternative methods are used to maintain the natural character of the coastal landscape.
PO4	Development avoids the release of hazardous materials into floodwaters.	**AO4.1**	Buildings used for the manufacture or storage of hazardous materials in bulk, as defined by the *Health and Safety Regulation 2011* ensures: (a) design prevents the intrusion of waters from a DSTE; and (b) emergency planning and contingency measures are appropriately developed and managed.
PO5	Development maintains the safety of people living and working on the premises from a DSTE.	**AO5.1**	Development ensures: (a) a safe refuge is available for people within the development site during a DSTE; or (b) that at least one evacuation route remains passable for

Performance Outcomes		Acceptable Outcomes	
			emergency evacuations during a DSTE. Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
PO6	Development does not negatively impact the flood characteristics of the DSTE outside of the subject site.	**AO6.1**	Unless within a Maritime development area, development is only located within the Coastal hazard area, if a Registered Professional Engineer Queensland (RPEQ) certifies that the development does not change the flood characteristics of the DSTE outside the subject site. Editor's note - Contact Council for information regarding DSTE and freeboard heights.
PO7	Development supports, and does not unduly burden, disaster management response or recovery capacity and capabilities.	**AO7.1**	Development does not: (a) increase the number of people calculated to be at risk from the coastal hazard event; (b) increase the number of people likely to need evacuation; (c) impact on the ability of traffic to use evacuation routes; or (d) unreasonably increase traffic volumes on evacuation routes. Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
PO8	Except in limited circumstances, development is located outside a wave run-up area.	**AO8.1**	Development is situated wholly outside of a wave run-up area except where the development is: (a) located within a Maritime development area or future Maritime development area; (b) coastal dependent development in an Urban area; (c) temporary or relocatable development; (d) does not result in an increase of development intensity on the site; or (e) for tourist attractions or tourist accommodation, and a Coastal hazard assessment report demonstrates that the development avoids any increase in risk to people,

Performance Outcomes		Acceptable Outcomes	
			infrastructure or property from coastal hazard impacts. Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
PO9	Development that is within an inundation area is located, designed, constructed and operated to avoid adverse coastal hazard impacts, including impacts on the development's ongoing operation.	**AO9.1**	Development is located outside an inundation area unless: (a) it does not result in an increase in the intensity of development on the site; (b) involving redevelopment that intensifies the use of a site, if the development mitigates any increase in risk to people and property from inundation impacts; or (c) a Coastal hazard assessment report demonstrates that the development avoids any increase in risk to people or property from coastal hazard impacts. Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
Community infrastructure			
PO10	Development involving community infrastructure remains functional to serve community needs during and immediately after a coastal hazard event.	**AO10.1**	Community infrastructure: (a) is designed, sited and operated to avoid adverse impacts on the community facilities, access and egress routes and the environment; (b) retains essential site access during a coastal hazard event; and (c) is able to remain functional, even when other infrastructure or services may be compromised in a coastal hazard event. Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
Public access to the coast			
PO11	Development ensures that there is no net loss of public access to the foreshore and, where practicable, provides enhanced opportunities for safe public access to the foreshore in a manner consistent with conserving coastal resources.	**AO11.1**	Development is located, designed and operated: (a) in a manner that retains or enhances existing public access to and along the foreshore; or (b) where loss of public access to the foreshore cannot practicably be avoided, development provides the

Performance Outcomes		Acceptable Outcomes	
			same or a greater amount of new public access opportunities in an alternative location.
Coastal dependent development and Maritime development areas			
PO12	Except in limited circumstances, coastal dependent development is located within a Maritime development area.	**AO12.1**	Coastal dependent development: (a) is located within an identified Maritime development area; (b) demonstrates that the site is suitable for identification as a Maritime development area; or (c) is located outside a Maritime development area, if it is: (i) a minor marine development; (ii) dredging for navigation channels; or (iii) development in a port.
PO13	Development in a Maritime development area: (a) supports some area for coastal dependent development; and (b) ensures ancillary and subsidiary development is sited and designed to avoid reverse amenity impacts from Industrial or Commercial coastal dependent development.	**AO13.1**	Within the Maritime development area: (a) adequate space is provided within the non-tidal component of the development site for coastal dependent development; (b) Port services and Industrial activities are suitably buffered from sensitive uses; and (c) sensitive uses are sited and designed to minimise amenity conflicts with existing or future areas identified for coastal dependent development.
PO14	Coastal dependent development or development within a Maritime development area mitigates any increase in risk to people and property from the impacts of Storm tide inundation, Erosion prone and Permanent inundation areas.	**AO14.1**	Development within Maritime development area and coastal dependent development: (a) is located outside an Erosion prone or Permanent inundation area; or (a) installs and maintains coastal environment works to mitigate adverse impacts to people and property from coastal erosion or permanent inundation.

8.2.8 Extractive resources overlay code

8.2.8.1 Application

This code applies to accepted and assessable development:

(a) subject to the Extractive resources overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Extractive resources overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.8.2 Purpose and overall outcomes

(1) The purpose of the Extractive resources overlay code is to protect and maintain the sustainable and viable use of extractive resources within the Region by preventing incompatible development and land uses from encroaching on the extractive resource/processing areas, the associated separation areas and transport routes.

(2) The purpose of the Extractive resources overlay code will be achieved through the following overall outcomes:

(a) development occurring within, or adjacent to, extractive resource areas does not adversely affect or impair the ability of existing or future extractive industries to viably win the resource;

(b) development occurring within, or adjacent to, transport routes for extractive resources does not constrain, or otherwise conflict with, the ongoing safe and efficient transportation of the extractive resource; and

(c) the potential negative impacts of extractive industries on sensitive uses within, or adjacent to, extractive resource areas and associated transport routes is mitigated to maintain high levels of safety and amenity.

8.2.8.3 Assessment benchmarks

Table 8.2.8.3.1 Benchmarks for accepted and assessable development

Performance Outcome		Acceptable Outcome	
Development within a Local resource or Key resource area (KRA) resource/processing area			
PO1	Development does not constrain, prevent or otherwise interfere with the current or future viability of the winning, or processing of, extractive resources.	**AO1.1**	Development is limited to: (a) extractive industry uses; (b) uses that are directly associated with an extractive industry; or (c) temporary or non-intensive development that is compatible with future extractive industry operations, for example forestry for wood production.
Development within a KRA separation area			
PO2	Development does not materially increase the number of people living within a KRA separation area.	**AO2.1**	Development does not result in an increase in residential density.
		AO2.2	Reconfiguring a lot: (a) does not result in the creation of additional lots used, or capable of being

Performance Outcome		Acceptable Outcome	
			used, for Accommodation activities; and (b) where realigning boundaries, does not worsen the existing situation with respect to the distance between available house sites and the resource processing area.
PO3	Development minimises the potential adverse impacts, including noise, dust, vibration and blasting, from existing or future extractive industry operations upon people working or congregating within a KRA separation area, given the proposed development's location.	**AO3.1**	Development ensures that: (a) the number of people working or congregating is not increased; (b) it is compatible with the potential adverse impacts arising from existing or future extractive industry operations; or (c) incorporates design, orientation and construction measures that mitigate the potential adverse effects from existing or future extractive industry operations to acceptable levels. Note — In order to demonstrate compliance with AO3 applicant should demonstrate the regulations of Environmental Protection Act and relevant policies (i.e. EPP Noise) can be achieved.
PO4	Extractive industry development maintains the function and integrity of a KRA separation area as an efficient and effective buffer between extractive/processing operations and incompatible uses beyond the separation area.	**AO4.1**	Development for an extractive industry use is not located within a KRA separation area.
Development within a Transport route or Transport route separation area			
PO5	Development does not materially increase the number of people living within a Transport route separation area.	**AO5.1**	Development does not result in an increase in residential density.
PO6	Development involving a sensitive use, other than for an Accommodation activity, maintains an acceptable level of amenity.	**AO6.1**	Development involving a sensitive use, other than an Accommodation activity, ensures an acceptable level of amenity by incorporating mitigation measures, such as landscape buffer strips and maintaining adequate separation distances.
PO7	Development does not adversely affect the safe and efficient movement and operation of vehicles transporting extractive materials along a Transport route.	**AO7.1**	Development ensures that: (a) the number of premises with access points to an identified Transport route is not increased; or (b) access points are designed to avoid adversely affecting

Performance Outcome		Acceptable Outcome	
			the safe and efficient operation of vehicles transporting extractive materials along a Transport route.

8.2.9 Flood hazard overlay code

8.2.9.1 Application

This code applies to accepted and assessable development that is:

(a) subject to the Flood hazard overlay maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Flood hazard overlay code by the tables of assessment in Part 5 (Tables of assessment).

Editor's Note - Council will make available (where flood modelling has been received by Council) the height of the defined flood level for any particular location upon request. Applicants should be aware that coastal hazards, such as storm tide inundation, may also affect the land. Where affected by multiple overlays, the overlay that provides the highest level (in AHD) from any source of inundation applies.

Council may not have detailed flood modelling for areas within the Planning Scheme that are be affected by local flooding. In this instance, applicants are required to undertake their own investigations prior to undertaking development through the preparation of a Flood Hazard Assessment Report (Planning Scheme Policy SC6.5.6).

8.2.9.2 Purpose and overall outcomes

(1) The purpose of the Flood hazard overlay code is to:

(a) provide for the assessment of the suitability of development in the Flood hazard overlay area, to ensure that risk to life, property, community, economic activity and the environment during flood events is minimised; and

(b) ensure that development does not increase the potential for flood damage on-site or to other property, both upstream and downstream.

(2) The purpose of the Flood hazard overlay code will be achieved by the following outcomes:

(a) storage capacity of floodplains and the flood conveyance of waterways are protected;

(b) development does not require complex engineering solutions, such as floodgates or extensive earthworks to mitigate adverse impacts;

(c) incompatible uses are not located in areas susceptible to flood hazard;

(d) development location, siting, layout, and access is designed to minimise the risk of the flooding and risk to personal safety and property;

(e) development does not compromise the ability of the disaster management response or recovery capacity and capabilities;

(f) development provides for:

i. efficient evacuation and emergency services access during flooding events; or

ii. otherwise plans for the prospect and impact of isolation or hindered evacuation during flooding;

(g) development directly, indirectly and cumulatively avoids an increase in severity of the flood event and does not materially increase the extent or impact of the flood event on the site or to other properties;

(h) development ensures that urban services are designed, located and operated to minimise damage to the environment, infrastructure, property, disruption to building function and recovery time after a flood event;

(i) natural processes and the protective function of landforms and/or vegetation are maintained where possible in Flood hazard areas;

(j) where practical, community infrastructure is located and designed to function effectively during, and immediately after, flood events; and

(k) development mitigates the impacts of predictable future increases in flood hazards.

8.2.9.3 Assessment benchmarks

Table 8.2.9.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
All Flood hazard areas			
PO1	Development is: (a) located and designed to ensure the safety of persons and property from known flood hazards; and (b) located to minimise, disruptions to residents, recovery time, rebuilding and restoration costs after a flood event.	**AO1.1**	Where development is located in a Low risk flood hazard area or Identified flood hazard area: (a) the finished floor level of all habitable rooms is a minimum of 300mm above the defined flood event (DFE); (b) the finished floor level of enclosed non-habitable rooms is above the DFE; (c) where non-habitable rooms are not enclosed, they are only below the DFE, if the structure allows for the unimpeded flow-through of flood water; (d) is not less than the floor levels of the existing habitable room(s) where involving an extension for no greater than 75m² to an existing building; and (e) underground parking is designed to prevent the intrusion of flood waters by the incorporation of a bund or similar barrier with a minimum height of 300mm above the defined flood level. Editor's note - Flood gates with pumps are not desired in underground parking due to noise issues. Editor's note – Information on potential flood levels is available from Council for certain properties where within Local Study areas as shown by the Flood hazard overlay mapping. Where no further information is provided by Council the applicant must source the information independently from a qualified professional.

Performance Outcomes		Acceptable Outcomes	
		AO1.2	Where located in an Identified flood hazard area and a DFE is not available: (a) a new, or extension to a, habitable building is: i. not located in the flood hazard area; ii. 300mm above the DFE; or iii. not less than the floor levels of the existing habitable room(s) where involving an extension for no greater than 75m² to an existing building; and (b) a new non-habitable building is: i. not located in the flood hazard area; ii. located on the highest part of the site to minimise entrance of floodwaters; or iii. must be built above the DFE. Note - The above requirements can be demonstrated through the development of a Flood Hazard Assessment Report (PSP SC6.5.6). Editor's note – Information on potential flood levels is available from Council for certain properties where within Local Study areas as shown by the Flood hazard overlay mapping. Where no further information is provided by Council the applicant must source the information independently from a qualified professional.
		AO1.3	A Class 10 structure located within a Low risk flood hazard area or Identified flood hazard area is designed to suit class H soil classification with 100kpa bearing capacity and is: (a) designed to allow for the flow through of flood water up to the DFE; and (b) setback 10m from drainage paths; or (c) an RPEQ certifies the development is structurally designed to resist hydrostatic and hydrodynamic loads associated with flooding up to and including the DFE.

Performance Outcomes		Acceptable Outcomes	
PO2	Development is limited to particular uses in Medium or High risk flood hazard areas to ensure no increased risk to life or property.	**AO2.1**	Development does not occur in High or Medium risk flood hazard areas except for the uses of animal husbandry, cropping, environment facility, extractive industry, landing, outdoor sports and recreation, park, parking station, substation, utility installation and major electricity infrastructure.
		AO2.2	Development: (a) prevents potential debris from blocking natural drainage flow; and (b) does not affect the natural functions of the catchment.
Infrastructure			
PO3	Essential network infrastructure (on-site electricity, water supply, reticulated and on-site sewerage systems and telecommunications) functions effectively during and after flood events.	**AO3.1**	Essential network infrastructure is: (a) located above the DFE; or (b) designed, constructed and certified by an RPEQ to avoid floodwater intrusion and resist hydrostatic and hydrodynamic forces as a result of inundation above the DFE; and (c) does not impact on the hydrology of the surrounding area.
Hazardous materials			
PO4	Development avoids the release of hazardous materials into floodwaters.	**AO4.1**	The manufacturing or storage of hazardous materials: (a) are not located in the flood hazard area; or (b) the structure is: (i) located 300mm above the DFE level; or (ii) designed to prevent the intrusion of floodwaters. Note - Refer to the *Work Health and Safety Act 2011* and associated Regulation and Guidelines, the *Environmental Protection Act 1994* and the relevant building assessment provisions under the *Building Act 1975* for requirements related to the manufacture and storage of hazardous substances. Note - The above requirements can be demonstrated through the development of a Flood hazard assessment report (PSP SC6.5.6).
Design Outcomes			
PO5	Appropriate resilient constructions solutions are provided to: (a) mitigate potential flood impacts;	**AO5.1**	Development for a residential use in Low and Identified flood hazard areas ensure: (a) fences and landscaping are permeable to flood water;

Performance Outcomes		Acceptable Outcomes	
	(b) development maintains drainage paths and avoids any direct, indirect or cumulative increase in water flow velocity or flood level; and (c) does not increase the potential for flood damage either on-site or on other properties.		(b) where requiring raised finished habitable floor levels, pier and pole construction is used to allow the flow through of flood water; or (c) meets AO5.2.
		AO5.2	Development within any Flood hazard area involving more than 100m³ of material that is imported to or removed from the site, only occurs where a Registered Professional Engineer Queensland (RPEQ) certifies that the works will not result in: (a) a direct, indirect or cumulative increase in water flow velocity or level; (b) existing overland flow paths not being maintained; (c) piped or complex engineering solutions to manage major flows; (d) an increase in the potential for erosion, scour or flood damage, either on the premises or off the premises; (e) a change in the timing of the flood wave or reduction in flood warning times; (f) adverse impacts on the local drainage or the velocity of a waterway; (g) increased flood inundation of surrounding properties; and (h) any reduction in the flood storage capacity of the floodplain by clearing of native vegetation. Note— This may be demonstrated by preparing a Flood hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
Waterways			
PO6	Development maintains the ecological functions of waterways.	**AO6.1**	Buildings and infrastructure in all areas are set back as per Table 8.2.9.3.3 – Minimum riparian buffers and setbacks for biodiversity, waterways and wetlands.
Community infrastructure			
PO7	The development supports, and does not unduly burden, disaster management response or recovery capacity and capabilities, including disruptions to residents, recovery time,	**AO7.1**	Essential community uses outlined within Table 8.2.9.3.3 meet the desired level of flood immunity within the Table, ensuring:

Performance Outcomes		Acceptable Outcomes	
	rebuilding and restoration costs after a flood event.		(a) it is designed, sited and operated to avoid adverse impacts on the community or the environment due to the impacts of flooding on infrastructure, facilities or access and egress routes; (b) it retains essential site access during a flood event; and (c) it is able to remain functional even when other infrastructure or services may be compromised in a flood event. Note – This may be demonstrated by preparing a Flood hazard assessment report in accordance with PSP SC6.5 (Natural hazards). Editor's note – Information on potential flood levels is available from Council for certain properties. Where no further information is provided by Council the applicant must source the information independently from a Registered Professional Engineer Queensland (RPEQ).
Vulnerable Uses			
PO8	Development siting and layout responds to flood hazards and maintains personal safety at all times.	**AO8.1**	Vulnerable uses or community infrastructure that must operate during and immediately after a flood event have direct access to evacuation routes.
		AO8.2	Developments that involves vulnerable uses, are not located in an isolated area or flood island area on the Flood hazard overlay map.

Table 8.2.9.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
ROL Requirements			
PO1	Development does not materially increase the number of people at risk of flood hazard through the subdivision of unsuitable flood affected land.	**AO1.1**	For Reconfiguring a lot, additional lots, if within a Low risk flood hazard area or Identified flood hazard area: (a) provide habitable building envelopes outside the Flood hazard area; (b) provide finished ground levels of urban purpose lots a minimum of 300mm above the DFE; or (c) within Rural and Rural Residential zones, lots have a minimum building envelope, above the DFE, with a usable area of 2000m².

Performance Outcomes		Acceptable Outcomes	
			Note – This may be demonstrated by preparing a Flood hazard assessment report in accordance with PSP SC6.5 (Natural hazards). Editor's note – Information on potential flood levels is available from Council for certain properties. Where no further information is provided by Council the applicant must source the information independently from a Registered Professional Engineer Queensland (RPEQ).
PO2	The development of additional lot(s) with new roads appropriately mitigates flood risks by: (a) appropriately locating roads, infrastructure and house pads; and (b) providing a safe evacuation route.	**AO2.1**	Development of additional lots with new roads affected by any Flood hazard area have: (a) adequate evacuation routes provided to safe ground, being land outside the Flood hazard area or an evacuation centre is able to be reached in a timely manner; (b) entry points to the reconfiguration are above the DFE and avoid cul-de-sacs or non-permeable layouts; (c) safety of people and property is prioritised; and (d) natural hydrological processes are maintained. Note – This may be demonstrated by preparing a Flood hazard assessment report in accordance with PSP SC6.5 (Natural hazards)
PO3	Appropriate road signage for flood depths is installed.	**AO3.1**	The creation of new roads provides signage and depth indicators at each key hazard point, e.g. waterway crossing.
Additional requirements for Medium or High risk flood hazard areas			
PO4	Reconfiguration of a lot does not create additional lots within a flood affected area, except for the uses of animal husbandry, cropping, environment facility, extractive industry, landing, outdoor sports and recreation, park, parking station, substation, utility installation and major electricity infrastructure.	**AO4.1**	Land partially affected by Medium or High risk flood hazard area must demonstrate that each additional lot has an appropriately sized building footprint and flood free access outside of the Medium and High risk flood hazard area. Note – A covenant or reserve may be required to ensure that no development occurs in the flood affected area.
		AO4.2	Land entirely affected by Medium or High risk flood hazard area does not create additional lots within the flood affected area, except for the uses of animal husbandry, cropping, environment facility, extractive industry, landing, outdoor sports and recreation, park, parking station, substation, utility

Performance Outcomes		Acceptable Outcomes	
			installation and major electricity infrastructure.

Table 8.2.9.3.3 Flood immunity for community infrastructure and services

Development	Level of immunity Annual exceedance probability (AEP)
Development involving: (a) emergency services; (b) hospitals and associated facilities; (c) retirement facilities and residential care facilities; (d) educational establishment; (e) facilities utilised as an evacuation or recovery facility in addition to their normal function (e.g. sporting facility, community centre, meeting hall); and (f) major electricity infrastructure.	0.2% AEP flood event
Development involving: (a) emergency/evacuation shelters; (b) the storage of valuable records or items of historic/cultural significance (e.g. libraries, galleries); (c) telecommunication facilities; (d) substations; (e) water treatment plants; (f) regional fuel storage; and (g) food storage warehouses.	0.5% AEP flood event
Development involving: (a) Sewerage treatment plants (requiring licensing as an environmentally relevant activity). (b) cemetery and crematorium (c) waste management facilities (d) sporting facility, community centre, meeting hall (where not used as an evacuation or recovery facility) (e) storage and works depots and similar facilities, including administrative facilities associated with the provision or maintenance of the community infrastructure mentioned in this part	1% AEP flood event

8.2.10 Heritage overlay code

Editor's note – This code does not apply to indigenous cultural heritage which is protected under the *Aboriginal Cultural Heritage Act 2003*. In accordance with this legislation, a person who carries out an activity must take all reasonable and practical measures to ensure the activity does not harm Aboriginal cultural heritage ("the cultural heritage duty of care").

Editor's note - Sites included in the Heritage overlay include Queensland and Commonwealth Heritage places. These are governed by their own relevant heritage legislation.

8.2.10.1 Application

This code applies to accepted and assessable development:

(a) subject to the Heritage overlay map contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Heritage overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.10.2 Purpose and overall outcomes

(1) The purpose of the Heritage overlay code is to ensure development on a Heritage place is compatible with the cultural heritage significance of the place outlined in the place card.

Editor's Note – Heritage place cards are identified and explained on the Whitsunday Regional Council website under the Local Heritage Register.

(2) The purpose of the Heritage overlay code will be achieved through the following overall outcomes:

(a) the cultural heritage significance of the Heritage place is conserved;

(b) development of the Heritage place is compatible with the cultural heritage significance of the place by:

(i) preventing the demolition or removal of Heritage places, unless there is no prudent and feasible alternative to its demolition or removal; and

(ii) maintaining or encouraging, as far as practical, the appropriate use, or adaptive re-use of Heritage places;

(iii) protecting, as far as practical, the materials and setting of the Heritage place;

(iv) ensuring, as far as practical, development on a Heritage place is compatible with the cultural heritage significance of the place; and

(c) development is compatible with the conservation and management of the cultural heritage significance of the Heritage place.

8.2.10.3 Assessment benchmarks

Table 8.2.10.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
PO1	Development of the Heritage place: (a) is compatible with the conservation and	**AO1.1**	Development: (a) conserves and does not alter, damage, remove or conceal significant features,

Performance Outcomes		Acceptable Outcomes	
	management of the cultural heritage significance of the Heritage place; and (b) protects the fabric and setting of the heritage place.		fabric or contents as described in the physical or historical significance description of the local heritage place or area, as written in the statements on each Heritage Placecard; or (b) protects, as far as practicable, the fabric and setting of a local heritage place or area; or (c) is minor and necessary to maintain a significant use for the Heritage place. Editor's note - Fabric means all the physical material of the place including elements, fixtures, contents and objects (the *Burra Charter 2013*).
		AO1.2	Development of the Heritage place is undertaken with reference to the ICOMOS Charter for the conservation of places of cultural heritage (*Burra Charter 2013*). Note – This may be demonstrated by undertaking a Heritage impact assessment report in accordance with PSP SC6.3 (Heritage).
PO2	The identified archaeological significance or potential archaeological significance of the Heritage place is conserved.	**AO2.1**	Where a ground breaking activity is required within the boundary of the Heritage place that has been identified as an archaeological place, a suitably qualified and experienced archaeologist must be appointed to assess the impact of the ground breaking activity on any identified and/or potential archaeological artefacts and features. The archaeologist must develop and, where required by Council, oversee the implementation of an Archaeological management plan that outlines how the project will manage impacts to the archaeological significance and potential of the place. Note – This may be demonstrated by undertaking an Archaeological management plan in accordance with PSP SC6.3 (Heritage).
Alteration or a Heritage Place or Area			
PO3	The Heritage place or part of the Heritage place may not be significantly altered unless it can be demonstrated:	**AO3.1**	Retaining a heritage item must be priority, unless it can be demonstrated that: (a) it is not capable of structural repair; and

Performance Outcomes		Acceptable Outcomes	
	(a) it is not capable of structural repair; or (b) there are any other relevant justifications.		(b) repair is not feasible having regard to economic or health and safety considerations. Note – Refer to Council's Local Heritage Register Policy for further information regarding removal of a heritage place. Note - This may be demonstrated by undertaking a Heritage impact assessment report in accordance with PSP SC6.3 (Heritage). Note - This may be demonstrated by undertaking a Heritage management plan in accordance with PSP SC6.3 (Heritage).

8.2.11 Infrastructure overlay code

8.2.11.1 Application

This code applies to accepted and assessable development:

(a) subject to the Infrastructure overlay shown on the overlay maps contained within Schedule 2 (Mapping); and

(b) identified as requiring assessment against the Infrastructure overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.11.2 Purpose and overall outcomes

(1) The purpose of the Infrastructure overlay code is to ensure that development is compatible with, and does not adversely affect the viability, integrity, operation and maintenance of the following existing and planned infrastructure and facilities with the Whitsunday region:

(a) major roads (State controlled roads);

(b) railways;

(c) major electricity infrastructure;

(d) substations;

(e) bulk water supply infrastructure;

(f) gas pipelines;

(g) strategic ports;

(h) public passenger transport facilities;

(i) wastewater treatment facilities; and

(j) waste management facilities.

(2) The purpose of the Infrastructure overlay code will be achieved through the following overall outcomes:

(a) existing and planned infrastructure facilities, networks and corridors are protected from incompatible development;

(b) development in proximity to existing and planned infrastructure facilities, networks and corridors is appropriately located, designed, constructed and operated to:

(i) avoid compromising the integrity, operational efficiency and maintenance of infrastructure and facilities; and

(ii) protect the amenity, health and safety of people and property.

8.2.11.3 Assessment benchmarks

Table 8.2.11.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Infrastructure Map – Transport infrastructure			
Road noise corridor and Railway buffers			
PO1	Sensitive uses are located, designed and constructed to ensure that noise emissions from major road corridors and railway corridors do not adversely affect: (a) the development's primary function; or (b) the wellbeing of occupants including their ability to sleep, work or otherwise undertake quiet enjoyment without unreasonable interference from road traffic or railway noise.	**AO1.1**	Development of sensitive uses: (a) does not occur within a Railway buffer; or (b) where within a Railway buffer complies with the acoustic noise quality objectives specified in Environmental Protection (Noise) Policy 2008.
		AO1.2	Development of sensitive uses located within a Road noise corridor, are sited and designed to comply with the QDC MP4.4 (Buildings in a transport noise corridor).
PO2	Development within a Road noise corridor or Railway buffer does not adversely impact on the associated infrastructure.	**AO2.1**	Development within a Road noise corridor or Railway buffer maintains and, where practicable, enhances the safety, efficiency and effectiveness of the infrastructure.
Strategic port areas and buffers			
PO3	Development within a Strategic port area or buffer does not interfere with an aid to navigation or associated signals.	**AO3.1**	Development does not result in significant electrical or electro-magnetic emissions which may impede the operation of aids to navigation.
		AO3.2	All lights on or above the development site: (a) are shielded to prevent glare or reflection; (b) do not include flood lights; (c) do not involve flashing or flickering lights which may be confused with aids to navigation; and (d) are not coloured lights such as green, blue or red lights which may be confused with aids to navigation.
		AO3.3	Lighting complies with AS 4282-1997(Control of the obtrusive effects of outdoor lighting).
Public passenger transport facilities and buffers			
PO4	Development supports a road hierarchy which facilitates efficient, safe and accessible bus services connecting to existing and future Public passenger transport facilities.	**AO4.1**	Roads catering for buses are major collector, arterial or sub-arterial roads or their equivalent.
		AO4.2	Roads catering for buses provide convenient connections to existing and future Public passenger transport facilities.

Performance Outcomes		Acceptable Outcomes	
		AO4.3	Development on bus routes does not impact bus stop infrastructure or the efficient running of bus services.
		AO4.4	Roads catering for buses are designed and constructed in accordance with PSP SC6.8 (WRC development manual).
PO5	Development enhances connectivity between existing and future Public passenger transport facilities and other transport modes.	**AO5.1**	The road network supports modal interchange by integrating with existing and future Public passenger transport facilities.
		AO5.2	Development provides direct linkages for passengers between existing and future Public passenger transport facilities and other transport modes.
		AO5.3	Development provides way-finding information for existing Public passenger transport facilities and interconnecting transport modes.
PO6	Development optimises the walkable catchment to existing and future Public passenger transport facilities.	**AO6.1**	Development connects to an existing or planned pedestrian/cycle network that links to existing and future Public passenger transport facilities.
		AO6.2	Development provides convenient through-site connections for pedestrians and cyclists to existing and future Public passenger transport facilities.
PO7	Development provides direct and safe access to and use of Public passenger transport facilities.	**AO7.1**	Through-site pathway connections to Public passenger transport facilities are provided in accordance with Part 6A of Austroads guide to road design (Pedestrian and cyclist paths).
		AO7.2	Pathway connections are available at all times.
		AO7.3	Direct and legible pedestrian and cycle paths and crossings provide connections to existing and future Public passenger transport facilities.
		AO7.4	Development incorporates landscaping, boundary treatments and lighting that enhances the safety of pedestrians and cyclists accessing Public passenger transport facilities by providing for casual surveillance.

Performance Outcomes		Acceptable Outcomes	
		AO7.5	Development of Business activities provides active frontages oriented towards Public passenger transport facilities.
		AO7.6	Accommodation activities address street frontages and provide casual surveillance of Public passenger transport facilities.
Infrastructure Map – Utility infrastructure			
Major electricity infrastructure and substation buffers			
PO8	Development involving a sensitive use is sufficiently separated from major electricity infrastructure or substations to minimise the likelihood of nuisance or complaint.	**AO8.1**	Sensitive uses maintain the following separation distances from the substation or easement for major electricity infrastructure: (a) 20m for transmission lines up to 132kV; (b) 30m for transmission lines between133kV and 275kV; and (c) 40m for transmission lines exceeding 275kV.
PO9	Major electricity infrastructure on private land is included in an easement.	**AO9.1**	Existing infrastructure easements are maintained and where none currently exist, new easements are created which are sufficient for electricity provider's requirements.
Bulk water supply pipelines and buffers			
PO10	Development within a water supply infrastructure buffer: (a) is located, designed and constructed to protect the integrity of the water supply pipeline; and (b) maintains adequate access for any required maintenance or upgrading work to the water supply pipeline.	**AO10.1**	Buildings and structures are setback from water supply pipelines a minimum of: (a) 20m; or (b) 10m if for a dwelling house; i. where habitable rooms are out of the drainage path of immediately adjoining water supply pipeline if it burst; or ii. building footprint cannot be sited elsewhere on the premises. Editor's note – Habitable rooms in a dwelling house should be located outside or above the drainage path of an immediately adjoining water supply pipeline, such that if it burst, the lay of the land, stormwater drainage or roads direct water elsewhere.
PO11	Development is located and designed to maintain required access to water supply infrastructure.	**AO11.1**	Development does not restrict access to bulk water supply infrastructure of any type or size, having regard to: (a) buildings or structures; (b) gates and fences; (c) storage of equipment or materials; and

Performance Outcomes		Acceptable Outcomes	
			(d) landscaping, earthworks, stormwater or other infrastructure.
Petroleum pipeline buffers			
PO12	Development within a Petroleum pipeline buffer reduces the risk of harm to sensitive uses, people and property.	**AO12.1**	Development within a Petroleum pipeline buffer provides and maintains adequate separation between the use or works and a Petroleum pipeline corridor so as to minimise risk of harm to sensitive uses, people and property.
PO13	Development and works within a Petroleum pipeline buffer does not adversely impact on associated infrastructure.	**AO13.1**	Uses and works within a Petroleum pipeline buffer are constructed and operated to avoid: (a) compromising the viability of the Petroleum pipeline corridor; or (b) damaging or adversely affecting the existing or future operation of major petroleum pipelines and the supply of petroleum.
Waste water treatment facilities and buffers			
PO14	Accommodation activities and other sensitive uses are not adversely affected by odour emissions from existing or planned Waste water treatment facilities.	**AO14.1**	A sensitive use involving an Accommodation activity is not located or intensified within a Waste water treatment facility buffer.
		AO14.2	Any sensitive use (other than an accommodation activity) located within a Waste water treatment facility buffer: (a) incorporates appropriate measures to minimise odour impacts; or (b) demonstrates that occupants and users will not be adversely affected by odour emissions from activities associated with the Waste water treatment facility.
		AO14.3	Reconfiguring a lot within a Waste water treatment facility buffer: (a) does not result in the creation of additional lots used or capable of being used for Accommodation activities; and (b) where rearranging boundaries, does not worsen the existing situation with respect to the distance between available

Performance Outcomes		Acceptable Outcomes	
			residential sites and the Waste water treatment facility.
Waste management facility buffer			
PO15	Accommodation activities and other sensitive uses are not adversely affected by noise emissions from existing or planned Waste management facilities.	**AO15.1**	A sensitive use involving an Accommodation activity is: (a) not located or intensified within a Waste management facility buffer; or (b) where located within a Waste management facility buffer complies with the following the acoustic quality design objectives specified in *Environmental Protection (Noise) Policy 2008.*
		AO15.2	Any sensitive use (other than an Accommodation activity) located within a Waste management facility buffer complies with the acoustic quality design objectives specified in *Environmental Protection (Noise) Policy 2008.*

8.2.12 Landslide hazard overlay code

8.2.12.1 Application

This code applies to accepted and assessable development:

(a) subject to the Landslide overlay maps contained within Schedule 2 (Mapping); or

(b) identified as requiring assessment against the Landslide overlay code by the tables of assessment in Part 5 (Tables of assessment).

8.2.12.2 Purpose and overall outcomes

(1) The purpose of the Landslide overlay code is to:

(a) provide for the assessment of the suitability of development, in an area subject to landslide hazard, to ensure that risk to life, property, community, economic activity and the environment is minimised; and

(b) ensure that development does not increase the potential damage from landslide events on site or to other property.

(2) The purpose of the Landslide overlay code will be achieved through the following overall outcomes:

(a) development is compatible with the level of risk associated with the landslide hazard;

(b) development siting, design, layout and access responds to the risk of the landslide hazard and minimises risk to personal safety and property;

(c) development supports, and does not unduly burden, disaster management response or recovery capacity and capabilities;

(d) development avoids an unacceptable increase in severity of the landslide hazard and does not significantly increase the potential for damage on the site or to other properties;

(e) where practical, community infrastructure is located and designed to function effectively during and immediately after a landslide event;

(f) development avoids the release of hazardous materials, as a result of the landslide hazard; and

(g) natural processes and the protective function of landforms and/or vegetation are maintained in Landslide hazard areas.

8.2.12.3 Assessment benchmarks

Table 8.2.12.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
PO1	Development maintains the safety of people, property and hazardous materials, manufactured or stored in bulk,	**AO1.1**	Development: (a) is not located on land identified in a Landslide hazard area or on land with a slope of 15% or greater; or

Performance Outcomes		Acceptable Outcomes	
	from the risk of a landslide hazard.		(b) if identified within a Landslide hazard area ensures: (i) buildings, infrastructure and associated works maintain the long-term stability of the site as Low or Very low risk in accordance *AGS 2007*; (ii) that the site will not be adversely affected by landslide activity originating from other land, including land above the site; and (iii) that landscaping, drainage, filling and excavation does not redirect the flow of, or concentrate surface water or groundwater on, the site or neighbouring sites. Note – This may be demonstrated by undertaking a site-specific Landslide hazard (geotechnical) assessment report in accordance with PSP SC6.5 (Natural hazards). The building assessment provisions must address the stability of buildings and structures in relation to landslide hazard. Editor's note – *AGS 2007* means *Australian Geomechanics Society 2007 Practice note guidelines for landslide risk management 2007*.
		AO1.2	The manufacture or storage of hazardous materials in bulk does not occur within a landslide hazard area.
		AO1.3	The siting, design and construction of works do not have a detrimental impact on slope stability or erosion potential on-site, adjoining premises or road reserves. Note – This may be demonstrated by undertaking a site-specific Landslide hazard (geotechnical) assessment report in accordance with PSP SC6.5 (Natural hazards).
PO2	Safe passage to evacuation centres or medical facilities is not at risk from being permanently impeded by a landslide event.	**AO2.1**	Reconfiguring of a lot ensures that new roads utilise appropriate retaining, slope setbacks and drainage measures to ensure the safety and long-term stability of the road for emergency evacuation, including a detailed Management plan completed by a Registered Professional Engineer of

Performance Outcomes		Acceptable Outcomes	
			Queensland (RPEQ) for engineering solutions likely to become Council assets. Note – This may be demonstrated by undertaking a site-specific Landslide hazard (geotechnical) assessment report in accordance with PSP SC6.5 (Natural hazards).
PO3	Community infrastructure maintains the safety of people and property and is not adversely affected by a landslide hazard.	**AO3.1**	Community facilities with a role in emergency management are not located on land within the landslide hazard area and are not at risk of impacts from potential landslide run-out areas.
		AO3.2	Development of community infrastructure within an identified Landslide hazard area or on land with a slope of 15% or greater ensures: (a) the long-term stability of the site, including associated building and infrastructure; (b) that access to the site will not be impeded by a landslide event; (c) that the site will not be adversely affected by landslides originating from other land, including land above the site; and (d) the primary function of the community infrastructure is maintained during a landslide event. Note – A site-specific landslide hazard (geotechnical) report is required to demonstrate compliance with PO3. The Landslide hazard (geotechnical) assessment report is to be prepared in accordance with PSP SC6.5 (Natural hazards). The building assessment provisions must address the stability of buildings and structures in relation to landslide hazard.

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Part 9 Development codes

9.1 Preliminary

(1) Development codes are codes for assessment where identified as an applicable code in Part 5 (Tables of assessment).

(2) The following codes and requirements apply to development under Schedule 6 of the Regulation, which are relevant for the Planning Scheme.

(3) Use codes and other development codes are specific to each Planning Scheme area.

(4) The following are the codes and requirements under the Regulation for development in the Planning Scheme area:

- (a) Community residence code requirements applying to development that may not be made assessable development under the Planning Scheme
- (b) Cropping involving forestry for wood production code applying to development that may not be made assessable development under the Planning Scheme
- (c) Reconfiguring a lot (subdividing one lot into two lots) and associated Operational works code applying to development for which code assessment is required under Schedule 10, part 12 and Schedule 10, Part 14 Division 2 of the Regulation.

(5) The following are the use codes for the Planning Scheme:

- (a) Business activities code
- (b) Caretaker's accommodation code
- (c) Child care centre code
- (d) Dual occupancy code
- (e) Dwelling house code
- (f) Extractive industry code
- (g) Home based business code
- (h) Industry activities code
- (i) Market code
- (j) Relocatable home park and tourist park code
- (k) Renewable energy facilities code
- (l) Residential care and retirement facility code
- (m) Rural activities code
- (n) Rural tourism code
- (o) Sales office code

(p) Service station code

(q) Short-term accommodation and multi-unit uses code

(r) Telecommunication facility code

(6) The following are the other development codes for the Planning Scheme:

(a) Advertising devices code

(b) Construction management code

(c) Excavation and filling code

(d) Healthy waters code

(e) Infrastructure code

(f) Landscaping code

(g) Reconfiguring a lot code

(h) Transport and parking code

9.2 Development that cannot be made assessable in accordance with Schedule 6 of the Planning Regulation 2017

9.2.1 Community residence requirements

Development for a community residence that complies with the acceptable outcomes in Table 9.2.3.1 is accepted development.

Table 9.2.3.1 Community residence for accepted development only

Requirements	
1.	The premises are in a residential zone or rural residential zone.
2.	No more than 7 support workers attend the residence in a 24-hour period.
3.	At least 2 car parks are provided on the premises for use by residents and visitors.
4.	At least 1 of the car parks stated in (3) is suitable for persons with disabilities.
5.	At least 1 car park is provided on the premises for use by support workers.

Editor's note—Schedule 6, Part 2, (6) of the Regulation states the development the Planning Scheme is prohibited from making assessable development for a material change of use for community residence.

9.2.2 Requirements for Cropping involving forestry for wood production code for accepted development

Table 9.2.2.1 Code for accepted development that is a material change of use for cropping (involving forestry for wood production) or operational work for harvesting trees for wood production.

Requirements	
Setbacks	
1	The use or work is at a distance of at least the separation distance stated in Table 9.2.2.2 **- Separation distances** below taken from the Regulation Schedule 13 Part 2 Table 1, column 2 Separation distances.
2	Seedlings within the separation distance stated in requirement (1) are removed if the seedlings: (i) are the same species as the trees to be harvested; and (ii) are not native to the local area.
Impacts on soil structure, fertility and stability	
3	For land with a slope of more than 10% but less than 25% - the development uses only— (a) mechanical strip cultivation on the contour; (b) spot cultivation; or (c) manual cultivation.
4	For land with a slope of 25% or more – the development uses only— (a) spot cultivation; or (b) manual cultivation.
5	The construction, operation or maintenance of a track or road for the development does not adversely affect – (a) a natural drainage feature on the land; or (b) land that is subject to erosion or landslide.
6	A track or road for the development – a) is appropriately drained; and b) has a stable surface.
7	Drainage structures for a track or road for the development are regularly maintained.
8	Drainage water from a track or road for the development is directed away from exposed soils, and onto undisturbed ground or other areas with a stable surface.
Fire risk	
9	For development involving a forest for wood production that is less than 40ha - a fire break that is at least 7m wide, measured from the base of the outermost tree in the forest to be harvested, is established and maintained.
10	For development involving a forest for wood production that is at least 40ha, but less than 100ha — a fire break that is at least 10m wide, measured from the base of the outermost tree in the forest to be harvested, is established and maintained.
11	For development involving a forest for wood production that is 100ha or more— (a) a fire break that is at least 20m wide, measured from the base of the outermost tree in the forest to be harvested, is established and maintained; or (b) both of the following things are established and maintained—

	(i) a fire break that is at least 10m wide, measured from the base of the outermost tree in the forest to be harvested; and (ii) a fuel reduction area immediately behind the fire break that is at least 10m wide.
12	Trees to be harvested in the fuel reduction area are pruned to a minimum height of 5m when the trees reach a height of 10m.
13	Fire breaks are kept clear of flammable material with a height of more than 1m.
14	Fire access tracks and roads with a minimum width of 4m wide are established and maintained on the premises.
15	Each part of the forest for wood production is within 250m of a fire access track or road.
16	Despite requirement (1), the following works may be carried out within the separation distance mentioned in Table 9.2.2.2 **- Separation distances** - Separation distances— a) the construction of roads and tracks for the development; or b) maintenance works for the development.

Table 9.2.2.2 - Separation distances

Column 1 **Structure or thing**	**Column 2** **Separation distance**
1 A watercourse shown on the regulated vegetation management map (1:100,000) and classified as stream order 1 to 2 under the Strahler stream order classification system	5m from the defining bank of the watercourse.
2 A watercourse shown on the regulated vegetation management map (1:100,000) and classified as a stream order 3 to 5 under the Strahler stream order classification system	10m from the defining bank of the watercourse.
3 A watercourse shown on the regulated vegetation management map (1:100,000) and classified as a stream order 6 under the Strahler stream order classification system	20m from the defining bank of the watercourse.
4 A State-owned protected area or forest reserve under the *Nature Conservation Act 1992*	10m from the boundary of the protected area or forest reserve.
5 category A area, category B area, category C area or category R area	10m from the boundary of the area.
6 A dwelling	100m from the dwelling, or another distance that complies with the Building Code and AS 3959-2009 *'Construction of buildings in bushfire prone areas".*
7 A machinery shed	A distance that is the greater of the following: (a) 25m from the machinery shed; or (b) A distance from the structure that equals 1.5 times the maximum height of the trees to be harvested
8 A transmission grid, supply network or above-ground pipeline, that services more than 1 premises and is not the subject of an easement.	A distance that is the longer of the following: (a) 25m from the structure; or (b) A distance from the structure that equals 1.5 times the maximum height of the trees to be harvested

9.2.3 Reconfiguring a lot (subdividing one lot into two lots) and associated operational works code

9.2.3.1 Purpose

The purpose of the Reconfiguring a lot (subdividing one lot into two lots) and associated operational works code is for assessing applications for development for reconfiguring a lot that requires assessment as regulated in Part 5, Section 5.4 under Table 5.4.2 (Regulated categories of assessment: reconfiguring a lot).

Editor's note—Schedule 12 (3) of the Regulation sets out the assessment benchmarks for the reconfiguring a lot.

This code applies to a reconfiguring of a lot if:

(a) The lot is in an industrial zone or residential zone (other than a park residential zone or rural residential zone);
(b) The reconfiguration is the subdivision of 1 lot, other than a rear lot, into 2 lots (each a created lot);
(c) Each created lot is at least the minimum lot size for the relevant zone stated in a local instrument; and
(d) the reconfiguration is consistent with the purpose statement for the relevant zone stated in a local instrument.

However, this code does not apply if:

(a) all or part of the premises, is in an erosion prone area or any of the following areas under a local instrument:
    (i) a flood hazard area;
    (ii) a bushfire hazard area;
    (iii) a landslide hazard area;
    (iv) a storm tide inundation area; or
(b) an overlay in a local instrument applies to all or part of the premises or any part of the premises.

For this section –

Industrial zone means area, (however described), designated in a local categorising instrument as industrial.
Relevant zone means the zone applying to premises under a local instrument.

A reference to a local instrument is a reference to a local instrument applying to the premises.

Table 9.2.3.1 Reconfiguring a lot (subdividing one lot into two lots) and associated operational works requiring code assessment

Requirements	
1.	The frontage of each created lot complies with the minimum frontage requirements for the relevant zone stated in a local instrument.
2.	The building envelope of each created lot complies with the building envelope requirements for the relevant zone stated in a local instrument.
3.	The reconfiguration involves the creation of a rear lot, only if the local instrument states that a rear lot is consistent with the relevant zone.
4.	The number of lots, including rear lots adjoining each created lot, complies with the maximum number of adjoining lots of the relevant zone stated in a local instrument.
5.	If the reconfiguration creates a rear lot: (i) an access strip for the rear lot does not adjoin the access strip of more than 1 other rear lot; and (ii) no more than 2 rear lots are accessed from the head of a single cul-de-sac

6.	If a local instrument states minimum setback distances for the relevant zone, the distance of a building or structure from a boundary of a created lot complies with the minimum distances stated in the local instrument.
7.	If the reconfiguration is in a residential zone and a local instrument does not state minimum setback distances for the zone, the distance of an existing building or structure from a boundary of a created lot complies with the minimum setback distances stated in the Queensland Development Code, Parts 1.1 to 1.3
8.	A new building or structure on the premises: (i) will comply with the Queensland Development Code, Part 1.4; and (ii) will be outside of an existing or planning infrastructure easement.
9.	Each created lot has access to the road network through: (i) direct road frontage; (ii) an access strip; or (iii) an access easement, if a local instrument states that an access easement is consistent with the relevant zone.
10.	Access from each created lot to the road network is: (i) lawful, safe and practical; and (ii) designed and built in accordance with requirements for the relevant zone stated in a local instrument, including requirements about width, length or gradient.
11.	If a local instrument does not state a minimum width requirement for an access strip or access easement in the relevant zone, an access strip or access easement for a created lot has a minimum width of: (i) for reconfiguring a lot in a residential zone—5m; or (ii) for reconfiguring a lot in an industry zone—8m.
12.	If a local instrument does not state a maximum length requirement for an access strip or access easement in the relevant zone, an access strip or access easement for a created lot has a maximum length of 50m.
13.	If the premises are in a reticulated water area, each created lot is connected to the reticulated water supply system.
14.	If the premises are not in a reticulated water area, each created lot has an alternative potable water supply source that complies with the minimum storage capacity requirements for the relevant zone stated in a local instrument.
15.	If the premises is in an area with a sewerage service, each created lot is connected to the sewerage service.
16.	If the premises is not in an area with a sewerage service, each created lot has an effluent treatment and disposal system designed and built in accordance with the requirements stated in a local instrument.
17.	Each lot is connected to a supply network and telecommunication network, if required under a local instrument.
18.	Any other infrastructure necessary to service the lots will be provided, designed and built in accordance with the requirements stated in a local instrument.
19.	The release of sediment from the premises, including from erosion and sediment-laden stormwater runoff: (i) is minimised during and after construction; and (ii) complies with the requirements stated in a local instrument.
20.	Filling and excavation on the premises: (i) does not cause a vertical change to the natural ground level of more than 1m; and (ii) does not result in ponding on the premises or adjoining land; and (iii) complies with the requirements stated in a local instrument.

9.3 Use codes

9.3.1 Business activities code

9.3.1.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Business activities code by the tables of assessment in Part 5 (Tables of assessment).

9.3.1.2 Purpose and overall outcomes

(1) The purpose of the Business activities code is to ensure that Business activities:

(a) are developed in a manner consistent with the Whitsunday regions hierarchy of centres; and

(b) are of a high quality design which reflects good centre design principles and appropriately responds to local character, environment and amenity considerations.

(2) The purpose of the Business activities code will be achieved through the following overall outcomes:

(a) a Business activity is of a type, scale and intensity that is consistent with and reinforces the Whitsunday regions hierarchy of centres;

(b) a Business activity incorporates building and landscape design that responds to the Region's tropical climate as well as the character of the particular local area;

(c) a Business activity is integrated into its surrounds and reflects high quality town centre design, streetscape and landscaping principles; and

(d) a Business activity avoids or mitigates adverse impacts upon the amenity, privacy or environmental quality of nearby Accommodation activities.

9.3.1.3 Assessment benchmarks

Table 9.3.1.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Relationship of buildings to streets and public spaces			
PO1	The Business activity is in a building that clearly defines frames or encloses the street and other useable public and semi-public open space.	**AO1.1**	The building is located close to the street frontage and other urban spaces for all or most of its length to create a continuous or mostly continuous edge.
		AO1.2	The building is sited and designed, such that: (a) the main pedestrian entrance to the building, or group of buildings, is located on the primary street frontage; (b) pedestrian access to the entrance of the building(s) or individual dwellings is easily discerned by

Performance Outcomes		Acceptable Outcomes	
			landscaping, lighting, signage or architectural elements from the primary street frontage; and (c) the building addresses the street and has its pedestrian entrances fronting the street.
		AO1.3	Car parking areas, service areas and driveways: (a) are located and configured so that they do not dominate the streetscape; and (b) are separate from the pedestrian access.
PO2	The Business activity provides for footpaths, walkways and other spaces intended primarily for pedestrians to be comfortable to use and adequately sheltered from excessive sunlight and inclement weather.	**AO2.1**	Any building provides adequate and appropriate shelter along or around the street in the form of an awning, colonnade, verandah or the like with a width: (a) that is 3m wide or to within 1m of any kerb, whichever is less; or (b) if awnings on adjoining premises are greater than 3m in width, awnings provided are consistent with the width and height of the adjoining awning, to within 1m of any kerb.
PO3	The Business activity is in a building which is designed to create vibrant and active streets and public spaces.	**AO3.1**	Development provides for a minimum of 65% of the building frontage to a public street or other public space to present with clear or relatively clear windows and glazed doors.
		AO3.2	The building incorporates activities that are likely to foster casual, social and business interaction for extended periods, such as shops, food and drink outlets and the like.
		AO3.3	Development minimises vehicular access across active street frontages.
Building mass and composition			
PO4	The Business activity is in a building that enhances the character and amenity of streets and neighbouring premises via a built form that: (a) is closely related to streets, public spaces and pedestrian routes;	**AO4.1**	Except where otherwise provided for in a zone or local plan code: (a) site cover of a building does not exceed: (i) 70% for that part of a building not exceeding 8.5m in height; and

Performance Outcomes		Acceptable Outcomes	
	(b) maintains some area free of buildings at ground level to facilitate pedestrian movement and other functions associated with the building; (c) ensures access to attractive views and prevailing cooling breezes; and (d) avoids excessively large building floor plates and building facades.		(ii) 50% for that part of a building exceeding 8.5m in height; (b) buildings are set back from street frontages: (i) not more than 3m for that part of a building not exceeding 8.5m in height; and (ii) at least 6m for that part of a building exceeding 8.5m in height; and (c) buildings are set back from other site boundaries: (i) 0m, if not exceeding 8.5m in height and adjoining an existing blank wall or vacant land on an adjoining site; (ii) at least 3m, if not exceeding 8.5m in height and adjoining an existing wall with openings on an adjoining site; and (iii) at least 6m for that part of a building exceeding 8.5m in height.
		AO4.2	Any projection above the podium level outside the boundaries of the building envelope is limited to balconies that do not project more than 1.5m into the setback.
		AO4.3	All storeys of a building above the third storey have a plan area that does not exceed 1,000m² in plan area with no horizontal dimension exceeding 45m.
Building features and articulation			
PO5	The Business activity is in a building, which: (a) provides visual interest through form and facade design; (b) provides outdoor or semi-enclosed public spaces that complement adjoining indoor spaces; and (c) responds to the character and amenity of neighbouring premises and the streetscape.	**AO5.1**	The building has articulated and textured façades that incorporate some or all of the following design features to create a high level of openness and visual interest and provide shading to walls and windows: (a) wide colonnades, verandahs, awnings, balconies and eaves; (b) recesses, screens and shutters; and/or (c) windows that are protected from excessive direct sunlight during warmer months.

Performance Outcomes		Acceptable Outcomes	
		AO5.2	Outdoor or semi-enclosed public spaces are sited to promote an attractive central core or entrance space, with plantings and seating arrangements that foster its function as a desirable meeting or resting point.
		AO5.3	The building is articulated and finished in ways that respond to significant built form elements of adjacent buildings and the streetscape, such as continuity of colonnades, verandahs, balconies, eaves, parapet lines and roof forms.
		AO5.4	The building incorporates vertical and horizontal articulation, such that no unbroken elevation is longer than 15m.
		AO5.5	The building has a top level and roof form that is shaped to: (a) provide a visually attractive skyline silhouette; and (b) screen mechanical plant and equipment from view.
PO6	Development utilises podiums, awnings, articulation, an attractive roofline and landscaping to improve visual interest, visual amenity and reduce building bulk when viewed from the street or adjoining pedestrian pathway.	**AO6.1**	A building, having a height of more than 8.5m, incorporates built form elements that help to differentiate between the podium and other building levels, including: (a) landscaping; (b) articulation; or (c) variations in building colour, material or trimmings.
		AO6.2	Podium areas may be utilised as a private balcony, semi-public space or communal space and must be free of built form with the exception of: (a) awnings or shade structures over the useable podium level space; and (b) balcony fencing that is at least 50% transparent. Editor's note - 'Communal' and 'semi-public space' is defined within Schedule 1.2 Administrative definitions.
Environmental management and amenity of residential premises			
PO7	The Business activity does not unreasonably impact upon the amenity or environmental quality of its environs and especially any nearby sensitive uses.	**AO7.1**	Undesirable visual, noise and odour impacts on public spaces and sensitive uses are avoided or reduced by: (a) where appropriate, limiting the hours of operation of the Business activity to maintain

Performance Outcomes		Acceptable Outcomes	
			acceptable levels of residential amenity relative to the site context and setting; (b) providing vehicle loading/unloading and refuse storage/collection facilities within enclosed service yards or courtyards that are not visible from the street; and (c) not locating site service facilities and areas along any frontage to a public street, sensitive uses or other urban space.
		AO7.2	Where the Business activity requires the use of acoustic attenuation measures to mitigate adverse impacts on nearby sensitive uses, such measures are designed and constructed to be compatible with surrounding development and the local streetscape.
		AO7.3	Glare conditions or excessive light spill onto adjacent sites and public spaces are avoided or minimised through measures, such as: (a) selection and location of light fixtures; (b) use of building design/architectural elements or landscape treatments to block or reduce excessive light spill to locations where it would cause a nuisance to residents or the general public; and (c) alignment of streets, driveways and servicing areas to minimise vehicle headlight impacts on adjacent residential premises.
PO8	Untreated trade waste contaminated water must not enter stormwater drains. Note - Developments must comply with Council's Trade Waste Policy.	**AO8.1**	Backwash from commercial swimming pools, ornamental ponds and spas must be able to be connected to the reticulated sewer system and not to the environmental/stormwater network.
		AO8.2	Refuse disposal and recycling areas: (a) are provided on-site; (b) are imperviously sealed, bunded and roofed;

Performance Outcomes		Acceptable Outcomes	
			(c) contain a hose down area draining to the sewer network with appropriate pre-treatment; and (d) does not drain into the stormwater network.
		AO8.3	Wash down bays for vehicles and boats: (a) are on a hardstand area with a minimum 1:80 grade for wash water drainage; (b) are connected to the reticulated sewerage system; (c) prevent the intrusion of rainwater; and (d) pre-treatment equipment areas are within a roofed wash bay bund, or in a separate approved roofed and bunded area that drains to the pump chamber.
PO9	The Business activity maintains the reasonable privacy and amenity of Accommodation activities, such that the use of indoor and outdoor living areas by residents is not unreasonably diminished.	**AO9.1**	Where the development is adjacent to an existing or approved building containing Accommodation activities, the reasonable privacy and amenity of such uses is maintained by: (a) siting and orienting buildings to minimise the likelihood of overlooking occurring; (b) having windows and outdoor areas, including balconies and terraces, located and designed to not look into dwellings or rooming units; and (c) incorporating screening over building openings.
PO10	Where the Business activity is part of a mixed use development involving Accommodation activities in the same building, the development provides residents with reasonable levels of privacy and security.	**AO10.1**	Entry areas for the residents of, and visitors to, dwellings or rooming units are provided: (a) separately from entrances for other building users; and (b) for safe entry from streets, car parking areas and servicing areas.
		AO10.2	Clearly marked, safe and secure parking areas are provided for residents and visitors, which are separate from parking areas provided for other building users.
		AO10.3	Security measures are installed, such that other building users do not have access to areas that are intended for the exclusive use of residents of,

Performance Outcomes		Acceptable Outcomes	
			and visitors to, Accommodation activities.
		AO10.4	Buildings provide opportunities for casual surveillance of any adjoining street or other public space.
		AO10.5	All access points, footpaths, car parks, building entrances and foyers are illuminated.
		AO10.6	The Business activity achieves the environmental values for the acoustic environment and acoustic quality objectives for sensitive receiving environments set out in the *Environmental Protection (Noise) Policy 2008*.
Requirements for a shop (corner store) in a residential zone			
PO11	Where the Business activity involves the establishment of a corner store in a residential zone, the corner store is: (a) appropriately located in the residential zone taking into account the size and configuration of the neighbourhood and the location of other existing or approved retail facilities; and (b) compatible with the scale and intensity of development in the neighbourhood.	**AO11.1**	The corner store is located on a site that is more than 400m radial distance from any: (a) existing shop; (b) site with a current approval for a shop; or (c) land included in a centre zone.
		AO11.2	The building in which the corner store is located does not exceed a gross floor area of 150m².
Requirements for a Business activity in an industry zone			
PO12	Buildings and structures associated with the Business activity are: (a) of a scale and design which is appropriate to an industrial setting, whilst contributing positively to the visual character and streetscape of the area; and (b) designed to avoid or mitigate the potential for adverse amenity impacts on adjoining or nearby sensitive uses.	**AO12.1**	Buildings and structures are setback a minimum of: (a) 9m to the primary street frontage; (b) 3m to any secondary street frontage; and (c) 10m from any side or rear boundary where adjoining a sensitive land use or land in a residential zone or the Community facilities zone; or (d) 0.75m from any side or rear boundary, where not adjoining a sensitive land use, land in a residential zone or the Community facilities zone; or (e) where less than 0.75m to the boundary, maintenance free.
Requirements for a Business activity in the Tourist accommodation zone			

Performance Outcomes		Acceptable Outcomes	
PO13	A Business activity in the Tourist accommodation zone is: (a) appropriately located, taking into account the size and configuration of the area and the location of other existing or approved Business activities; and (b) compatible with the scale and intensity of development in the neighbourhood.	**AO13.1**	The Food and drink outlet is located more than 400m radial distance from any: (a) existing Food and drink outlet; (b) site with a current approval for a Food and drink outlet; or (c) land included in a Centre zone.
		AO13.2	The Shop is located more than 400m radial distance from any: (a) existing shop; (b) site with a current approval for a shop; or (c) land included in a Centre zone.
		AO13.3	The Business activity does not exceed a gross floor area of 150m².

9.3.2 Caretaker's accommodation code

9.3.2.1 Application

This code applies to accepted and assessable development:

(a) being a material change of use for caretaker's accommodation; and

(b) identified as requiring assessment against the Caretaker's accommodation code by the tables of assessment in Part 5 (Tables of assessment).

9.3.2.2 Purpose and overall outcomes

(1) The purpose of the Caretaker's accommodation code is to provide for the development of caretaker's accommodation use, which provides acceptable levels of amenity for occupants.

(2) The purpose of the Caretaker's accommodation code will be achieved through the following overall outcomes:

(a) caretaker's accommodation is used for genuine caretaking or property management purposes;

(b) caretaker's accommodation remains ancillary to non-residential premises on the same site;

(c) an acceptable level of residential amenity is provided for occupants of caretaker's accommodation; and

(d) caretaker's accommodation does not adversely impact upon the amenity of the local area.

9.3.2.3 Assessment benchmarks

Table 9.3.2.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Use requirements			
PO1	The caretaker's accommodation is used for genuine caretaking or property management purposes.	**AO1.1**	The caretaker's accommodation is occupied by a person or persons having responsibility for the security, maintenance or management of non-residential activities conducted on the same site and, if applicable, that person's immediate family.
PO2	The caretaker's accommodation is ancillary to the non-residential premises on the same site.	**AO2.1**	The caretaker's accommodation has a gross floor area not exceeding 70m².
		AO2.2	No more than one caretaker's accommodation is established on the site.
		AO2.3	The caretaker's accommodation does not have a separate land title from the balance of the site.
Protection of residential amenity			
PO3	The design of the caretaker's accommodation achieves an acceptable level of residential	**AO3.1**	Bedrooms and living rooms of the caretaker's accommodation face away from, and do not adjoin, noise generating

Performance Outcomes		Acceptable Outcomes	
	amenity for residents of the caretaker's accommodation.		activities conducted on the site or adjoining sites.
		AO3.2	Waste service areas are located at least: (a) 1m away from any adjacent side or rear property boundary; and (b) 3m from bedrooms, living rooms and private open space of the caretaker's accommodation.
PO4	The caretaker's accommodation is provided with adequate private open space that is useable and directly accessible from the caretaker's accommodation.	**AO4.1**	The caretaker's accommodation contains an area of private open space, which is directly accessible from a habitable room and: (a) if at ground level, has an area of not less than 16m², with no horizontal dimension of less than 4m; or (b) if a balcony, verandah or deck has an area of not less than 10m², with no horizontal dimension of less than 2.5m.
PO5	The design of the caretaker's accommodation is compatible with the preferred character of the zone in which it is located.	**AO5.1**	The caretaker's accommodation does not exceed the maximum building height for the zone in which it is located, as specified in the applicable zone code.
On-site car parking			
PO6	Sufficient on-site car parking is provided to satisfy the projected needs of the caretaker's accommodation and is appropriately designed to facilitate ease of use.	**AO6.1**	A minimum of 1 on-site parking space is provided for exclusive use by the occupants of the caretaker's accommodation.
		AO6.2	Development provides access driveways, internal circulation, manoeuvring areas and on site car parking areas in accordance with AS2890 (Parking facilities: Off-street car parking).

9.3.3 Child care centre code

9.3.3.1 Application

This code applies to assessable development:

(a) being a material change of use for a child care centre; and

(b) identified as requiring assessment against the Child care centre code by the tables of assessment in Part 5 (Tables of assessment).

9.3.3.2 Purpose and overall outcomes

(1) The purpose of the Child care centre code is to ensure child care centres are appropriately located and are designed in a manner which provides a safe environment for users and protects the amenity of surrounding premises.

(2) The purpose of the Child care centre code will be achieved through the following overall outcomes:

(a) a viable child care centre network is established and maintained for the Whitsunday region;

(b) child care centres are conveniently located close to residential communities or major employment nodes;

(c) the health and safety of children is not compromised by incompatible land use activities or poor design; and

(d) a child care centre does not have a detrimental impact on the amenity of surrounding residential premises.

9.3.3.3 Assessment benchmarks

Table 9.3.3.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	The child care centre is co-located with other compatible Community activities or Business activities to maximise accessibility.	**AO1.1**	The child care centre is located: (a) within 400m of, or is integrated with, another compatible Community activity; (b) on a conveniently accessible site at the entrance to a residential neighbourhood; or (c) in an activity centre or other employment area.
PO2	The child care centre is located on a road, which is accessible and safe but not predominately used by local residential traffic.	**AO2.1**	The child care centre is located on a site with access and frontage to a collector street.
PO3	The child care centre is located and designed to ensure that children and staff are not exposed to unacceptable levels of noise, unhealthy air emissions contaminants or other unacceptable risks, such	**AO3.1**	The child care centre is located on a site where: (a) soils are not contaminated by pollutants, which represent a health or safety risk to children and staff;

Performance Outcomes		Acceptable Outcomes	
	as gas, sewerage tanks, medium and high industry, and other nuisances.		(b) maximum concentrations of air pollutants are less than those recommended by the National Health and Medical Research Council; and (c) noise levels from external sources, measured at the maximum L10 [1 hour], are less than: (i) 35dB(A) within buildings; and (ii) 55dB(A) when measured at the centre of any outdoor play area.
PO4	The child care centre is located on a site that is capable of accommodating a well-designed, safe and integrated facility.	**AO4.1**	The child care centre is located on a site having: (a) a slope of not more than 10%; and (b) a regular shape.
Protection of residential amenity			
PO5	The child care centre is sited and designed to complement the local streetscape and reflect the character of the locality, while maintaining residential amenity and mitigating adverse impacts, such as noise and light nuisance.	**AO5.1**	All buildings, structures and outdoor play areas are setback at least 3m from all site boundaries adjoining an Accommodation activity or land, included in a residential zone.
		AO5.2	A 2m high acoustic screen fence is erected along the full length of all site boundaries adjoining an Accommodation activity or land included in a residential zone.
Services and utilities			
PO6	An appropriate level of water and sewerage infrastructure is provided to the child care centre to: (a) allow for the efficient functioning of the facility; and (b) maintain acceptable public health and environmental standards.	**AO6.1**	(a) The childcare centre is connected to the reticulated water supply and sewerage network; or (b) Where a reticulated water supply and sewerage network is not available: (i) satisfactory alternative means of potable water supply is provided; and (ii) an adequate standard of on site effluent treatment and disposal is provided.
Parking and access			
PO7	A safe set-down and pick-up area is provided, with all on site parking and vehicle manoeuvring areas located and designed to minimise conflicts	**AO7.1**	Set down and pick up areas: (a) provide an appropriate number of bays, with a drive through lane located at the front of the site; (b) provide good visibility; and

Performance Outcomes		Acceptable Outcomes	
	between private motor vehicles and pedestrians.		(c) are adequately covered to provide protection from weather elements.
		AO7.2	Convenient, safe and clearly visible pedestrian access is available within and to the site, which does not cross access driveways.

9.3.4 Dual occupancy code

9.3.4.1 Application

This code applies to accepted and assessable development:

(a) being for building work for a dual occupancy; and

(b) identified as requiring assessment against the Dual occupancy code by the tables of assessment in Part 5 (Tables of Assessment).

9.3.4.2 Purpose and overall outcomes

(1) The purpose of the Dual occupancy code is to ensure that development involving a dual occupancy achieves a high level of comfort and amenity for occupants, maintains the amenity and enjoyment of neighbouring premises and is compatible with the character of the streetscape and surrounding area.

(2) The purpose of the Dual occupancy code will be achieved through the following overall outcomes:

(a) a dual occupancy makes a positive contribution to the streetscape character of the area in which it is located;

(b) a dual occupancy is sited and designed to protect the amenity, privacy and access to sunlight of adjoining residential premises;

(c) a dual occupancy provides a high level of amenity and safety for residents of the dual occupancy; and

(d) a dual occupancy is provided with an acceptable level of infrastructure and services.

9.3.4.3 Assessment benchmarks

Table 9.3.4.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Site suitability			
PO1	The dual occupancy is located close to local services and public transport and has sufficient area to accommodate the dual occupancy and associated access, parking, landscaping and setback requirements.	**AO1.1**	A dual occupancy is located on a lot in the Low-medium density residential zone, Mixed use zone or a Centre zone.
		AO1.2	A dual occupancy is located on a lot having a minimum area of 800m².
Siting, design and layout			
PO2	A Dual occupancy facilitates residential amenity in line with the surrounding neighbourhood and residential character, through the siting, layout, landscaping and design of a development that is responsive to the size of the premises, including:	**AO2.1**	Car parking spaces may be in tandem, provided one space is behind the road setback.
		AO2.2	Garage openings facing the street do not exceed 6m or 50% of the street frontage, whichever is the lesser.
		AO2.3	Where fencing is not provided, street frontages are adequately landscaped, including shade trees, to visually define the

Performance Outcomes		Acceptable Outcomes	
	(a) adequate building setbacks from the front, side and rear boundary; (b) natural light and ventilation through the building; (c) site cover; (d) building height; (e) privacy and overlooking; (f) building maintenance setbacks; (g) sight lines on corner blocks; (h) private open space; and (i) on-site car parking.		boundary between private and public land.
		AO2.4	Development involving pier and pole construction includes Queenslander architectural design elements to reduce visibility of the underside of the building and minimise building bulk from the Street, including decorative features that cast shadows, such as timber battens or lattice screens and: (a) landscaping; or (b) verandahs or stairs fronting the street.
Domestic outbuildings			
PO3	Domestic outbuildings associated with a Dual occupancy are of a scale, location and built form that: (a) contributes positively to the streetscape; (b) have a design and built form that complements the residential character of the area; and (c) avoids negative impacts on the streetscape or adjoining properties.	**AO3.1**	Domestic outbuildings within a Residential zone or Mixed-use zone are of a scale and size that adheres to the surrounding residential character, including: (a) maximum combined floor area equivalent to 9% of the site area, or 72m², whichever is the least; (b) a maximum length of 12m in one plane; and (c) a maximum length-to-width ratio of 2:1. Editor's note – Domestic outbuildings are defined as non-habitable sheds or car ports. 'Liveable sheds' are defined as a Dwelling house. Residential zones are defined by Table 1.2.1 of the Planning Scheme.
Services and utilities			
PO4	Development ensures that the layout and design of vehicle access, on-site circulation systems and parking areas are safe, convenient and legible.	**AO4.1**	Development provides access driveways, internal circulation, manoeuvring areas and parking areas in accordance AS2890 (Parking facilities: Off street car parking).
PO5	The dual occupancy is provided with, and connected to, essential infrastructure and services.	**AO5.1**	A dual occupancy is: (a) connected to reticulated water supply, sewerage and stormwater drainage infrastructure networks in accordance with PSP SC6.8 (WRC Development manual); and (b) is connected to the electricity network.
PO6	The dual occupancy is provided with adequate areas for the storage of waste and recyclable items, in appropriate containers,	**AO6.1**	Waste storage areas are provided as: (a) separate areas for each dwelling to accommodate the permanent storage of

Performance Outcomes		Acceptable Outcomes	
	which are convenient to use and service.		waste and recyclable items in standard waste containers; or (b) shared areas over which each dwelling has control via access rights or ownership is provided to accommodate the permanent storage of waste and recyclable items in standard waste containers.
		AO6.2	Waste storage areas are screened from public view.

9.3.5 Dwelling house code

9.3.5.1 Application

This code applies to accepted and assessable development:

(a) being for building work for a dwelling house; and

(b) identified as requiring assessment against the Dwelling house code by the tables of assessment in Part 5 (Tables of Assessment).

Editor's note – in accordance with Schedule 1 (Definitions), a reference to a dwelling house includes outbuildings and works normally associated with a dwelling, including a secondary dwelling.

9.3.5.2 Purpose and overall outcomes

(1) The purpose of the Dwelling house code is to ensure the design and siting of detached houses protects residential amenity and maintains streetscape character and that associated dwellings and outbuildings are of an appropriate scale and intensity.

(2) The purpose of the Dwelling house code will be achieved through the following overall outcomes:

(a) the building form, siting design and use of the dwelling house is consistent with the desired amenity and character of the area;

(b) a dwelling house is sited and designed to protect the amenity, privacy and access to sunlight of adjoining residential premises;

(c) a dwelling house provides a high level of amenity and safety for residents of the dwelling house;

(d) a dwelling house is provided with an acceptable level of infrastructure and services;

(e) outbuildings are of an appropriate scale and intensity and are compatible with surrounding development;

(f) secondary dwellings are small in scale and ancillary to the principal use for a dwelling house; and

(g) a dwelling house is not at an unacceptable risk from natural hazards.

9.3.5.3 Assessment benchmarks

Editor's note – an approved plan of development for a variation approval overriding the Planning Scheme or reconfiguring a lot may vary or specify alternative assessment benchmarks for a dwelling house. In such cases, compliance with these alternative assessment benchmarks will be deemed to represent compliance with the comparable provisions of the Dwelling house code.

Table 9.3.5.3.1 Benchmarks for acceptable and assessable development

Performance Outcomes		Acceptable Outcomes	
Building design			
PO1	A Dwelling house is of a scale, location and built form that: (a) contributes positively to the streetscape;	**AO1.1**	Dwelling houses, excluding domestic outbuildings, promote the local residential character, through variations in building façade and roof form, including:

Performance Outcomes		Acceptable Outcomes	
	(b) has a design and built form that complements the residential character of the area; and (c) avoids negative impacts on the streetscape or adjoining properties.		(a) eaves at least 0.5m from the wall edge, along Street fronting walls; (b) roof pitch of at least 5 degrees; (c) large windows, openings and variations in building footprint or articulation, such that no unbroken wall fronting a street is greater than 5m, vertically or horizontally; and (d) front façade treatments that differentiate between upper and lower levels. Editor's note – Domestic outbuildings are defined as non-habitable sheds or car ports. 'Liveable sheds' are defined as a Dwelling house.
		AO1.2	Domestic outbuildings within a Residential zone or Mixed-use zone are of a scale and size that adheres to the surrounding residential character, including: (a) maximum combined floor area equivalent to 9% of the site area or 72m², whichever is the least; (b) a maximum length of 12m in one plane; and (c) a maximum length-to-width ratio of 2:1. Editor's note – Domestic outbuildings are defined as non-habitable sheds or car ports. 'Liveable sheds' are defined as a Dwelling house. Residential zones are defined by Table 1.2.1 of the Planning Scheme.
		AO1.3	Where fencing is not provided, street frontages are adequately landscaped to visually define the boundary between private and public land.
		AO1.4	Development involving pier and pole construction includes Queenslander architectural design elements to reduce visibility of the underside of the building and minimise building bulk from the Street, including decorative features that cast shadows, such as timber battens or lattice screens and: (a) landscaping; or (b) verandahs or stairs fronting the street.
Services and utilities			

Performance Outcomes		Acceptable Outcomes	
PO2	The dwelling house is provided with and connected to essential infrastructure and services.	**AO2.1**	A dwelling house in the PIA is: (a) connected to reticulated water supply, sewerage and stormwater drainage infrastructure networks in accordance with PSP SC6.8 (WRC Development manual); and (b) is connected to the electricity network.
		AO2.2	The dwelling house, where in a Rural or Rural residential zone, is connected to the electricity network and is connected to a: (a) reticulated water supply; or potable water supply and water storage collection system having: (i) a minimum storage capacity of 70,000 litres; and (ii) a first flush system; (b) reticulated sewerage system or an alternative on site effluent and wastewater treatment system consistent with the *Queensland Plumbing and Wastewater Code*.
PO3	Development ensures that the layout and design of vehicle access, on-site circulation systems and parking areas are safe, convenient and legible.	**AO3.1**	Development provides access driveways, internal circulation and manoeuvring areas and parking areas in accordance AS2890 (Parking facilities: Off street car parking).
Secondary dwellings			
PO4	A secondary dwelling is subordinate in bulk and scale to maintain the appearance of a dwelling house with ancillary buildings when viewed from the street.	**AO4.1**	Only one secondary dwelling is established in association with a dwelling house.
		AO4.2	A secondary dwelling has a maximum GFA of 70m² and a TUA of 100m², excluding car parking areas.
		AO4.3	A minimum of one on site car parking space is provided to service the secondary dwelling.

9.3.6 Extractive industry code

9.3.6.1 Application

This code applies to assessable development:

(a) being a material change of use for extractive industry; and

(b) identified as requiring assessment against the Extractive industry code by the tables of assessment in Part 5 (Tables of assessment).

Editor's note – The Extractive resource area overlay map also show mining lease areas located within the Planning Scheme area. Mining lease areas are shown for information purposes only with mining operations in these areas regulated under the *Mineral Resources Act 1989*.

9.3.6.2 Purpose and overall outcomes

(1) The purpose of the Extractive industry code is to ensure that the exploitation of extractive resources is undertaken in a sustainable manner which protects environmental and landscape values, public safety and the amenity of surrounding premises.

(2) The purpose of the Extractive industry code will be achieved through the following overall outcomes:

(a) extraction of resources occurs in a sustainable manner;

(b) natural values and water quality are protected from any environmental degradation potentially arising from extractive industry operations;

(c) extractive industry operations are located, designed and constructed to avoid or effectively mitigate adverse impacts on any sensitive use, in particular, residential or rural residential premises;

(d) transport routes allow extractive materials to be transported with the least amount of impact on development along those roads and on the function of those roads; and

(e) land used for extractive industry operations is effectively rehabilitated.

9.3.6.3 Assessment benchmarks

Table 9.3.6.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Site planning			
PO1	The extractive industry is designed and established having regard to the availability of other appropriate infrastructure, characteristics of the natural environment and the proximity of sensitive land uses, to provide: (a) adequate separation distance to protect the surrounding area from significant noise, dust, vibration and visual impacts of operations;	**AO1.1**	The extractive industry is undertaken in accordance with an approved environmental management plan, which addresses environmental and social impacts of operations.

Performance Outcomes		Acceptable Outcomes	
	(b) suitable vehicle access and haulage routes; (c) protection against erosion; (d) acceptable quality of water leaving the site; (e) public safety; (f) acceptable restoration measures; (g) protection of groundwater quality and quantity; (h) avoidance of land contamination; (i) effective stormwater management; and (j) waste management practices, which maximise recycling and reuse of wastes.		
PO2	The extractive industry maintains suitable and sustainable landscaping on the extractions site.	**AO2.1**	The volumes of anticipated extraction are planned and staged, allowing for appropriate landscape form.
Vehicle access and manoeuvring			
PO3	Vehicle access to, from and within the extractive industry site is provided to: (a) be adequate for the type and volume of traffic to be generated; (b) not create or worsen any traffic hazard; (c) not have adverse effects on the amenity of the locality; and (d) ensure disturbance to surrounding land uses is minor and that impacts from emissions are minimised.	**AO3.1**	The proposed transport route to and from the site is along sealed roads and does not require heavy vehicles to traverse residential or rural residential streets.
		AO3.2	All driveways are sealed, with internal manoeuvring and car parking areas suitably surfaced.
		AO3.3	Site ingresses and egresses are located to provide: (a) a minimum sight distance in all directions of 200m; (b) a maximum gradient of 1:10 (10%) on all roads, including haul roads, within 100m of such ingress or egress; (c) a minimum ingress/egress width of 12m; and (d) a minimum separation to any road intersection or property access of 50m.
		AO3.4	Acceleration and deceleration lanes, in accordance with Austroads guidelines, are provided to site ingress and egress points.
		AO3.5	Rubble pad, wheel wash or other suitable method installed at heavy vehicle egresses to prevent material being carried onto roadway during bulk haulage.

Performance Outcomes		Acceptable Outcomes	
		AO3.6	Vehicle access is provided in accordance with the standards specified PSP SC6.8 (WRC development manual).
Separation distances			
PO4	The extractive industry is located on a site which has sufficient area to provide for adequate setback of operations from road frontages, site boundaries, surrounding sensitive uses, such that the extractive industry achieves an acceptable standard of visual amenity and control of noise, light, dust and vibration impacts.	**AO4.1**	Extractive industry involving blasting or crushing is not carried out within 1km of any sensitive use.
		AO4.2	Extractive industry not involving blasting or crushing is not carried out within 100m of any sensitive use.
		AO4.3	A mounded vegetated buffer strip having a minimum width of 10m is provided to all boundaries of the site.
Site drainage			
PO5	The extractive industry provides on site drainage that is designed, constructed and maintained to: (a) prevent ponding in excavated areas; (b) avoid erosion; (c) prevent pollution of groundwater and surface water; (d) protect downstream water quality; and (e) provide opportunities to recycle water for reuse in processing, washing and/or screening materials, dust suppression and on product stockpiles, overburden stockpiles, revegetation or rehabilitation areas and wheel wash facilities.	**AO5.1**	Banks and channels are constructed to divert stormwater run-off away from excavated areas.
		AO5.2	Sediment basins are provided to detain stormwater run-off from disturbed areas, such that there is no off-site discharge likely to cause environmental harm.
		AO5.3	Bunding, treatment and disposal of industrial wastes are carried out, such that no environmental harm is caused.
		AO5.4	Lining or other suitable treatment of erosion-prone areas is established and maintained at discharge points.
Management of blasting and other operations			
PO6	The extractive industry provides for blasting, crushing, screening and loading to be carried out safely and in accordance with best practice management standards, so that disturbance to surrounding land uses is minor and impacts from emissions are minimised.	**AO6.1**	Blasting and other operations are confined to the periods identified in Table 9.3.6.3.2 (Extractive industry operations periods).
		AO6.2	Public signage to warn of operations and safety hazards is provided to all boundaries of the site.
		AO6.3	Blasting and other operations are undertaken in a manner which complies with best practice approaches to vibration avoidance and management, such as those identified in AS2670.2 (Evaluation of human exposure to whole of body vibration - Continuous and

Performance Outcomes		Acceptable Outcomes	
			shock induced vibration in buildings (1-80Hz)).
		AO6.4	Blasting operations are designed and planned to minimise risk of dust and fume emissions.
Safety fencing			
PO7	Entry to extractive industry operational areas is restricted to authorised personnel and authorised vehicles.	**AO7.1**	A 2m high fence is erected and maintained around all extractive industry operations and associated infrastructure.
Site rehabilitation			
PO8	Rehabilitation of the extractive industry site restores the environmental and economic values of the land and provides: (a) progressive/staged rehabilitation works; (b) appropriate clean-up works, particularly areas of possible soil contamination; (c) agreed landform and soil profiles; (d) suitable revegetation; and (e) establishment phase requirements.	**AO8.1**	The extractive industry provides for all rehabilitation works to be undertaken in accordance with an approved expected final landform design and site rehabilitation plan. Editor's note—the Council may require rehabilitation works to be bonded to ensure the affective return of disturbed areas to acceptable land use suitability.

Table 9.3.6.3.2 Extractive industry operation periods

Extractive industry activity	Hours of operation
Blasting operation	9am to 5pm Monday to Friday
	No operations Saturday, Sunday or public holidays
Other operations	6am to 6pm, Monday to Friday
	7am to 1pm Saturday
	No operations Sunday or public holidays

9.3.7 Home based business code

9.3.7.1 Application

This code applies to accepted and assessable development:

(a) being a material change of use for home based business; and

(b) identified as requiring assessment against the Home based business code by the tables of assessment in Part 5 (Tables of assessment).

9.3.7.2 Purpose and overall outcomes

(1) The purpose of the Home based business code is to facilitate legitimate home based business, conducted in a manner which is appropriate to the preferred character of the area and protects the amenity of surrounding premises.

(2) The purpose of the Home based business code will be achieved through the following overall outcomes:

(a) a home based business is domestic in scale and operates in a manner that is subservient and ancillary to the Accommodation activity of the premises;

(b) a home based business is conducted in a manner that maintains the residential character and amenity of the locality; and

(c) a home based business is operated in a safe manner and does not impose an unreasonable load on infrastructure services.

9.3.7.3 Assessment benchmarks

Table 9.3.7.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Operation of working from home activity			
PO1	The home based business is conducted as a genuine working from home activity.	**AO1.1**	The home based business, including a bed and breakfast, is conducted within a dwelling house, dual occupancy or multiple dwelling.
Scale of use and protection of amenity			
PO2	The home based business is limited in size and scale so that: (a) the amenity of the existing neighbourhood is protected; and (b) the home based business remains ancillary to the Accommodation activity of the premises.	**AO2.1**	For a home based business, other than a bed and breakfast, conducted in association with a dwelling house or dual occupancy: (a) the total area, both in and outside of the dwelling, used for the home based business does not exceed: (i) 40m² where the dwelling is located on a lot not more than 2,000m² in area; or (ii) 80m² where the dwelling is located on a lot more than 2,000m² in area;

Performance Outcomes		Acceptable Outcomes	
			(b) no more than 2 customers or clients are present at any one time and no more than 8 customers or clients are present in any one day; and (c) the home based business does not involve more than: (i) 2 persons, including residents of the dwelling; or (ii) where the site is in the Rural zone, 4 persons, including residents of the dwelling.
		AO2.2	For a home based business conducted within a multiple dwelling: (a) the total GFA used for the home based business does not exceed: (i) 20m²; or (ii) 10% of the area of any floor level on which the home based business is located; (b) the home based business does not involve outdoor use areas; (c) no more than 2 customers or clients are present at any one time and no more than 8 customers or clients are present in any one day; and (d) the home based business involves only the persons who are residents of the dwelling.
		AO2.3	For a home based business operating as a bed and breakfast: (a) the use is conducted from a dwelling house; (b) at least one bedroom within the dwelling house is excluded from use by guests; and (c) the maximum number of bedrooms used to accommodate guests is 3 and the maximum number of guests accommodated at any one time is 6.
		AO2.4	Not more than one home based business is conducted on the premises.
PO3	The home based business does not involve any materials, equipment or processes that	**AO3.1**	The home based business does not produce any dust emissions.

Performance Outcomes		Acceptable Outcomes	
	cause nuisance or detrimentally impact on residential amenity.	**AO3.2**	The home based business does not produce any offensive odour emissions beyond the site boundaries.
		AO3.3	The home based business does not produce noise, which exceeds the background noise level plus 5 dB(A) from8.00am to 6.00pm, measured as an adjusted sound level.
		AO3.4	Glare conditions or excessive light spill into dwellings, adjacent sites and public spaces is avoided or minimised through measures, such as: (a) the use of building design and architectural elements or landscape treatments to block or reduce excessive light spill to locations where it would cause a nuisance to residents or the general public; and (b) the alignment of driveways and servicing areas to minimise vehicle headlight impacts on residential accommodation and private open space.
		AO3.5	Loading or unloading of goods is not undertaken by a vehicle larger than a SRV.
		AO3.6	A maximum of 1 commercial vehicle, not including a HRV or AV, associated with the home based business is parked/garaged on the premises.
		AO3.7	Not more than 2 customer vehicles are associated with the home based business at any one time.
		AO3.8	In addition to the parking required for a dwelling house or dual occupancy, the following onsite parking is provided, where applicable: (a) 1 space for customer parking; plus (b) 1 space per non-resident employee; plus (c) 1 space per guest room, where a Bed and breakfast. Note – Any required on site parking spaces may be provided in tandem to the residential parking spaces.
		AO3.9	No vehicle is fuelled, serviced or repaired on the premises.

Performance Outcomes		Acceptable Outcomes	
		AO3.10	Materials or equipment used, or goods manufactured, serviced or repaired, are stored within a building on the premises.
		AO3.11	Trade person's storage and activities are located at the rear of the dwelling and any vehicle, or stored equipment or materials, is screened from view from all public places and adjoining residential premise.
		AO3.12	Refuse and waste storage and service areas associated with the home based business are suitably screened from the street.
		AO3.13	Quantities of chemicals, gases or other hazardous materials do not exceed the limits normally associated with a residential activity.
		AO3.14	The home based business does not involve any activity defined as an environmentally relevant activity in the *Environmental Protection Regulation 2008*.
PO4	The hours of operation of the home based business do not cause a nuisance or detrimentally impact on residential amenity.	**AO4.1**	Where goods are offered for sale from the premises, there is no public display of such goods.
Signage			
PO5	Signage associated with the home based business is small, unobtrusive and appropriate to its location and setting.	**AO5.1**	Not more than 1 advertising device is erected on the premises and the sign: (a) includes only the name of the occupier, the business conducted on the premises and associated contact/address details; (b) has a maximum sign face area of 0.3m²; (c) is attached to a fence or wall; and (d) is not illuminated or in motion.
Services and utilities			
PO6	The home based business does not detrimentally impact on the capacity of infrastructure services.	**AO6.1**	No greater load is imposed on any public utility than would reasonably be expected from that normally associated with a residential activity.
Storage of chemicals			
PO7	The risk to occupiers, employees and neighbouring residents from the storage of chemicals and hazardous substances is minimised.	**AO7.1**	Storage of flammable and combustible liquids complies with the minor storage provisions of AS1940 (The storage and handling of

Performance Outcomes		Acceptable Outcomes	
			flammable and combustible liquids).
Additional requirements for bed and breakfast accommodation			
Temporary accommodation			
PO8	Bed and breakfast accommodation is provided for short-term stay only.	**AO8.1**	Guests stay no more than 14 consecutive nights.
Guest facilities			
PO9	An acceptable standard of facilities is provided for guests of the bed and breakfast.	**AO9.1**	Guests are provided with a bedroom capable of being enclosed to prevent visual or other intrusion by members of the host family or other guests.
		AO9.2	A separate bathroom and toilet facility is provided within the dwelling house for the exclusive use of guests.

9.3.8 Industry activities code

9.3.8.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Industry activities code by the tables of assessment in Part 5 (Tables of assessment).

9.3.8.2 Purpose and overall outcomes

(1) The purpose of the Industry activities code is to ensure Industry activities are designed and operated in a manner which meets the needs of the Industry activity, protects public safety and environmental values and appropriately responds to amenity considerations.

(2) The purpose of the Industry activities code will be achieved through the following overall outcomes:

(a) the scale and intensity of an Industry activity is compatible with its location and setting;

(b) an Industry activity incorporates a site layout and building design that provides for the efficient and safe conduct of industrial activities and contributes to a well organised development that is attractive when viewed from the street;

(c) an Industry activity does not cause environmental harm or nuisance, including the contamination of land or water;

(d) an Industry activity avoids or effectively mitigates adverse impacts on the amenity of adjoining and nearby non-industrial activity where these activities are located in a zone other than an industry zone; and

(e) an Industry activity incorporates service areas and waste management processes that are efficient and maximise opportunities for reuse or recycling.

9.3.8.3 Assessment benchmarks

Table 9.3.8.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Built form, streetscape character and protection of amenity			
PO1	Buildings and structures associated with the industrial activity are: (a) of a scale and design, which is appropriate to an industrial setting, whilst contributing positively to the visual character and streetscape of the area; and (b) designed to avoid or mitigate the potential for adverse amenity impacts on adjoining or nearby sensitive land uses.	**AO1.1**	The site cover of all buildings and structures on the site does not exceed 75%.
		AO1.2	Buildings and structures are setback a minimum of: (a) 9m to the primary street frontage; (b) 3m to any secondary street frontage; and (c) 10m from any side or rear boundary, where adjoining a sensitive land use, land in a residential zone or the Community facilities zone; or (d) 0.75m from any the side or rear boundary, where not

Performance Outcomes		Acceptable Outcomes	
			adjoining a sensitive use, land in a residential zone or the Community facilities zone; or (e) where less than 0.75m to the boundary, maintenance free.
		AO1.3	Where the site has a common boundary with a sensitive land use, land in a residential zone or the Community facilities zone: (a) no openings occur in walls facing a common boundary; (b) acoustic screening is provided to all areas where work could be conducted outside of the building, including waste storage and refuse areas, so that off-site noise emissions are avoided or do not cause a nuisance; and (c) noise emitting services, such as air conditioning equipment, pumps and ventilation fans, are located as far away as possible from residential areas.
		AO1.4	The main entry to any building is easily identifiable and directly accessible from the street or the primary street frontage, if the site has more than one street frontage.
		AO1.5	Where adjoining a sensitive land use, land included in a residential zone or the Community facilities zone, a minimum 2m high solid screen fence is provided for the full length of the common boundary.
PO2	The industrial activity is attractive when viewed from a major road.	**AO2.1**	Where the industrial activity has frontage to, or overlooks, a major road: (a) building design incorporates variations in parapet design, roofing heights and treatments; and (b) any security fencing is set within or located behind the landscaping strip rather than adjacent to the major road.
Services and utilities			
PO3	The industrial activity is provided with:	**AO3.1**	The industrial activity is connected to the reticulated

Performance Outcomes		Acceptable Outcomes	
	(a) a safe and reliable water supply; (b) a waste disposal system and stormwater drainage, which maintains acceptable public health and environmental standards; (c) electricity infrastructure; (d) appropriate frontage works; and (e) refuse storage areas that are suitably screened from the street.		water supply, sewerage, stormwater drainage and electricity infrastructure networks.
		AO3.2	Kerb and channel is constructed for the full length of the road frontage.
		AO3.3	The layout and design of the industrial activity provides for the on-site loading and unloading of goods and the storage of refuse to the rear of the site.
Environmental performance			
PO4	The industrial activity ensures that any emissions of odour, dust, air pollutants, noise, light or vibration does not cause nuisance to, or have an unreasonable adverse impact on, adjoining or nearby premises. Editor's note—development involving Industry activities will need to comply with relevant environmental legislation including the *Environmental Protection Act 1994* and subordinate legislation.	**AO4.1**	The industrial activity achieves the environmental values for the acoustic environment and acoustic quality objectives for sensitive receiving environments set out in the *Environmental Protection (noise) Policy 2008*.
		AO4.2	The industrial activity achieves the environmental values and air quality objectives set out in the *Environmental Protection (air) Policy 2008*.
		AO4.3	The industrial activity does not produce any offensive odour emissions beyond the site boundaries.
		AO4.4	The industrial activity ensures that any external lighting is provided in accordance with AS4282 (Control of the obtrusive effects of outdoor lighting).
		AO4.5	Vibrations resulting from the industrial activity do not exceed the maximum acceptable levels identified in AS2670.2 (Evaluation of human exposure to whole of body vibration - Continuous and shock induced vibration in buildings (1-80Hz)).
PO5	The industrial activity provides for the collection, treatment and disposal of all liquid waste, such that: (a) there is no off-site release of contaminants; (b) all wastes are collected and disposed of in accordance with relevant license and approval conditions and/or relevant government or industry standards; and	**AO5.1**	Sealed impervious surfaces, draining to receptors and/or storage containers are provided in areas where potential spills of contaminants can occur.
		AO5.2	Waste water associated with the industrial activity is disposed to Council's sewerage system or an on-site industrial waste treatment system.
		AO5.3	Liquid wastes that cannot be disposed to Council's sewerage system or the on-site industrial

Performance Outcomes		Acceptable Outcomes	
	(c) there are no adverse impacts on the quality of surface water or groundwater resources.		waste treatment system are disposed of off-site to an approved waste disposal facility.
		AO5.4	No discharge of waste occurs to local waterways (including dry waterways) or natural wetlands.
		AO5.5	Oil arrestor or other pre-treatment infrastructure is provided to remove contaminants from industrial waste water where discharged to the sewer or environment.
PO6	The industrial activity does not contaminate or pollute stormwater runoff from the site.	**AO6.1**	Areas where hazardous materials or potentially contaminating substances are stored or used are roofed.
		AO6.2	Provision is made for spills to be bunded and retained on-site for removal and disposal by an approved means.
		AO6.3	Stormwater is diverted away from contaminated areas.
On-site retail sales			
PO7	Any retail sales conducted from the premises are ancillary and subordinate to the industrial activity.	**AO7.1**	On-site retail sales are limited to goods manufactured, assembled on the premises or goods associated with those manufactured on the site.
		AO7.2	Parking for on-site retail sales is provided at the same rate as required for a shop (refer Table 9.4.8.3.3 Minimum on-site parking requirements).
Trade waste			
PO8	Untreated trade waste contaminated water must not enter stormwater drains. Note: Development must comply with Council's Trade Waste Policy.	**AO8.1**	Wash down bays for vehicles and boats: (a) are on a hardstand area with a minimum 1:80 grade for wash water drainage; (b) are connected to the reticulated sewerage system; (c) prevent the intrusion of rainwater; and (d) pre-treatment equipment areas are within a roofed wash bay bund or in a separate approved roofed and bunded area that drains to the pump chamber.

Table 9.3.8.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	The Industry activity is established on land included in an industry zone or another	**AO1.1**	The Industry activity is established on a site with sufficient area and dimensions

Performance Outcomes		Acceptable Outcomes	
	zone that is suitable having regard to: (a) the suitability of the land for an Industry activity; (b) the nature, scale and intensity of the Industry activity; (c) the infrastructure and service needs of the Industry activity; and (d) the preferred character of the local area.		to accommodate required buildings, machinery, parking and service areas, storage areas, vehicle access, on-site movement and landscaping.
Site layout			
PO2	The layout and design of the industrial activity is functional and compatible with surrounding development.	**AO2.1**	The industrial activity ensures that: (a) the premises are safe, secure and legible; (b) movement systems, including roads and pathways, and accessible on-site parking and manoeuvring areas, meet the needs of users and employees; (c) the premises addresses the street, with buildings integrated with landscaping and security fencing to provide a quality contemporary appearance; and (d) surplus areas that may become unsightly or difficult to manage, due to their size, configuration or access limitations, are not created.
Requirements for an Industry activity within a centre zone			
Built form			
PO3	The Industry activity is in a building that enhances the character and amenity of streets and neighbouring premises via a built form that: (a) is closely related to streets, public spaces and pedestrian routes; and (b) maintains some area free of buildings at ground level to facilitate pedestrian movement and other functions associated with the building.	**AO3.1**	Where within a centre zone: (a) Buildings are set back from street frontages: (i) not more than 3m for that part of a building not exceeding 8.5m in height; and (ii) at least 6m for that part of a building exceeding 8.5m in height; (b) buildings are set back from other site boundaries: (i) 0m, if not exceeding 8.5m in height and adjoining an existing blank wall or vacant land on an adjoining site; (ii) at least 3m, if not exceeding 8.5m in

Performance Outcomes		Acceptable Outcomes	
			height and adjoining an existing wall with openings on an adjoining site; and (iii) at least 6m for that part of a building exceeding 8.5m in height.
Relationship of buildings to streets and public areas			
PO4	The Industry activity is in a building that clearly defines frames or encloses the street and other useable public and semi-public open space.	**AO4.1**	The building is located close to the street frontage and other urban spaces for all, or most, of its length to create a continuous or mostly continuous edge.
		AO4.2	The building is sited and designed, such that: (a) the main pedestrian entrance to the building, or group of buildings, is located on the primary street frontage; and (b) pedestrian access to the entrance of the building(s) or individual dwellings are easily discerned from the primary street frontage.
		AO4.3	Car parking areas, service areas and driveways are located and configured, so that they do not dominate the streetscape.
		AO4.4	Vehicular access to the site is separate from the pedestrian access.
PO5	The Industry activity provides for footpaths, walkways and other spaces intended primarily for pedestrians to be comfortable to use and adequately sheltered from excessive sunlight and inclement weather.	**AO5.1**	Any building provides adequate and appropriate shelter along, or around, the street in the form of an awning, colonnade, verandah or the like, with a width of 3.2m to 4m or is otherwise consistent with the width of shelter provided to adjoining premises.
PO6	The Industry activity is in a building which is designed to create passive surveillance in streets.	**AO6.1**	Development provides for a minimum of 65% of the building frontage to a public street or other public space to present with clear, or relatively clear, windows and glazed doors.
Requirements for an Industry activity in a Rural zone			
PO7	The Industry activity is located on a site which has sufficient area to accommodate the use.	**AO7.1**	Where within a Rural zone: (a) buildings are set back 50m from street frontages; and (b) buildings are setback 10m from other site boundaries.

9.3.9 Market code

9.3.9.1 Application

This code applies to accepted and assessable development:

(a) being a material change of use for a market; and

(b) identified as requiring assessment against the Market code by the tables of assessment in Part 5 (Tables of assessment).

9.3.9.2 Purpose and overall outcomes

(1) The purpose of the Market code is to ensure markets are appropriately located and are operated in a manner, which is economically, environmentally and socially sustainable and appropriately responds to local amenity issues.

(2) The purpose of the Market code will be achieved through the following overall outcomes:

(a) markets are established in locations of community attraction;

(b) markets are established where infrastructure and services are available or can easily be provided to meet the needs of users;

(c) markets operate in a manner, which takes account of:

(i) the amenity of the local area; and

(ii) the viability of local businesses.

9.3.9.3 Assessment benchmarks

Table 9.3.9.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	The market is operated at a location where attracting a large number of people is consistent with the preferred character of the local area.	**AO1.1**	The market use is not located in a residential zone.
PO2	The market minimises economic impacts on established businesses near the market.	**AO2.1**	Where market stalls are proposed to be located adjacent to existing shops, the market is not held on more than 2 days per week.
Site layout			
PO3	The market is designed to provide for: (a) convenient pedestrian access and movement; (b) legibility and accessibility between stalls and existing surrounding uses; and (c) pedestrian comfort and safety, including the	**AO3.1**	Pedestrian access or pathways are a minimum of 2m wide and provided between: (a) stall fronts; and (b) stalls and existing shop fronts.
		AO3.2	Public toilets: (a) are provided within the area of the market or are located within 250m of the market;

Performance Outcomes		Acceptable Outcomes	
	provision of public convenience facilities.		(b) remain open and accessible for use during market hours; and (c) are maintained in a clean, safe and tidy state.
		AO3.3	Directional signage is provided to identify the location of, and the entry to, public toilet facilities.
Operation and protection of amenity			
PO4	The market is operated in a manner that does not cause environmental nuisance or adverse amenity impacts to nearby residents and other sensitive uses having regard to the: (a) generation of noise, dust, odour and light; and (b) hours and frequency of operation.	**AO4.1**	The market is conducted, including setup and pack-up, between the hours of 5.00am and 10.00pm.
		AO4.2	The use of amplified music, megaphones, public address systems and noise generating plant equipment is avoided.
		AO4.3	Noise generated from the market complies with the level of noise emissions prescribed under the *Environmental Protection (Noise) Policy 2008* .
		AO4.4	Any outdoor lighting associated with the market is designed, installed, operated and maintained in accordance with AS4282 (Control of the obtrusive effects of outdoor lighting).
		AO4.5	Any temporary lighting is dismantled immediately on closure of the markets.
Waste management			
PO5	The market is established and operated to provide a safe and healthy environment and provides waste disposal facilities, which are appropriate to the type and scale of the market.	**AO5.1**	The area used for market purposes is maintained in a clean, safe and tidy state: (a) during market hours; and (b) at the conclusion of each day's trading.
		AO5.2	An appropriate number of waste containers are provided.
Access and parking			
PO6	The design and management of access, parking and vehicle movement protects the functioning of the road network and provides safe vehicular, pedestrian and cyclist access to and from the site.	**AO6.1**	Where the market is conducted on a footpath, and the adjoining road remains open to vehicle use, a minimum 1.2m clearance from the kerb to any market structure, or use area, is provided.
		AO6.2	Access is provided for emergency services vehicles.

9.3.10 Relocatable home park and tourist park code

9.3.10.1 Application

This code applies to assessable development:

(a) being a material change of use for a relocatable home park or tourist park ; and

(b) identified as requiring assessment against the Relocatable home park and tourist park code by the tables of assessment in Part 5 (Tables of assessment).

9.3.10.2 Purpose and overall outcomes

(1) The purpose of the Relocatable home park and tourist park code is to ensure relocatable home parks and tourist parks are appropriately located and designed in a manner, which meets the needs of residents and visitors and protects the amenity of surrounding premises.

(2) The purpose of the Relocatable home park and tourist park code will be achieved through the following overall outcomes:

(a) a relocatable home park and tourist park is well designed, located and offers convenient access to the services and facilities required to support residents' and travellers' needs;

(b) a relocatable home park and tourist park provides high quality amenities and facilities commensurate with its setting, the types of accommodation supplied and the length of stay accommodated;

(c) a relocatable home park and tourist park is of a scale and intensity that is compatible with the preferred character of the local area;

(d) a relocatable home park and tourist park does not adversely impact on the amenity of rural and residential areas or the viable operation of Rural activities; and

(e) a relocatable home park and tourist park is provided with appropriate infrastructure services.

9.3.10.3 Assessment benchmarks

Table 9.3.10.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Provisions for combined Relocatable home parks and tourist parks			
Location and site suitability			
PO1	The relocatable home park or tourist park is located so that residents and guests have convenient access to: (a) tourist attractions; (b) everyday commercial, community and recreation facilities; and (c) public transport services.	**AO1.1**	The relocatable home park or tourist park is located: (a) on a site within 1km of a centre zone; or (b) on a site within 400m walking distance of a public transport stop.
PO2	The relocatable home park or tourist park is located on a site	**AO2.1**	The site can sufficiently accommodate all the facilities prescribed in this code.

Performance Outcomes		Acceptable Outcomes	
	of an appropriate size and has suitable levels of accessibility.	**AO2.2**	Roads to which the site has access: (a) have a minimum reserve width of 20m; (b) in an urban area, are fully constructed with bitumen paving for the full frontage of the site; (c) in a non-urban area, are constructed to an acceptable all weather standard; and (d) can accommodate any projected increase in traffic generated by the development.
PO3	The relocatable home park or tourist park is located and designed so that residents and users are not exposed to unacceptable levels of noise, unhealthy air emissions or other nuisance.	**AO3.1**	The site is not within: (a) 250m of land included in the Medium impact industry zone; or (b) 500m of land included in the High impact industry or Special industry zone.
		AO3.2	The relocatable home park or tourist park is not located on land where: (a) soils are contaminated by pollutants, which may represent a health or safety risk to residents; or (b) where maximum concentrations of air pollutants exceed those recommended by the National Health and Medical Research Council.
Residential amenity and landscaping			
PO4	The relocatable home park or tourist park does not impact on the amenity of adjoining or nearby residential zones.	**AO4.1**	A 2m high solid screen fence is provided for the full length of any property boundary adjoining an existing Accommodation activity or land included in a residential zone.
		AO4.2	Pools and other potentially noisy activities or mechanical plant are not located where they adjoin an existing Accommodation activity.
Rural amenity and landscaping			
PO5	The relocatable home park or tourist park is designed to integrate into the surrounding rural landscapes and does not conflict with the operations of adjoining Rural activities.	**AO5.1**	Fencing and landscaping is complementary to the surrounding rural landscape, promoting integration.
		AO5.2	Living and activity areas within relocatable home park or tourist parks are adequately buffered by vegetation and space from adjacent intensive agricultural

Performance Outcomes		Acceptable Outcomes	
			uses in accordance with Table 9.3.10.3.2 Siting and setback requirements for intensive Rural activities.
Recreational open space			
PO6	The relocatable home park or tourist park provides communal open space that is: (a) provided to meet the needs of all residents; and (b) designed to promote resident safety through casual surveillance.	**AO6.1**	A minimum of 20% of the total site area, exclusive of landscape buffer strips, is provided as communal open space.
		AO6.2	50% of the required open space is provided in one area.
		AO6.3	Communal open space: (a) has a minimum dimension, length or width, of 80m; (b) contains one area of at least 150m^2 in size; (c) is located not more than 80m from any caravan or cabin site or 150m from any relocatable home park site; (d) includes a fenced children's playground; and (e) has adequate lighting for the safety of staff, visitors and/or residents.
		AO6.4	A communal recreation building is provided for the use of residents.
Site access and parking			
PO7	The design and management of access and entry parking arrangements facilitates the safe and convenient use of the relocatable home park or tourist park by residents and visitors.	**AO7.1**	Vehicle access is limited to 1 major entry/exit point on 1 road frontage.
		AO7.2	On-site visitor parking is located with direct access from the entry driveway and is located and sign-posted to encourage visitor use.
		AO7.3	No caravan or relocatable home site has direct access to any public road.
Internal access and circulation			
PO8	The design and management of internal vehicle and pedestrian access, parking and vehicle movement on the site facilitates the safe and convenient use of the relocatable home park or tourist park.	**AO8.1**	The design of internal access ways, footpaths and the location of visitor parking areas complies with the following: (a) vehicular access to each site is via shared internal access ways, which are designed to provide safe, convenient and efficient movement of vehicles and pedestrians; (b) access ways are designed to discourage vehicle speeds in excess of 15km/hr;

Performance Outcomes		Acceptable Outcomes	
			(c) the access way and footpath system provide adequate access for service and emergency vehicles to each site and connect sites with amenities, recreational open space and external roads; and (d) internal access ways comply with the following: (i) carriageway width is not less than 6m for two way traffic and not less than 4m for one way traffic; (ii) the verge width on both sides is not less than 1.5m; (iii) cul-de-sac have turning bays at the end capable of allowing conventional service trucks to reverse direction with a maximum of two movements; (iv) all internal access ways are sealed to the carriageway widths stated above; (v) internal footpaths are a minimum width of 1.2m, internal footpaths may be accommodated within the carriageway of internal access ways serving 10 sites or less; and (vi) are adequately lit and provide direct routes to recreation and amenity facilities.
Services and utilities			
PO9	The relocatable home park or tourist park is provided with: (a) a safe and reliable water supply; and (b) a sewerage disposal system, which maintains acceptable public health and environmental standards.	**AO9.1**	(a) each relocatable home, caravan or cabin site is connected to the reticulated water supply, sewerage and stormwater drainage infrastructure networks; or (b) the site has access to: (i) a potable water supply of adequate quantity and quality, capable of generating at least 800 litres per person per day at 100% occupancy, of which at least 250 litres per

Performance Outcomes		Acceptable Outcomes	
			person per day is potable; and (ii) an effective on-site effluent disposal system capable of accommodating anticipated maximum demand at 100% occupancy.
		AO9.2	Each relocatable home, caravan or cabin site is connected to underground electricity.
PO10	Caravan, tent and cabin sites are provided with adequate access to amenities for day-to-day living.	**AO10.1**	Except where private facilities are provided to each site, toilet, shower and laundry amenities are located: (a) within 100m of every caravan, tent or cabin site; and (b) not closer than 6m to any caravan, tent or cabin site.
		AO10.2	Laundry and clothes drying facilities are provided for guests.
PO11	The relocatable home park or tourist park provides on-site facilities for the storage and collection of refuse, with such facilities: (a) located in convenient and unobtrusive positions; and (b) capable of being serviced by the Council's refuse collection contractor.	**AO11.1**	Development: (a) where a tourist park, provides a central waste collection area for every 50 caravan sites; or (b) where a relocatable home park, provides refuse collection to every relocatable home park site.
Relocatable homes in tourist parks			
PO12	A proportion of a tourist park may be used as a relocatable home park, where: (a) the relocatable home park portion is subservient to that used as a tourist park. .	**AO12.1**	Not more than 40% of the total area of a tourist park is used to accommodate relocatable homes.
Provisions specific to relocatable home parks			
Density			
PO13	The relocatable home park has a density that is compatible with the preferred character of the local area in which it is located.	**AO13.1**	The maximum site density for the relocatable home park does not exceed 30 relocatable homes per hectare.
Privacy and separation			
PO14	A reasonable level of privacy and separation is available to all residents within the relocatable home park.	**AO14.1**	Individual relocatable home sites: (a) are at least 200m² in area; (b) are setback at least 6m from any external road frontage and 5m from any other property boundary;

Performance Outcomes		Acceptable Outcomes	
			(c) are setback 3 metres from any existing or proposed building on the subject land; (d) have a minimum frontage to any internal access way of 10m; (e) have a private open space area of 16m²; and (f) are clearly delineated and separated from adjoining sites by trees or shrubs.
		AO14.2	Relocatable homes are not sited within 1.5m of the side and rear boundaries or within 3m of the front boundary of the individual relocatable home site.
Services and utilities			
PO15	Relocatable home sites are provided with adequate private amenities.	**AO15.1**	Relocatable homes are provided with private kitchen and ablution facilities.
Provisions specific to tourist parks			
Density			
PO16	The tourist park has a density that is compatible with the preferred character of the local area in which it is located.	**AO16.1**	The maximum site density for the tourist park does not exceed 60 sites per hectare.
Privacy and separation			
PO17	A reasonable level of privacy and separation is available to all residents within the tourist park.	**AO17.1**	Individual sites: (a) are set back at least 12m from any external road frontage and 5m from any other property boundary; (b) are sited such that no part of any caravan is within 3m of any other caravan, tent, cabin or building; (c) have a frontage of at least 10m to any internal access way; (d) are clearly delineated and separated from adjoining sites by trees or shrubs; (e) contain a clear area of at least 2.5m by 2.5m for outdoor space; and (f) ensure that no part of any caravan or cabin is within 2m of any internal access way.
Site access and parking			
PO18	The design and management of entry parking arrangements facilitates the safe and convenient use of the tourist park by residents and visitors.	**AO18.1**	A short-term standing area, with a minimum of 2 bays, with the dimension of 4m by 20m, are provided either as separate bays or as part of a one-way entrance road.

9.3.11 Renewable energy facilities code

9.3.11.1 Application

This code applies to assessable development identified as requiring assessment against the Renewable energy facilities code by the tables of assessment in Part 5 (Tables of assessment).

9.3.11.2 Purpose and overall outcomes

(1) The purpose of the Renewable energy facilities code is to ensure renewable energy facilities are developed in a sustainable manner which conserves the productive characteristics of rural land, protects environmental and landscape values and preserves the amenity of surrounding premises.

(2) The purpose of the Renewable energy facilities code will be achieved through the following overall outcomes:

(a) Renewable energy facilities do not affect good quality agricultural land for present and future productivity;

(b) Renewable energy facilities are appropriately designed and sited to mitigate risks from natural hazards and minimise impacts on places of environmental or cultural significance;

(c) Renewable energy facilities mitigate environmental harm and impacts on roads, accesses, traffic and sensitive uses during construction and decommissioning; and

(d) Renewable energy facilities are appropriately designed, sited, operated and landscaped to mitigate amenity impacts, such as dust, noise, light, glare or glint on surrounding sensitive uses, major roads, airports and urban areas.

9.3.11.3 Assessment benchmarks

Table 9.3.11.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	A Renewable energy facility is appropriately designed and sited to minimise impacts on surrounding sensitive uses, Rural activities or rural amenity.	**AO1.1**	Solar farm facilities are located within a Rural or Industrial zone.
		AO1.2	Renewable energy facility visible from scenic corridors along Gregory Cannon Valley Road, Conway Road, Crystal Brook Road, or Bowen-Developmental Road between Bogie River and Strathmore Road, are designed and sited to be visually unobtrusive and: (a) if adjoining a scenic corridor, are setback 60m from the road frontage; and (b) are adequately visually buffered by a 5m wide landscaping strip.
PO2	Renewable energy facilities do not adversely impact on the	**AO2.1**	Renewable energy facility is not located on agricultural land

Performance Outcomes		Acceptable Outcomes	
	present or future operational efficiency and productive use of good quality agricultural land.		identified within the Agricultural land overlay. Note - See Agricultural Overlay maps for reference.
PO3	Renewable energy facilities avoid impacts on areas of environmental or cultural significance.	**AO3.1**	Places and objects of Aboriginal cultural significance, such as sites for story telling or other cultural activities, scarred trees, stone extraction sites, ceremonial sites, fireplaces, ochre, axe grinding grooves, rock art, fish traps, graves, old growth vegetation, shell middens and artefact scatters are appropriately preserved. Note – Under Section 23 of the *Aboriginal Cultural Heritage Act 2003*, a person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage. Information is available on www.datsip.qld.gov.au or by working with the relevant local Aboriginal group.
Design			
PO4	Renewable energy facilities mitigate potential visual impacts on sensitive uses and major roads through siting, design, and operation of the facility.	**AO4.1**	Where a Renewable energy facility is visible to sensitive uses or arterial roads, a visual impact assessment is conducted to ensure visual impact does not exceed 'moderate', as defined by Table SC 9.3.116.1 within PSP SC6.2.6 Renewable energy facility visual impact assessment. Note – This may be demonstrated by undertaking a Renewable energy facility visual impact assessment report in accordance with PSP 6.2.6 Renewable energy visual impact assessment.
PO5	Appropriate security and safety measures are installed.	**AO5.1**	Security lighting, CCTV and signage is installed at entrances and buildings to deter crime.
		AO5.2	Any fencing does not exceed 2.4m in height made of chain wire or materials of similar visual permeability is constructed around the development footprint.
Construction, operation and decommissioning			
PO6	Development maintains road safety by offsetting damage to roads utilised by heavy vehicles during construction and decommissioning phases.	**AO6.1**	Development completes: (a) an appraisal of roads to be utilised by heavy vehicles prior to construction and decommissioning phases; and (b) repairs to all damage to Council and public utility

Performance Outcomes		Acceptable Outcomes	
			assets as a result of construction or decommissioning processes, immediately after completion of the respective development phase.
PO7	Development provides appropriate design and controls in construction, operation and decommissioning to mitigate amenity impacts on surrounding uses and roads from noise, dust and lighting.	**AO7.1**	Construction and decommissioning shall occur between the hours of 6:30am and 6:30pm Monday to Saturday, with work on Sundays limited to a maximum of 10 workers on-site for safety inspections, checks and environmental work.
		AO7.2	A Construction Environmental Management Plan is completed and adhered to, outlining actions to be taken to mitigate potential amenity or environmental impacts, performance targets and monitoring processes in construction. Note – Environmental and amenity performance targets and monitoring shall be in accordance with *Environmental Protection Act 1994* and associated policies.
		AO7.3	An Operational Environmental Management Plan managing ongoing impacts during operation is completed and adhered to, outlining: (a) system and operational monitoring; (b) site management and maintenance responsibilities; (c) bio security, pest control and weed management; (d) landscaping and fencing maintenance; (e) complaint handling procedure; (f) emergency response plan; and (g) waste management plan. Note – Environmental and amenity performance targets and monitoring shall be in accordance with *Environmental Protection Act 1994* and associated policies.

Performance Outcomes		Acceptable Outcomes	
		AO7.4	All outdoor lighting is: (a) designed, sited, installed and tested to comply with tables 2.1 and 2.2 of Australian Standard 4282-1997 Control of the Obtrusive Effects of Outdoor lighting using a control level of 1; and (b) all lighting is of a type that give no upward component of light when mounted horizontally.
PO8	Where for the development of a solar farm, land is appropriately rehabilitated, guided by a rehabilitation and exit plan that is provided to Council 1 year prior to decommissioning for endorsement, prepared by a suitably qualified person.	**AO8.1**	Where for the development of a solar farm, a land rehabilitation and exit plan is provided to Council 1 year prior to decommissioning for endorsement: (a) prepared by a suitably qualified person; (b) demonstrating that the site will be restored to a standard capable of the level of productivity that was available prior to development; (c) identifying possible land uses following cessation of the approved use; (d) clearly establishing the objectives of the plan; (e) setting out performance criteria for rehabilitation efforts; (f) including an Action plan, with timing for remedial works, such as structure removal, removal of imported materials, soil erosion, pre-development drainage, vegetation cover works and weed and pest management to meet rehabilitation performance criteria; and (g) outlining a program for monitoring rehabilitation success using appropriate indicators.
Servicing			
PO9	Development is provided with and connected to essential infrastructure and services.	**AO9.1**	Development provides adequate potable water supply to service on-site personnel, having: (a) minimum storage capacity of 50,000L; and (b) a first flush system.

Performance Outcomes		Acceptable Outcomes	
		AO9.2	Reticulated sewerage system or an alternative effluent and wastewater treatment system is provided on-site and consistent with the *Queensland Plumbing and Wastewater Code*.
PO10	Adequate water supply and fire-fighting equipment is provided in accessible locations on-site suitable to deal with electric and electronic fires.	**AO10.1**	On-site bushfire equipment must include a minimum of 5,000L water supply, with a 50mm male camlock fitting for rural fire fighting connections.
		AO10.2	Appropriate firefighting equipment to deal with electrical fires is provided at locations at risk.

9.3.12 Residential care facility and retirement facility code

9.3.12.1 Application

This code applies to assessable development:

(a) being a material change of use for a residential care facility or retirement facility; and

(b) identified as requiring assessment against the Residential care facility and retirement facility code by the tables of assessment in Part 5 (Tables of assessment).

9.3.12.2 Purpose and overall outcomes

(1) The purpose of the Residential care facility and retirement facility code is to ensure residential care facilities and retirement facilities:

(a) are appropriately located to meet the particular needs of residents;

(b) are designed in a manner which provides a comfortable and safe environment for residents; and

(c) protect the amenity of, and integrate with, surrounding premises.

(2) The purpose of the Residential care facility and retirement facility code will be achieved through the following overall outcomes:

(a) a residential care facility or retirement facility is located where residents can have easy and direct access to public transport, community services and facilities;

(b) a residential care facility or retirement facility provides a home-like, non-institutional environment that promotes individuality, sense of belonging and independence;

(c) a residential care facility or retirement facility achieves a balance between providing specialised housing for residents, whilst providing the opportunity for residents to participate in the wider community;

(d) a residential care facility or retirement facility is designed to be integrated with surrounding development;

(e) a residential care facility or retirement facility is sited, such that there is ease of movement, safety and legibility for residents and visitors; and

(f) a residential care facility or retirement facility is designed, such that the comfort, safety, security, individuality, privacy and wellbeing of residents are promoted.

9.3.12.3 Assessment benchmarks

Table 9.3.12.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	The residential care facility or retirement facility is located so that residents have convenient access to:	**AO1.1**	The residential care facility or retirement facility is located: (a) on a site within 1km of a centre zone; or

Performance Outcomes		Acceptable Outcomes	
	(a) everyday commercial facilities; (b) community facilities and social services; and (c) regular public transport or facility specific transport that provides a comparable or better level of service.		(b) on a site within 400m walking distance of a public transport stop; or (c) where the residential care facility or retirement facility is not located close to an activity centre or public transport stop, a regular, convenient and affordable transport service is provided for residents by the facility operator to the nearest activity centre or public transport connection.
PO2	The residential care facility or retirement facility is on a site which: (a) is not exposed to unacceptable levels of noise, unhealthy air emissions or other nuisance; and (b) is not constrained by steep slopes or other physical limitations that may represent an impediment for residents and staff using the facility.	**AO2.1**	The site is not within: (a) 250m of land included in the Medium impact industry zone; or (b) 500m of land included in the High impact industry or Special impact industry zone.
		AO2.2	The residential care facility or retirement facility is not located on land where: (a) soils are contaminated by pollutants which may represent a health or safety risk to residents; or (b) maximum concentrations of air pollutants exceed those recommended by the National Health and Medical Research Council.
		AO2.3	The residential care facility or retirement facility is located on land: (a) with a slope not exceeding 10%; or (b) where located on land with a slope exceeding 10%, the facility is designed, such that any areas to be accessed by residents of the facility are not steeper than 5%.
Site area and dimensions			
PO3	The residential care facility or retirement facility is located on a site, which has an area and dimensions suitable to enable the development of a well-designed and integrated facility.	**AO3.1**	The design of the residential care facility or retirement facility needs to incorporate and take into account: (a) accommodation and support facilities; (b) vehicles access, parking and manoeuvring; (c) stormwater treatment areas; (d) open space areas and landscaping; and

Performance Outcomes		Acceptable Outcomes	
			(e) any necessary buffering to adjoining uses or other elements.
Integration of large sites with neighbourhoods and street networks			
PO4	The residential care facility or retirement facility is integrated with the neighbourhood and local transport network.	**AO4.1**	The residential care facility or retirement facility: (a) is connected to, and forms part of, the surrounding neighbourhood rather than establishing a separate private enclave; (b) is integrated with, and extends the, existing or proposed local transport network; (c) provides for legible and direct pedestrian, bicycle and vehicular access for all residents to nearby activity centres, community facilities and public open space; and (d) clearly defines the boundaries of public, communal and private open space.
Building scale and bulk			
PO5	The residential care facility or retirement facility is sited and designed in a manner, which: (a) results in a building scale that is compatible with surrounding development; (b) does not represent an appearance of excessive bulk to adjacent premises, the streetscape or other areas external to the site; (c) allows sufficient area at ground level of private and communal open space, site facilities, resident and visitor parking, landscaping and maintenance of a residential streetscape; and (d) facilitates on-site stormwater management and vehicle access.	**AO5.1**	Site cover does not exceed 50%.
		AO5.2	Building bulk is reduced by incorporating a combination of the following elements in building design: (a) verandahs; (b) recesses; (c) variation in materials, colours and/or textures, including between levels; and (d) variation in building form.
		AO5.3	The length of any unarticulated elevation of a building, fence or other structure visible from the street does not exceed 15m.
		AO5.4	Any building does not exceed 40m in length, with separation between buildings, for the purposes of cross ventilation, articulation and light, of at least 6m.
Building design and streetscape appearance			
PO6	The residential care facility or retirement facility is designed to: (a) create an attractive and functional living environment for residents; (b) take account of its setting and site context; and	**AO6.1**	The residential care facility or retirement facility incorporates a high standard of facility design that is responsive to the specific needs of its residents.
		AO6.2	Buildings are oriented to the street and provide casual surveillance of the street.

Performance Outcomes		Acceptable Outcomes	
	(c) make a positive contribution to the character of the street and local area.	**AO6.3**	Buildings and structures are setback a minimum of: (a) 6m from the front boundary; and (b) 4.5m from the side and rear boundaries.
		AO6.4	Screening of balconies is limited to the side and rear boundaries and the sides of balconies, where needed, to prevent noise and overlooking of other rooming units or dwellings and recreation areas.
		AO6.5	Services structures and mechanical plants are screened or designed as part of the building.
PO7	The site layout and design of buildings forming part of the residential care facility or retirement facility promote a domestic scale, individuality and sense of belonging.	**AO7.1**	Rooming units and dwellings are configured in clusters with each cluster clearly addressing the street and each rooming unit and dwelling having clearly defined private open space and a prominent front door.
		AO7.2	Clusters of rooming units and dwellings are supported by unique design features that help identify and individualise them.
		AO7.3	Rooming units and dwellings have clear addresses within a conventional address system of streets and dwellings.
		AO7.4	Logical, direct and separated pedestrian and vehicle routes are provided between rooming units, dwellings, communal buildings, other on-site facilities and facilities in the neighbourhood.
PO8	The residential care facility or retirement facility ensures that dwellings, rooming units, private open spaces and adjoining Accommodation activities are provided with a reasonable level of privacy.	**AO8.1**	Non-habitable room windows of a dwelling or rooming unit are not located opposite the non-habitable room windows of another dwelling or rooming unit, unless views are controlled by screening devices, distance, landscaping or design of the opening.
		AO8.2	Where habitable room windows look directly at habitable room windows in an adjacent dwelling or rooming unit, within 2m at the ground level or 9m at levels above the ground level, privacy is protected by: (a) window sill heights being a minimum of 1.5m above floor level; or

Performance Outcomes		Acceptable Outcomes	
			(b) fixed opaque glazing being applied to any part of a window below 1.5m above floor level; or (c) fixed external screens; or (d) if at ground level, screen fencing to a minimum height of 2m.
		AO8.3	For development up to and including 3 storeys in height, the outlook from private, communal or public areas is screened where direct view is available into private open space of an existing dwelling.
Open space			
PO9	The residential care facility or retirement facility incorporates communal and private open space areas that provide: (a) sufficient spaces for residents to engage in and enjoy outdoor activities; (b) high levels of residential amenity; (c) boundary fences and walls that do not visually dominate; and (d) promote casual surveillance and integration with the street.	**AO9.1**	At least 30% of the area of the site is provided as communal open space.
		AO9.2	Each ground floor rooming unit is provided with a courtyard, verandah or similar private open space area not less than 10m², with a minimum dimension of 2.5m directly accessible from the living area.
		AO9.3	Each rooming unit above ground floor level has a balcony or similar private open space area not less than 4.5m² with a minimum dimension of 1.7m directly accessible from the living area.
		AO9.4	A 2m high solid screen fence is provided along the full length of all side and rear boundaries of the site.
		AO9.5	Unless required to ameliorate traffic noise or headlight glare, high solid fences or walls are avoided along street frontages.
Management, residential care and social facilities			
PO10	The residential care facility or retirement facility provides appropriate management, social and care facilities on-site.	**AO10.1**	The residential care facility or retirement facility provides management, supervised care and social facilities in communal buildings.
		AO10.2	Communal buildings are easily accessible and centrally located, permitting residents to easily navigate the site on foot or with the assistance of mobility aids.
Accessibility			
PO11	The residential care facility or retirement facility incorporates easy and safe pedestrian access and movement.	**AO11.1**	No dwelling or rooming unit is more than 250m walking distance from a site entry or exit point.

Performance Outcomes		Acceptable Outcomes	
		AO11.2	All pathways and land used for outdoor recreation have grades of 5% or less, with paths having hard, slip resistant surfaces.
		AO11.3	Internal paths, ramps and hallways are capable of accommodating two wheelchairs (side by side) at any one time.
		AO11.4	Development complies with AS1428 (Design for access and mobility).
		AO11.5	Buildings exceeding one level in height incorporate lifts to each level and ramped access.
Safety and security			
PO12	The residential care facility or retirement facility provides a safe and secure living environment.	**AO12.1**	Buildings adjacent to public or communal streets or open space have at least one habitable room window with an outlook to that area.
		AO12.2	Entrances and exits to the site are clearly marked and well lit.
		AO12.3	Bollards or overhead lighting, which achieves lighting levels of at least category 2 as specified in AS1158 (Lighting roads and public spaces), is provided along: (a) all footways and roads; and (b) in all car parking areas.
Services and utilities			
PO13	The residential care and retirement facility is provided with: (a) a safe and reliable water supply; and (b) a sewage disposal system, which maintains acceptable public health and environmental standards.	**AO13.1**	The site is connected to the reticulated water supply, sewerage and stormwater drainage infrastructure networks.

9.3.13 Rural activities code

9.3.13.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Rural activities code by the tables of assessment in Part 5 (Tables of assessment).

9.3.13.2 Purpose and overall outcomes

(1) The purpose of the Rural activities code is to facilitate rural uses and ensure Rural activities are developed in a sustainable manner, which conserves the productive characteristics of rural land and protects environmental and landscape values and the amenity of surrounding premises.

(2) The purpose of the Rural activities code will be achieved through the following overall outcomes:

(a) Rural activities are undertaken on a sustainable basis;

(b) agricultural land is conserved and not alienated or encroached upon by incompatible land uses;

(c) uses that support rural production are established on suitable sites where environmental and amenity impacts can be effectively managed; and

(d) adverse impacts on the surrounding or downstream environments or natural environmental processes are avoided.

9.3.13.3 Assessment benchmarks

Table 9.3.13.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
General requirements			
PO1	The Rural activity is conducted on a lot that is of sufficient size to reasonably accommodate the use and mitigate potential nuisance arising from noise, dust, odour and other emissions or contaminants generated by the use.	**AO1.1**	The lot is of an adequate size to sufficiently support the intended Rural activity.
PO2	Buildings and structures associated with the Rural activity are sited and designed to avoid or minimise adverse visual impacts on the rural landscape.	**AO2.1**	Buildings and structures, other than a dwelling house, associated with the Rural activity are set back at least 10m from all site boundaries.
Requirements for permanent plantation			
PO3	The plantation forest is located, such that it conserves the productive characteristics of agricultural land.	**AO3.1**	The plantation forest is not located on agricultural land identified on the Overlay map – Agriculture land overlay.
Requirements for roadside stall			
PO4	The roadside stall is limited in scale and appropriate to a rural area.	**AO4.1**	Produce sold at the roadside stall is limited to that which is grown or produced on the site.
		AO4.2	The roadside stall does not involve the sale of manufactured goods, other

Performance Outcomes		Acceptable Outcomes	
			than those manufactured on the site.
		AO4.3	Buildings and structures associated with the roadside stall: (a) are constructed along the property boundary; (b) occupy not more than 10m² GFA; and (c) are constructed of materials that can easily be dismantled following the cessation of the use.
		AO4.4	The roadside stall is ancillary to a Rural activity occurring on the same site.
PO5	The roadside stall does not have an adverse impact on the safety and functioning of the road network.	**AO5.1**	The roadside stall is located on a site adjoining a road other than a State controlled road.
		AO5.2	The location of the road side stall provides sufficient area for parking and for the safe entry and exit of vehicles from the site.
PO6	Signage associated with the roadside stall is small, unobtrusive and appropriate to a rural location.	**AO6.1**	Not more than 1 sign is erected on the premises and the sign: (a) has a maximum sign face area of 0.5m² per side; and (b) is not illuminated or in motion.

Table 9.3.13.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Requirements for intensive Rural activities (Animal keeping, Aquaculture, Intensive animal industry, Intensive horticulture and Rural industry)			
PO1	The intensive Rural activity is sited and designed on a lot of sufficient area to: (a) accommodate the use, including buildings, pens, ponds, other structures and waste disposal areas involved in the use; (b) provide for adequate setbacks to: (i) road frontages; (ii) site boundaries; (iii) sensitive uses on surrounding land; and (iv) waterways or wetlands; and (c) avoid or minimise adverse visual impacts on the rural landscape.	**AO1.1**	The intensive Rural activity is located on a site, which has a minimum area and setbacks complying with Table 9.3.13.3.3 Siting and setback requirements for intensive Rural activities unless for a: (a) Caretakers accommodation; or (b) Rural workers' accommodation.
PO2	The intensive Rural activity is located on a site, which is sufficiently separated from any existing or planned residential,	**AO2.1**	The intensive Rural activity is located on a site, which is not less than:

Performance Outcomes		Acceptable Outcomes	
	rural residential area or other sensitive activity, to avoid any adverse impacts with regard to noise, dust, odour, visual impact, traffic generation, lighting, radiation, other emissions or contaminants.		(a) 1km from land included in a residential zone; (b) 1km from land included in the Rural residential zone; and (c) 1km from any Community activity where people gather, such as educational establishment or child care centre; or (d) if the intensive Rural activity is a rural industry, the use is located on a site, which is not less than 100m from a sensitive use.
PO3	The intensive Rural activity is located, such that it conserves the productive characteristics of agricultural land.	**AO3.1**	The intensive Rural activity: (a) is not located on agricultural land identified on the Overlay map –Agriculture land overlay; or (b) where located on agricultural land identified on the Overlay map – Agriculture land overlay, the use and associated activities conserves the productive characteristics of the agricultural land.
Environmental and amenity impacts			
PO4	The intensive Rural activity provides for the appropriate disposal of waste and contaminants.	**AO4.1**	The intensive Rural activity incorporates waste disposal systems and practices, which: (a) ensures that off-site release of contaminants does not occur; (b) ensures no significant adverse impacts on surface or ground water resources; and (c) complies with relevant Government or industry guidelines, codes and standards applicable to a specific use or on–site waste disposal.

Table 9.3.13.3.3 Siting and setback requirements for intensive Rural activities.

Rural activity	Min. site area (ha)	Min. boundary setbacks (m)	Min. distance from a sensitive use on a surrounding land (m)
Animal keeping	4ha	50m from any road frontage and 15m from any side or rear boundary.	300m
Aquaculture	5ha	50m from any road frontage and 15m from any side or rear boundary.	100m

Rural activity	Min. site area (ha)	Min. boundary setbacks (m)	Min. distance from a sensitive use on a surrounding land (m)
Intensive animal industry, such as a piggery or feedlot.	20ha	200m from any road frontage and 15m from any side or rear boundary.	250m
Intensive animal industry, such as poultry farms.	50ha	100m from any road frontage and 100m from any side or rear boundary.	400m
Intensive animal industry, such as emu or ostrich hatching and brooding facility.	4ha	60m from any road frontage and 15m from any side or rear boundary.	400m
Intensive animal industry, where not previously specified.	20ha	200m from any road frontage and 15m from any side or rear boundary.	250m
Intensive horticulture	10ha	50m from any road frontage and 15m from any side or rear boundary.	100m
Rural industry	1ha	50m from any road frontage and 10m from any side or rear boundary	100m

9.3.14 Rural tourism code

9.3.14.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Rural tourism code by the tables of assessment in Part 5 (Tables of assessment).

9.3.14.2 Purpose and overall outcomes

(1) The purpose of the Rural tourism code is to ensure uses supporting the tourism industry are appropriately located and designed in a manner which meets the needs of visitors, preserves natural ecological systems and cultural heritage, promotes natural amenity, promotes the Whitsunday tourism brand and protects the on-going operation of surrounding Rural activities; and

(2) The purpose of the Rural tourism code will be achieved through the following overall outcomes:

(a) development is located in proximity of horticultural hubs, areas of high natural amenity, key natural assets and cultural or historic sites in the Region;

(b) development is designed and sited to minimise impacts on nearby dwellings and the productive use of agricultural land;

(c) development is of a scale and intensity that is compatible with, and subservient to, the rural or natural setting and the prevailing character of the local area; and

(d) development is provided with appropriate utilities and services for visitors.

9.3.14.3 Assessment benchmarks

Table 9.3.14.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Shop and food and drink outlet			
PO1	A shop or food and drink outlet is small in scale, and ancillary to the primary use of the premises.	**AO1.1**	A shop or food and drink outlet is ancillary to a Rural activity, Recreation activity, Low impact industry that is a brewery or coffee roastery, Environmental facility or Nature based tourism and does not exceed 150m² of TUA.

Table 9.3.14.3.2 Benchmarks for assessable development

Performance Outcomes	Acceptable Outcomes
Location and site suitability	

Performance Outcomes		Acceptable Outcomes	
PO1	Development does not impact on the amenity or privacy of adjoining or nearby residential or sensitive uses.	**AO1.1**	Development utilises landscaping to preserve amenity and privacy for adjoining sensitive uses and is setback at least: (a) 20 metres from any adjoining property boundary where for an Accommodation activity; or (b) 50 metres from any adjoining property boundary where for a Business or Recreation activity.
PO2	Development does not conflict with the operations of Rural activities.	**AO2.1**	Accommodation, kitchen and common areas within the development are adequately buffered by vegetation and are separated from adjacent intensive agricultural uses in accordance with Table 9.3.13.3.3 Siting and setback requirements for intensive Rural activities.
Scale and design			
PO3	A Nature-based tourism activity does not detract from the environmental or rural character and amenity of the local area.	**AO3.1**	For Nature-based tourism involving cabins: (a) the GFA of each cabin does not exceed 60m²; and (b) the maximum number of cabins on any site does not exceed 8.
		AO3.2	For Nature-based tourism, including camp grounds, the maximum number of camping sites on any premises does not exceed 50.
PO4	Development is located, orientated and designed to enhance the rural or natural setting for visitors.	**AO4.1**	Development is orientated and designed to enhance the experience of natural assets or the rural setting of the premises, including: (a) plantings to enhance the rural or natural setting and provide habitat for local wildlife; (b) orientation and location of rooms and communal areas toward scenic vistas on the premises; (c) large windows, balconies and verandas overlooking natural or rural settings; or

Performance Outcomes		Acceptable Outcomes	
			(d) architecture or placemaking elements that capture the sense of place.
PO5	Development is designed to: (a) provide an attractive landscape setting; (b) integrate the development into the surrounding landscape; (c) maximise the retention of existing mature trees to retain the landscape character of the area; and (d) preserve the amenity and privacy of adjoining habitable buildings.	**AO5.1**	Development preserves mature trees where possible and utilises high quality landscaping to: (a) identify the entrance to the premises; (b) provide shading of common areas, pathways and car parks; (c) soften solid fencing and built form in a manner that integrates built aspects into the natural environment; and (d) provide vegetation buffers to preserve the privacy and amenity of neighbouring habitable buildings and mitigate amenity impacts from adjoining uses.
PO6	The scale, design and external finish of buildings: (a) complements the rural and/or natural character of the area; and (b) incorporates colours and finishes that allow buildings to blend in with the rural and/or natural landscape.	**AO6.1**	Buildings take the form of small, separate buildings.
		AO6.2	Materials and finishes utilise: (a) muted earth/environmental tones that blend with the rural and/or natural environment; and (b) low reflective roofing and building materials. Note – Appropriate colours will depend on the existing native vegetation and backdrop. A colour palette may be requested by Council to ensure built form integration.
Access and servicing			
PO7	An acceptable standard of facilities is provided for guests.	**AO7.1**	For cabin accommodation: (a) shower, wash basin and toilet amenities are provided within each cabin; and (b) a common area or building is provided for food preparation, dining and other facilities.
		AO7.2	For camping grounds, a minimum of 2 toilets are provided on-site for every 10 camping sites.

Performance Outcomes		Acceptable Outcomes	
PO8	Development is provided with: (a) a safe and reliable potable water supply commensurate with the needs of the users; (b) a sewerage system, which maintains acceptable public health and environmental standards; and (c) adequate firefighting supplies.	**AO8.1**	The development has access to: (a) a potable water supply and water storage collection system capable of servicing the development that complies with the *Australian Drinking Water Guidelines* (NHMRC, 2011); and (b) an effective on-site effluent disposal system capable of accommodating anticipated maximum demand at 100% occupancy.
		AO8.2	Where not affected by a Bushfire overlay risk area, adequate fire-fighting water supply is provided on the premises: (a) sited to enable emergency service vehicles to park within 6m; (b) at least 10m from the building; (c) located within 60m of the building and not more than 90m from any part of the building; and (d) fitted with fire brigade tank fittings (50mm ball valve & male camlock coupling). Note – Provisions within the Bushfire overlay take precedence over this outcome where affected.
PO9	Development: (a) where composed of 10 or less camp sites, signage and operational controls are in place to ensure user management of waste; or (b) provides on-site facilities for the storage and collection of refuse, with facilities located in convenient and unobtrusive positions capable of being serviced by the Council's refuse collection contractor, where within the service area, or by local contractor in un-serviced areas.	**AO9.1**	Development ensures waste management facilities are: (a) adequately screened by landscaping or fencing to maintain amenity; (b) setback from Accommodation activities by at least 10m; and (c) where a Nature-based tourism use, a central waste collection area is provided for every 25 sites; or (d) where a shop, food and drink outlet or Recreation activity, waste bins are provided at key entrances and exits.

Performance Outcomes		Acceptable Outcomes	
PO10	Development manages impacts on neighbouring properties from dust, noise and traffic associated with vehicular movement to and from the development.	**AO10.1**	Development utilises mini-buses to reduce vehicular trips and: (a) access and parking areas provide dense vegetation on all sides, if within 50m of a neighbouring sensitive use; or (b) access and parking areas are sealed, if within 50m of a neighbouring sensitive use. Note – Where demonstrating effective use of mini-buses to service development, a car parking dispensation may be granted. Traffic impact assessment report prepared in accordance with PSP SC6.7 (Growth management) may assist in demonstrating compliance with the performance outcome.

9.3.15 Sales office code

9.3.15.1 Application

This code applies to accepted and assessable development:

(a) being a material change of use for a sales office; and

(b) identified as requiring assessment against the Sales office code by the tables of assessment in Part 5 (Tables of assessment).

9.3.15.2 Purpose and overall outcomes

(1) The purpose of the Sales office code is to ensure sales offices are temporary in nature and are developed in a manner, which protects the amenity of surrounding premises.

(2) The purpose of the Sales office code will be achieved through the following overall outcomes:

(a) the siting, layout, design and operation of a sales office is commensurate to, and does not adversely impact upon, the character and amenity of the surrounding area; and

(b) a sales office is operated for a temporary duration only.

9.3.15.3 Assessment benchmarks

Table 9.3.15.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Operational characteristics			
PO1	The duration of the use of premises for a sales office does not extend beyond a reasonable period.	**AO1.1**	A sales office, where: (a) a display dwelling, display village or estate sales office, operates for a maximum period of 2 years; or (b) a dwelling offered as a prize, operates for a maximum period of 6 months.
		AO1.2	Any temporary building or structure associated with the operation of the sales office is removed from the site within 14 days of the end of the period of operation and the site is left in a clean and tidy condition.
PO2	Where the temporary use of a sales office is contained within a structure intended to become a genuine residential dwelling, it is constructed in accordance with the relevant requirements for the ultimate use.	**AO2.1**	Where a sales office is located in a Class 1 building (Dwelling house) this dwelling must comply with Part 9.3.5 Dwelling house code.
PO3	The location, hours of operation and activities of the sales office does not adversely affect the amenity of nearby existing and	**AO3.1**	A sales office: (a) is located at the major entry to the development site; (b) only operates between 8.00am and 6.00pm; and

Performance Outcomes		Acceptable Outcomes	
	potential future residential premises.		(c) sales and promotional activities do not create a nuisance to adjoining residents or residents in the immediate locality.
PO4	The number of employees engaged in the operation of the sales office does not adversely affect the amenity of nearby residential premises.	**AO4.1**	A sales office, where a: (a) display dwelling, dwelling offered as a prize or estate sales office, has a maximum of 2 employees engaged in the operation at any one time; or (b) display village, has a maximum of 2 employees per display home engaged in the operation at any one time.
Public convenience facilities			
PO5	The sales office provides appropriate public convenience facilities for users of the sales office.	**AO5.1**	Public toilet facilities are provided for a display village comprising 4 or more display dwellings.
On-site car parking			
PO6	Sufficient car parking is provided to satisfy the projected needs of the sales office and is appropriately designed.	**AO6.1**	A sales office ensures: (a) a minimum of 2 on-site parking spaces are provided, where on-street parking is not available; or (b) a minimum of 2 on-street car parking spaces are available within 50m of the sales office.

9.3.16 Service station code

9.3.16.1 Application

This code applies to assessable development:

(a) being a material change of use for a service station; and

(b) identified as requiring assessment against the Service station code by the tables of assessment in Part 5 (Tables of assessment).

9.3.16.2 Purpose and overall outcomes

(1) The purpose of the Service station code is to ensure service stations are developed in appropriate locations and in a manner, which meets the needs of users, provides safe access and protects the environment and amenity of surrounding premises.

(2) The purpose of the Service station code will be achieved through the following overall outcomes:

(a) a service station is established at a suitable location, on a site that is capable of accommodating all necessary and associated activities;

(b) a service station does not adversely impact upon the amenity of the surrounding local area;

(c) a service station incorporates a high standard of built form and landscaping;

(d) a service station is provided with safe and convenient access to the road network;

(e) a service station incorporates appropriate environmental management measures; and

(f) minimises the risk of land, ground and surface water contamination.

9.3.16.3 Assessment benchmarks

Table 9.3.16.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	The service station is located on a site having sufficient area and dimensions to accommodate required buildings, structures, vehicle access, manoeuvring areas, site landscaping and buffer areas.	**AO1.1**	The service station site is located on a site that: (a) is at least 1,500m² in area; and (b) has a street frontage of at least: (i) 35m, where the site is a corner site; or (ii) 40m otherwise.
PO2	The service station is located so that it does not adversely impact upon the amenity of existing or future planned residential areas.	**AO2.1**	The service station is located: (a) on land included in a centre or industry zone; or (b) in the Rural zone on a major road and at least 15km from any existing or approved service station.
Siting of building and structures			

Performance Outcomes		Acceptable Outcomes	
PO3	Buildings and structures associated with the service station are sited to: (a) ensure the safe and efficient use of the site and operation of the facility; (b) protect streetscape character; and (c) provide adequate separation to adjoining land uses.	**AO3.1**	Buildings and structures are setback a minimum of: (a) 9m to the primary street frontage; (b) 3m to any secondary street frontage; and (c) 5m from any side or rear boundary, where adjoining a sensitive use or land in a residential zone or the Community facilities zone; or (d) where not adjoining a sensitive use or land in a residential zone or the Community facilities zone, no minimum side or rear boundary setback applies.
		AO3.2	For front boundary setbacks fuel pumps and canopies are setback a minimum of 7.5m from the property boundary.
		AO3.3	On-site storage of refuse is located so that it is not visible from the street.
PO4	Development maintains and contributes to the visual amenity of the locality.	**AO4.1**	Development ensures a 4m wide landscaping strip containing ground cover and small shrubs is maintained along: (a) a minimum 50% of the primary frontage; or (b) a minimum 75% of the total frontage, where a secondary frontage exists.
Location of fuel pumps and bulk fuel storage			
PO5	Fuels pumps and bulk fuel storage tanks are located: (a) wholly within the site; (b) such that vehicles, while refuelling, are standing wholly within the site and are parked away from entrances and circulation driveways; and (c) a safe distance from all site boundaries.	**AO5.1**	Fuel pumps are located in accordance with AS1940 (The storage and handling of flammable and combustible liquids).
		AO5.2	Inlets to bulk fuel storage tanks are located to ensure that tankers, while discharging fuel, are standing wholly within the site and are on level ground.
Access and parking			
PO6	The service station: (a) does not impair traffic flow or road safety; and (b) facilitates, through the design and arrangement of vehicular crossovers and on-site circulation, safe and convenient movement to, from and within the site.	**AO6.1**	Separate entrances and exits are provided, and these are clearly marked for their intended use.
		AO6.2	Vehicle crossovers are at least 8m wide.
		AO6.3	No part of a vehicle crossover is closer than: (a) 14m from any other vehicle crossover on the same site;

Performance Outcomes		Acceptable Outcomes	
			(b) 12m from an intersection; and (c) 3m from any property boundary.
		AO6.4	Adequate queuing areas are provided for refuelling, washing and related facilities.
		AO6.5	Bulk delivery area is located so that the site access and traffic flow is not restricted during delivery.
Environmental performance			
PO7	The service station is designed and constructed to ensure that on-site operations: (a) do not cause any environmental nuisance or harm; (b) do not result in the release of contaminants or untreated pollutants; (c) achieve acceptable levels of stormwater run-off quality and quantity; and (d) where practical, minimise wastage through recycling of liquid and solid waste.	**AO7.1**	Sealed impervious surfaces are provided in areas, where potential spills of contaminants may occur.
		AO7.2	Grease and oil arrestors or other infrastructure is provided to prevent the movement of contaminants from the site.
		AO7.3	Storm water is diverted away from the forecourt area or areas of potential contamination.
		AO7.4	The collection, treatment and disposal of solid and liquid wastes ensures that: (a) off-site releases of contaminants do not occur; and (b) measures to minimise waste generation and to maximise recycling are implemented.
		AO7.5	Ancillary automatic mechanical carwash facilities, where provided, are designed to collect, treat and recycle waste water for reuse.
Protection of residential amenity			
PO8	The service station ensures the amenity of existing or planned residential areas is protected and air pollutants, noise, light or odour nuisance is avoided.	**AO8.1**	Where the service station adjoins an Accommodation activity or land included in a residential zone: (a) a 2m high solid screen fence is provided along all common property boundaries of the site; and (b) the hours of operation of the service station are limited to between 7.00am to 10.00pm.
		AO8.2	The layout and design of the service station provides for the storage and collection of waste and is screened from public view.
		AO8.3	The service station limits the generation of noise, such that:

Performance Outcomes		Acceptable Outcomes	
			(a) nuisance is not caused to a sensitive land use; (b) desired ambient noise levels for residential areas are not exceeded; and (c) applicable legislative requirements are met.
		AO8.4	The service station prevents or minimises any emissions of odour, dust and air pollutants, such that: (a) nuisance is not caused beyond the site boundaries; and (b) air quality conducive to the health and wellbeing of people is maintained.
PO9	External lighting is designed, located and operated to avoid any adverse impacts on the amenity of neighbouring premises.	**AO9.1**	External lighting is provided in accordance with AS4282 (Control of obtrusive effects of outdoor lighting).
Ancillary on-site amenities			
PO10	Customer air and water facilities, and any ancillary automatic mechanical car washing facilities are provided in a way that protects the amenity of nearby Accommodation activities.	**AO10.1**	Ancillary facilities are located such that: (a) vehicles using, or waiting to use, such facilities are standing wholly within the site; and (b) an adequate buffer is provided to any adjoining Accommodation activities.
Extent of retail sale of goods			
PO11	The associated sale of goods, including food stuffs, is ancillary to the provision of fuel and automotive repairs and service.	**AO11.1**	The GFA used for the associated retail sale of goods is limited to 150m².
		AO11.2	Liquid contaminants are stored: (a) in a bunded area capable of containing 125% of the largest package; or (b) are located so that a spill can be contained within an existing contaminated area, such as the forecourt.

9.3.17 Short-term accommodation and multi-unit uses code

9.3.17.1 Application

This code applies to assessable development identified as requiring assessment against the Short-term accommodation and multi-unit uses code by the tables of assessment in Part 5 (Tables of assessment).

9.3.17.2 Purpose and overall outcomes

(1) The purpose of the Short-term accommodation and multi-unit uses code is to ensure Short-term accommodation and multi-unit uses are of a high-quality design, and appropriately integrate with local character, environment and amenity.

(2) The purpose of the Short-term accommodation and multi-unit uses code will be achieved through the following overall outcomes:

(a) development is visually attractive addresses the street and integrates with surrounding development;

(b) development minimises residential amenity impacts on the surrounding area;

(c) development incorporates high quality landscaping and well designed, useable communal and private open space areas, that provide visual relief to the built form;

(d) development provides a high standard of privacy and amenity for residents; and

(e) infrastructure and services are provided, commensurate with the scale of the use and its location.

9.3.17.3 Assessment benchmarks

Table 9.3.17.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Short-term accommodation (Dwelling)			
PO1	Development: (a) is occupied and used in a manner generally expected of the type of dwelling in its locality; (a) does not detract from the prevailing environmental, residential or rural character and amenity of the local area.	**AO1.1**	No more than 2 guests are permitted per bedroom and: (a) if Short-term accommodation (Dwelling) accommodating no more than 8 resident guests at any one time, none may stay within a Secondary dwelling; or (b) if Short-term accommodation (Dwelling) on premises involving two dwellings on one lot, not more than 4 guests per dwelling stay at any one time.
PO2	Use of the premises does not cause adverse impacts on the amenity of the neighbourhood by reason of:	**AO2.1**	Audible noise beyond the boundary of the premises does not happen:

Performance Outcomes		Acceptable Outcomes	
	(a) use of outdoor areas, including but not limited to swimming pools/spas, outdoor decking/balconies and pontoons; or (b) noise from guests, visitors, entertainers or amplified devices.		(a) between 9.00pm to 7.00am on a Sunday to Thursday night; and (b) between 11.00pm to 7.00am on a Friday or Saturday night.
PO3	Short-term accommodation (Dwelling) establishes operational controls to manage residential amenity, including: (a) adequate waste storage; (b) ensuring visitors, suppliers or entertainers do not disturb neighbouring properties; (c) a detailed Code of Conduct for guests to comply with; and (d) contact details of the property manager visible from the front of the premises.	**AO3.1**	If within an Urban area, where 3 or more bedrooms are used: (a) provides two recycling bins and one general waste bin; (b) provides adequate space for storing all rubbish bins in an area that is screened from frontages by a solid fence or vegetation at least 1.2m in height; and (c) ensures excess waste left on the premises following each booking period is promptly disposed of lawfully.
		AO3.2	Guests, visitors or suppliers: (a) must not congregate at the entrance to the premises, on the footpath or in the street; and (b) vehicles loading or unloading remains entirely within the site.
		AO3.3	Adult entertainment is not visible or audible from neighbouring premises or public spaces.
		AO3.4	A Code of Conduct is established, which includes as a minimum: (a) the maximum permitted number of resident guests on any one day; (b) a prohibition of noise and other activities that adversely affect neighbourhood amenity; and (c) details about on-site carparking, waste bin collection days and fire safety requirements.
		AO3.5	A 0.3m² sign, visible from the street includes contact details of a local property manager including a phone number, available twenty-four (24) hours a day, seven (7) days per week.
Site layout and relationship of buildings to site features for a multi-unit use			

Performance Outcomes		Acceptable Outcomes	
PO4	The multi-unit use is located on a site, which has an area and dimensions capable of accommodating a well-designed and integrated multi-unit development, incorporating: (a) vehicle access, parking and manoeuvring areas; (b) communal and private open space areas; and (c) any necessary buffering to incompatible uses or sensitive environments.	**AO4.1**	The multi-unit use is located on a lot having a minimum area of: (a) 800m²; or (b) 600m² if within Airlie Beach Local Plan Precinct A or B (Main Street).
Relationship of buildings to streets, public spaces and private open space for a multi-unit use			
PO5	The multi-unit use is sited and designed to: (a) provide a visibly clear pedestrian entrance to and from the building; and (b) minimise the potential for pedestrian and vehicular conflict.	**AO5.1**	The building is sited and designed, such that: (a) the main pedestrian entrance to the building, or group of buildings, is located on the primary street frontage; (b) pedestrian access to the entrance of the building(s) or individual dwellings is easily discerned; and (c) vehicular access to the site is separate from the pedestrian access.
PO6	The multi-unit use is sited and designed to: (a) address and provide a semi-active frontage to the street, adjacent parkland or other public areas; (b) promote casual surveillance of public and semi-public spaces; (c) contribute to a residential character; and (d) achieve a high level of amenity for dwellings within the site.	**AO6.1**	The building is sited and designed, such that: (a) street and parkland frontages of the site comprise semi-active uses/spaces, such as habitable rooms, indoor and outdoor common recreation areas and landscaped areas, to facilitate casual surveillance; and (b) the number of dwellings, rooming units, windows and balconies of habitable rooms that address adjoining streets, communal recreation areas and open spaces is optimised.
PO7	The multi-unit use is designed to ensure that car parking areas, services or any mechanical plant does not visually dominate the site or surrounding area.	**AO7.1**	Services and any mechanical plant, including individual air conditioning equipment for dwellings or rooming units, are visually integrated into the design and finish of the building or are effectively screened from view.
			Services and any mechanical plant, including individual air conditioning equipment for dwellings or rooming units, are

Performance Outcomes		Acceptable Outcomes	
			visually integrated into the design and finish of the building or are effectively screened from view.
Building mass and composition			
PO8	The multi-unit use is sited and designed in a manner, which: (a) minimises building mass and scale; (b) provides visual interest through building articulation and architectural design features; and (c) allows sufficient area at ground level for communal open space, site facilities, resident and visitor parking, landscaping and maintenance of a residential streetscape.	**AO8.1**	Buildings do not exceed 60% total site coverage.
		AO8.2	The building incorporates most or all of the following design features: (a) vertical and horizontal articulation, such that no unbroken elevation is longer than 15m; (b) variations in plan shape, such as curves, steps, recesses, projections or splays; (c) variations in the treatment and patterning of windows, sun protection and shading devices, or other elements of a façade treatment at a finer scale than the overall building structure; (d) balconies, verandahs or terraces; or (e) planting, particularly on podiums, terraces and low level roof decks.
PO9	The multi-unit use is sited and designed to: (a) provide amenity for users of the premises whilst preserving the privacy and amenity of nearby properties; (b) provide adequate separation distance from adjoining uses; (c) preserve any existing vegetation that will buffer the proposed building; (d) allow for landscaping to be provided between buildings and street frontages and between neighbouring buildings; and (e) maintain the visual continuity and pattern of buildings and landscape elements within the street.	**AO9.1**	Buildings and structures comply with the minimum boundary setbacks in Table 9.3.17.3.2 Minimum boundary setbacks for multi-unit uses.
		AO9.2	The building has a top level and roof form that is shaped to: (a) reduce the bulk of the building; (b) provide a visually attractive skyline silhouette; and (c) screen mechanical plant and equipment from view.
Privacy and amenity for a multi-unit use			
PO10	Where a mixed use development, residential amenity is managed through design and operation.	**AO10.1**	Mixed use development demonstrates the integration of uses or mitigates conflicts through:

Performance Outcomes		Acceptable Outcomes	
			(a) building layout solutions, such as locating living spaces and bedrooms toward quiet areas; and (b) technical solutions to minimise noise impacts, such as acoustic or double glazing, insulation, cladding or noise attenuated ventilation systems, such that residential units achieve the following design sound levels: i. Leq 35 dB(A) in sleeping areas (bedrooms); and ii. Leq 40 dB(A) in living or work areas. Editor's note – Within Airlie Beach, noise reductions must assume a maximum allowable noise limit of 75 dB, measured 3m from the source, being a nearby premise capable of hosting an Entertainment activity in the future.
PO11	The multi-unit use ensures that dwellings, rooming units, private open spaces and adjoining Accommodation activities are provided with a reasonable level of privacy and amenity.	**AO11.1**	Non-habitable room windows of a dwelling or rooming unit are not located opposite the non-habitable room windows of another dwelling or rooming unit, unless views are controlled by screening devices, distance, landscaping or design of the opening.
		AO11.2	Where habitable room windows look directly at habitable room windows in an adjacent dwelling or rooming unit within 2m at the ground level or 9m at levels above the ground level, privacy is protected by: (a) window sill heights being a minimum of 1.5m above floor level; (b) fixed opaque glazing being applied to any part of a window below 1.5m above floor level; (c) fixed external screens; or (d) if at ground level, screen fencing to a minimum height of 2m.
		AO11.3	For development up to, and including, 3 storeys in height, the outlook from private, communal and public areas is screened, where direct view is

Performance Outcomes		Acceptable Outcomes	
			available into the private open space of an existing dwelling.
PO12	The multi-unit use utilises appropriate lighting for the security of residents, whilst not impacting on the amenity of surrounding residents.	**AO12.1**	Glare conditions or excessive light spill into dwellings, rooming units, adjacent sites and public spaces is avoided or minimised through measures, such as: (a) the use of building design and architectural elements or landscape treatments to block or reduce excessive light spill to locations where it would cause a nuisance; and (b) the alignment of driveways and servicing areas to minimise vehicle headlight impacts on residential accommodation and private open space.
		AO12.2	All access points, footpaths, car parks, building entrances and foyers are provided with adequate illumination.
		AO12.3	All external lighting complies with AS4282 Control of the obtrusive effects of outdoor lighting and does not exceed 8 lux measured at any lot boundary and at any level.
Open space and landscaping			
PO13	The multi-unit use provides communal and private open space and landscaping, such that residents have sufficient area to engage in communal activities, enjoy private and semi-private spaces, and accommodate visitors.	**AO13.1**	At least 30% of the site area is provided as communal and private open space.
		AO13.2	Each ground floor dwelling or rooming unit has a courtyard or similar private open space area, directly accessible from the main living area and complying with the following minimum areas and dimensions respectively: (a) 10m² and 2.5m for a studio or rooming unit; (b) 18m² and 2.5m for a 1 bedroom unit; and (c) 20m² and 3.0m for a 2 or more bedroom unit.
		AO13.3	Each dwelling or rooming unit above ground floor level has a balcony or similar private open space area directly accessible from the living area and complying with the following minimum areas and dimensions respectively: (a) 4.5m² and 1.7m for a studio or rooming unit;

Performance Outcomes		Acceptable Outcomes	
			(b) 5.5m² and 2.1m for a 1 bedroom unit; and (c) 8m² and 2.5m for a 2 or more bedroom unit.
		AO13.4	Where not adjoining a park or similar public open space, a minimum 2m high solid screen fence is provided and maintained along the full length of any side or rear boundary.
		AO13.5	Communal open space is provided on-site and complies with the following minimum areas and dimensions: (a) minimum width of 4m; and (b) area equal to 15% of total area of the site.
PO14	The scale and external finishes of buildings: (a) complements the rural and/or natural character of the area and integrates with the surrounding natural landscape; and (b) incorporates colours and finishes that allow buildings to blend in with the natural and rural landscape.	**AO14.1**	The architectural style and materials used for any new building: (a) use muted earth or environmental tones that blend with the rural and natural environment; and (b) use low reflective roofing and building materials. Note – Appropriate colours will depend on the existing native vegetation and backdrop. A colour palette may be requested by Council to ensure built form integration.
Site facilities and waste management			
PO15	Adequate communal clothes drying facilities are provided where dwellings or rooming units are not provided with individual drying facilities.	**AO15.1**	Where dwellings or rooming units are not provided with individual clothes drying facilities, one or more outdoor communal clothes drying areas are provided in an accessible location, equipped with robust clothes lines.
PO16	Refuse disposal and recycling areas are located in convenient and unobtrusive positions and are capable of being serviced by the Council's refuse collection contractor. Note - Developments must comply with Council's Trade Waste Policy.	**AO16.1**	Refuse disposal and recycling areas are of an appropriate size and preferably use collective bins instead of multiple individual bins. Note - There should be sufficient space to accommodate the equivalent of two 240L bins (for waste and recycling) per dwelling per week contained in the communal bins.
		AO16.2	Refuse disposal and recycling areas are: (a) provided on-site; (b) screened by a solid fence or wall having a minimum height of 1.2m;

Performance Outcomes		Acceptable Outcomes	
			(c) are not directly visible from the street; (d) are imperviously sealed, bunded and roofed; (e) contain a hose down area draining to the reticulated sewerage system; (f) are fitted with a strainer basket type drain outlet or other appropriate pre-treatment device; and (g) drain into the reticulated sewerage system.
		AO16.3	Backwash discharge from commercial swimming pools, spas and decorative ponds must be connected to the reticulated sewer system or otherwise approved by Council.
Additional requirements for rooming accommodation or short-term accommodation			
PO17	The rooming accommodation or short-term accommodation use is provided with sufficient facilities to accommodate the needs of temporary residents and staff.	**AO17.1**	Facilities including, but not limited to, kitchens, dining rooms, laundries and common rooms are provided for the use of temporary residents and staff.

Table 9.3.17.3.2 Minimum boundary setbacks for multi-unit uses

Building height	Boundary type	Minimum setback
Up to 8.5	Side	2m
	Front (primary)	6m
	Front (secondary)	3m
	Rear	2m
8.5m up to 11m	Side	4m
	Front (primary)	6m
	Front (secondary)	4m
	Rear	6m
11m to 16m	Side	4m
	Front (primary)	6m
	Front (secondary)	4m
	Rear	6m
16m up to 21m	Side	6m
	Front (primary)	6m
	Front (secondary)	6m
	Rear	6m
21m and above	Side	8m
	Front (primary)	6m
	Front (secondary)	6m
	Rear	8m

9.3.18 Telecommunications facility code

9.3.18.1 Application

This code applies to accepted and assessable development:

(a) being a material change of use for a telecommunications facility; and

(b) identified as requiring assessment against the Telecommunications facility code by the tables of assessment in Part 5 (Tables of assessment).

Editor's note—this code primarily deals with telecommunications facilities involving the erection of a telecommunications tower.

9.3.18.2 Purpose and overall outcomes

(1) The purpose of the Telecommunications facility code is to ensure telecommunication facilities are developed in a manner, which protects public health, the environment and the amenity of surrounding premises.

(2) The purpose of the Telecommunication facility code will be achieved through the following overall outcomes:

(a) a telecommunications facility is located with compatible uses and facilities;

(b) a telecommunications facility does not adversely impact upon community wellbeing;

(c) a telecommunications facility does not adversely affect the amenity of surrounding premises;

(d) a telecommunications facility is visually integrated with its natural, rural or townscape setting; and

(e) a telecommunications facility is sited and constructed to minimise detrimental environmental impacts.

9.3.18.3 Assessment benchmarks

Table 9.3.18.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
PO1	The telecommunications facility is located to minimise any adverse impacts on the amenity of a local area and protect community wellbeing.	**AO1.1**	The telecommunications facility is located at least: (a) 400m from any residential activity; (b) 500m from any childcare centre, community care centre, educational establishment or park; (c) 20m from any public pathway; and (d) 1km from any other existing or approved telecommunications facility, except where a co-located telecommunications tower uses a single structure.
Protection of visual amenity and landscape character			

Performance Outcomes		Acceptable Outcomes	
PO2	Development is visually integrated with its landscape or townscape setting to not be visually dominant or unduly obtrusive.	**AO2.1**	Telecommunications facilities within view of key lookouts or adjoining scenic corridors along Gregory Cannon Valley Road, Conway Road, Crystal Brook Road, Rose Bay Road, Horseshoe Bay Road, Kings Beach Road or Bowen-Developmental Road between Bogie River and Strathmore Road, are designed and sited to be visually unobtrusive and: (a) if adjoining a scenic corridor, are setback 60m from the road frontage; (b) are adequately buffered by landscaping; (c) are of monopole design; and (d) are coloured non-reflective grey to blend with the sky. Editor's note – The full length of the above-mentioned roads are considered scenic corridors, except for Bowen-Developmental Road, as described.
Access, safety and security			
PO3	The telecommunications facility is accessible and secure, public safety is protected and potential damage from vandalism is minimised.	**AO3.1**	The telecommunications facility is provided with adequate access to allow periodic servicing and maintenance of the facility.
		AO3.2	Warning information signs and security fencing are provided around the perimeter of the telecommunications facility site to prevent unauthorised entry.

9.4 Other development codes

9.4.1 Advertising devices code

9.4.1.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Advertising devices code by the tables of assessment in Part 5 (Tables of assessment).

9.4.1.2 Purpose and overall outcomes

(1) The purpose of the Advertising devices code is to ensure that advertising devices are established in a manner, which is consistent with the desired character and amenity of the Whitsunday region.

(2) The purpose of the Advertising devices code will be achieved through the following overall outcomes:

(a) an advertising device complements and does not detract from the desirable characteristics of the natural and built environment in which the advertising device is exhibited;

(b) an advertising device is designed and integrated into the built form to minimise visual clutter;

(c) an advertising device does not adversely impact on the visual amenity of a heritage or neighbourhood character area or public open space;

(d) an advertising device does not adversely impact on the amenity of rural, rural residential or residential areas;

(e) an advertising device does not pose a hazard for pedestrians, cyclists or drivers of motor vehicles;

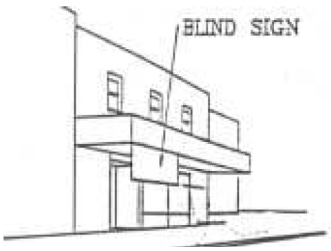
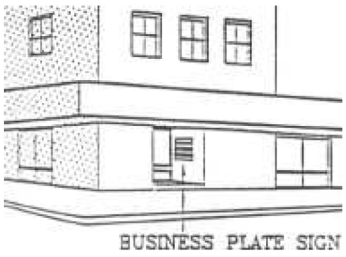
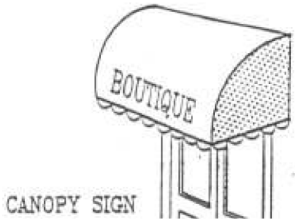
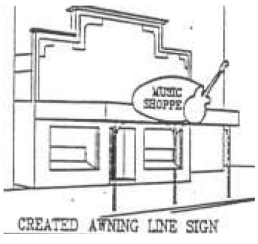
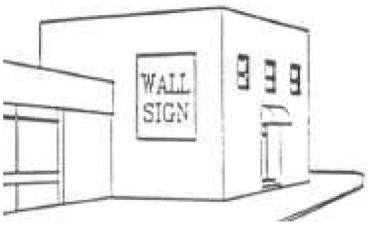
(f) an advertising device that is only visible from an elevated location or the air, such as sky signs and written roof signs, are avoided; and

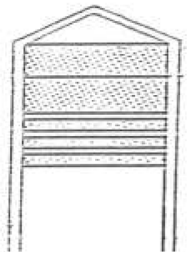
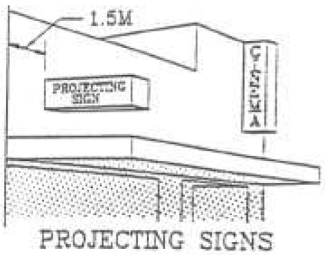
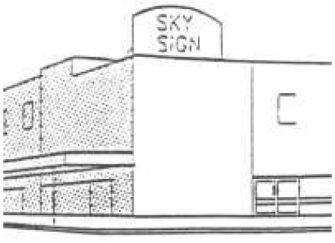
(g) an advertising device accommodates the legitimate need to provide directions and business identification in a manner that is consistent with achieving overall outcomes (a) to (f) above.

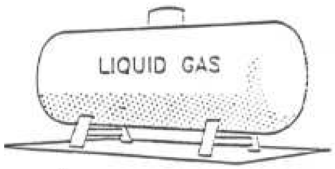
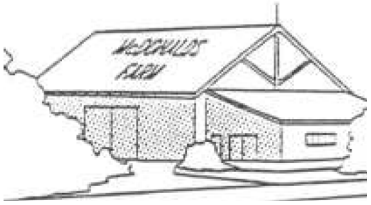
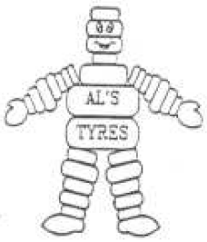
9.4.1.3 Description of advertising devices

Table 9.4.1.3.1 Description of advertising device types

Advertising device type	Written description	Pictorial description
Above awning sign	An advertising device located on top of and attached to an awning or verandah.	

Advertising device type	Written description	Pictorial description
Awning fascia or return fascia sign	An advertising device painted or otherwise affixed to a solid or flexible material suspended from an awning, verandah or wall.	
Blind sign	An advertising device painted or otherwise affixed to a solid or flexible material suspended from an awning, verandah or wall.	
Business name plate	An advertising device displaying the name, occupation and contact details for the business occupant, which may also include the hours of operation of the business.	
Canopy sign	An advertising device painted on a canopy structure.	
Created awning sign	An advertising device positioned on the face, or aligned with the face of an awning, where the shape interrupts the natural line of the awning.	
Flush wall sign	An advertising device painted or otherwise affixed upon, and confined within, the limits of a wall.	

Advertising device type	Written description	Pictorial description
Freestanding sign	An advertising device that is independent of a building and is supported by one or more columns, poles or pylons. The term includes devices containing third party advertising. Note - Freestanding sign includes billboard and pylon signs, where a billboard sign has a surface area wider than it is tall and a pylon sign has a surface area taller than it is wide.	
Ground sign	An advertising device that is independent of a building that is normally erected at a driveway entrance to identify the business or points of entry.	
Hamper sign	An advertising device painted or otherwise affixed above the door head or its equivalent height and below the awning level or verandah of a building.	
Projecting sign	An advertising device attached and mounted at a right angle to the façade of a building.	
Sky sign	An advertising device placed at or near the top of a building and projecting above the building.	

Advertising device type	Written description	Pictorial description
Stallboard sign	An advertising device located below the ground level window of a building.	
Structure sign	An advertising device painted or otherwise affixed to any structure, which is not a building.	
Written roof sign	An advertising device painted or otherwise affixed to the roof cladding of a building.	
Three dimensional replica object or shape sign	An advertising device that replicates a real world object or shape. The replica may be enlarged, miniaturised or equal in scale and be freestanding or form part of another advertising device.	
Under awning sign	An advertising device attached or suspended under an awning or verandah.	
Window sign	An advertising device painted or otherwise affixed to the exterior or on the inner surface of a glazed area of any window. It includes any devices that are suspended from the window frame. The term does not include product displays or showcases for viewing by pedestrians.	

9.4.1.4 Assessment benchmarks

Table 9.4.1.4.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Requirements for all advertising device types			
General			
PO1	All advertising devices are: (a) compatible with the existing and future planned character of the locality in which they are erected; (b) compatible with the scale, proportion, bulk and other characteristics of buildings, structures, landscaping and other advertising devices on the site; (c) of a scale, proportion and form that is appropriate to the streetscape or other setting in which they are located; (d) sited and designed to: (i) be compatible with the nature and extent of development and advertising devices on adjoining sites; (ii) not interfere with the reasonable enjoyment of adjoining sites; (iii) not unreasonably obstruct lawfully established advertising devices; (iv) not unduly dominate the visual landscape; (v) maintain views or vistas of public value; and (vi) protect the visual amenity of scenic routes and lookouts; (e) designed, sited and integrated to avoid the proliferation of visual clutter.	**AO1.1**	The advertising device complies with the specific requirements of Table 9.4.1.4.2 Requirements for particular advertising devices.
		AO1.2	Advertising devices, other than billboards, must advertise a lawful business, product or service offered on the subject premises.
PO2	Frequent and large advertising devices along key scenic gateways are avoided.	**AO2.1**	Not more than two billboard advertising devices are permitted per 10km of scenic corridors along Gregory Cannon Valley Road, Conway Road, Crystal Brook Road, Kings Beach Road or Bowen-Developmental Road between Bogie River and Strathmore Road. Note - This includes the distance, by road, to billboard advertising devices located just outside of scenic corridors.

Performance Outcomes		Acceptable Outcomes	
			Editor's note – The full length of the above-mentioned roads are considered scenic corridors, except for Bowen-Developmental Road as described.
Movement and illumination			
PO3	An advertising device: (a) does not incorporate elements that move; and (b) incorporates illumination and lighting only where required and in a manner that does not create nuisance or detract from the amenity of the area.	**AO3.1**	The advertising device does not flash, revolve, move or contain mechanisms that give the impression of movement.
		AO3.2	Moving or variable message advertising devices are not located: (a) within 50 metres of land developed or intended for residential purposes; and (b) adjacent to any road which has a traffic speed of more than 60km/hr.
		AO3.3	The advertising device is not internally or externally illuminated.
Maximum site based sign face area			
PO4	The maximum sign face area of an advertising device does not unduly detract from a building or location where the device is positioned, including: (a) visually dominating the appearance of a building; or (b) being visually intrusive in the streetscape or natural landscape setting.	**AO4.1**	The total sign face area of all advertising devices on a site does not exceed 0.75m² of sign face area per linear metre of the street front boundary length.
Construction standards			
PO5	An advertising device is constructed to an appropriate and safe standard.	**AO5.1**	No support, fixing or other system required for the proper installation of an advertising device is exposed or protrudes in a manner that would create a potential safety hazard.
		AO5.2	The advertising devices are to be constructed from non-reflective materials that incorporate colours and finishes that complement and blend with the surrounding natural and built environment.
Traffic and safety hazards			
PO6	An advertising device does not cause a traffic or safety hazard.	**AO6.1**	The advertising device is not located in a position: (a) that presents a physical danger to pedestrians; (b) that disrupts pedestrian movement along the footpath or from the road to the footpath; or (c) that distracts the attention of motorists or obscures the

Performance Outcomes		Acceptable Outcomes	
			view of drivers or road users.
		AO6.2	An advertising device adjacent to a State controlled road complies with the Department of Transport and Main Roads *Roadside Advertising Manual 2019* and must not: (a) give instructions to traffic; or (b) imitate a traffic control device.
PO7	Advertising devices provide adequate clearance above pedestrian or traffic movement areas to ensure safe and unobstructed movement.	**AO7.1**	Where located above a pedestrian area, the advertising device provides a minimum clearance of: (a) 2.4m if rigid; or (b) 2.1m if flexible.
Requirements for particular advertising device types			
Freestanding signs			
PO8	A Freestanding sign is designed and sited to comply with the general amenity outcomes sought by PO1 of this code.	**AO8.1**	Where related to the use of the site, the total number of all freestanding signs on a site does not exceed: (a) one sign where the street front boundary length of the site is 30m or less; or (b) two signs where the total street front boundary length of the site is more than 30m.
		AO8.2	Where not related to the use of the site, the total number of all freestanding signs on a site does not exceed one (1) sign per three (3) km of frontage.
Requirements for advertising devices associated with a particular use			
Home based business			
PO9	Advertising devices for Home based business uses are of a scale and design consistent with the residential amenity of the locality.	**AO9.1**	Home based business uses are not permitted to display any advertising device other than a Business Name Plate.

Table 9.4.1.4.2 Requirements for particular advertising devices.

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	
Above awning sign	All zones	(a) Orientated at right angles to the building frontage; and (b) centrally located along the frontage of each shop or tenancy.	(a) Does not extend past the width of the awning or verandah; (b) does not exceed a maximum height of 600mm and a maximum depth of 300mm; and (c) is rigidly fixed.	1.4m².	
Awning fascia or return fascia signs	All zones.	Not specified.	(a) Does not exceed a depth of 10mm; and (b) does not project out from either face of the awning.	Does not exceed 100% of the fascia.	
Blind signs	All zones.	Not specified.	(a) Is predominantly constructed out of flexible materials; and (b) can be retracted or removed.	Does not exceed 50% of the blind.	
Business name plates	All zones.	Limited to one sign per business entry point.	Displays only the name, occupation, contact details and hours of operation of the business.	1.0m².	
Canopy signs	All zones.	Not applicable.	(a) Does not exceed a height of 600mm; (b) does not project out from the surface of the canopy; and	Does not exceed 50% of the canopy.	

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	
			(c) does not project above or below the canopy.		
Created awning signs	All zones.	Not applicable.	(a) Does not project out from either face of the awning; and (b) does not extend more than 600mm above or below the fascia.	'Created' sign face area not exceeding 25% of the existing awning face area.	
Flush wall signs	All zones.	Do not obscure any window or architectural feature of the building on which it is located.	(a) Does not project more than 300mm from the wall on which it is affixed; and (b) does not project beyond the property boundary, except as an authorised encroachment onto a road reserve.	The lesser of: (a) 30m²; or (b) 20% of the area of the wall.	
Freestanding signs - billboard	The Rural zone, only where adjacent to a State controlled road.	(a) Minimum spacing between freestanding billboard signs is 3km; and (b) situated at least 3m from any adjoining site boundary.	(a) Has a maximum of two sign faces; (b) is mounted as a freestanding structure in a landscaped environment; (c) framework and back of the sign face area are not visible or blend with the surrounding field of view; and (d) has a maximum height of 9m.	9m² per sign face.	

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	
Freestanding signs – Pylon	(a) A centre zone; (b) an industry zone; (c) the Recreation and open space zone; (d) the Community facilities zone; (e) the Mixed use zone; and (f) the Rural zone, only where adjacent to a State controlled road.	(a) Minimum spacing between freestanding signs is: (i) 3km, if erected on land in the Rural zone; or (ii) otherwise, 20m; and (b) is situated at least 3m from any adjoining site boundary.	(a) Has a maximum of two sign faces; (b) is mounted as a freestanding structure in a landscaped environment; (c) framework and back of the sign face area are not visible or blend with the surrounding streetscape or field of view; (d) has a maximum height of 9m; and (e) has a maximum width of 3m.	9m² per sign face.	
Ground signs	All zones.	Minimum spacing between ground signs is 100m.	(a) Is displayed in a landscaped environment; (b) has a maximum of two sign faces; and (c) has a maximum height of 1.5m.	4m² per sign face.	
Hamper signs	All zones.	Not applicable.	(a) Project no more than 300mm from the wall; and (b) does not extend beyond the length of the building wall.	Limited to that area between the door head and the underside of the verandah or awning roof.	
Projecting signs	All zones.	(a) Situated at least 2m from any site boundary; and	Does not project higher than the gutter line of the building.	2m².	

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	
		(b) not more than one projecting sign is erected for the premises.			
Sign written roof sign	Is not erected within the Planning Scheme area.	Not applicable.	Not applicable.	Not applicable.	
Sky sign	Is not erected within the Planning Scheme area.	Not applicable.	Not applicable.	Not applicable.	
Stallboard signs	All zones.	Are designed such that the sign face is recessed inside the Stallboard facing.	Does not project beyond the property boundary, except as an authorised encroachment onto a road reserve.	Limited to the Stallboard area below a street front window.	
Structure signs	(a) A centre zone; (b) an industry zone; and (c) the Mixed use zone.	Not applicable.	(a) Does not project beyond the surface of the structure; and (b) must be on a structure ancillary to the use of the premises.	4m².	
Three dimensional replica object or shape sign	(a) A centre zone; (b) an industry zone; and (c) the Mixed use zone.	Not applicable.	Council may determine to allocate an additional advertising device type and assess against those requirements based on the characteristics of the sign.	The surface area is calculated by taking the largest two dimensional cross section of the object and multiplying by two.	
Under awning signs	(a) A centre zone; (b) an industry zone; and (c) the Mixed use zone.	(a) Oriented at right angles to the building frontage; and (b) centrally located along the frontage of each shop or tenancy,	(a) Is no longer than the width of the awning or verandah; (b) has a maximum height of 600mm and maximum depth of 300mm;	2.5m² per sign face.	

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	
		provided that one additional sign may also be erected at the entrance of an arcade.	(c) has a maximum of two sign faces; and (d) is rigidly fixed.		
Window sign	All zones.	Located on ground storey windows only.	Not applicable	Does not exceed 50% of the window.	

9.4.2 Construction management code

9.4.2.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Construction management code by the tables of assessment in Part 5 (Tables of assessment).

9.4.2.2 Purpose and overall outcomes

(1) The purpose of the Construction management code is to ensure that development works meets the needs of the development and is undertaken in a sustainable manner in accordance with best practice.

(2) The purpose of the Construction management code will be achieved through the following overall outcomes:

(a) works are undertaken such that environmental harm and nuisance resulting from construction activities is avoided or minimised and the environmental values of water are protected;

(b) development is designed and constructed to a standard that meets community expectations, maintains public health and safety, prevents unacceptable off-site impacts and minimises whole of life cycle costs; and

(c) development does not compromise or interfere with the integrity or function of existing utilities, road or infrastructure.

9.4.2.3 Assessment benchmarks

Table 9.4.2.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Construction management			
PO1	Air emissions, noise or lighting arising from construction activities and works do not adversely impact on surrounding areas.	**AO1.1**	Dust emissions do not cause environmental nuisance beyond the boundary of the site.
		AO1.2	Air emissions, including odours, are not detectable at the boundary of the site.
		AO1.3	Noise generating equipment is enclosed, shielded or acoustically treated in a manner which ensures the equipment achieves the environmental values for the acoustic environment and acoustic quality objectives for sensitive receiving environments set out in the *Environmental Protection (Noise) Policy 2008*.
		AO1.4	Outdoor lighting complies with AS4282 (Control of the obtrusive effects of outdoor lighting).
PO2	Construction activities and works are managed such that all reasonable and practicable measures are taken to protect	**AO2.1**	Development is located, designed and constructed in accordance with an Erosion and sediment control plan, prepared

Performance Outcomes		Acceptable Outcomes	
	the environmental values of water and the functionality of stormwater infrastructure from the impacts of erosion, turbidity and sedimentation, both on and downstream of the development site.		in accordance with the requirements specified the PSP SC6.8 WRC development manual.
		AO2.2	The ESPC demonstrates that release of sediment-laden stormwater is avoided the nominated design storm, and minimised when the nominated design storm is exceeded, by addressing design objectives listed below in Table 9.4.2.3.2 Stormwater management design objectives – construction phase.
		AO2.3	Erosion and Sediment control practices (including any proprietary erosion and sediment control products) are designed, installed, constructed, operated, monitored and maintained, and any other erosion and sediment control practices are carried out in accordance with local conditions and appropriate recommendation from a suitability qualified person.
PO3	Construction activities and works are undertaken such that existing utilities, roads and drainage infrastructure: (a) continue to function efficiently; and (b) can be accessed by the relevant authority for maintenance purposes.	**AO3.1**	Existing utilities, roads and drainage infrastructure are protected or relocated in accordance with the standards specified in PSP SC6.8 WRC development manual.
		AO3.2	The costs of any alterations or repairs to utilities, roads and drainage infrastructure are met by the developer.
PO4	Traffic and parking generated during construction activities are well planned and managed.	**AO4.1**	Any traffic or parking generated as a result of construction activities are managed to minimise potential impacts on the amenity of the surrounding area.
PO5	Construction activities and works provide appropriate opportunities for waste minimisation and recycling where possible.	**AO5.1**	Construction activities and works provide for: (a) separation of recyclable material; (b) storage of waste and recyclable material; and (c) collection of waste and recyclable material in a manner that minimises adverse impacts on the amenity and safety of surrounding areas.
Vegetation Clearing			

Performance Outcomes		Acceptable Outcomes	
PO6	Vegetation is protected to ensure that: (a) ecological processes, biodiversity and the habitat values of native flora and fauna are protected and enhanced; (b) ecosystems are protected from weed invasion and edge effects; (c) the functioning and connectivity of biodiversity corridors and fauna movement networks is maintained; (d) the ecological health and integrity of riparian corridors, waterways and wetlands are maintained; (e) soil resources are protected against the loss of chemical and physical fertility through processes, such as erosion, mass movement, salinity and water logging; and (f) vegetation of historical, cultural or visual significance is retained.	**AO6.1**	Vegetation clearing, other than exempt vegetation clearing: (a) does not occur; or (b) where any permanent, irreversible loss of identified ecological values occurs due to vegetation clearing, rehabilitation is undertaken in accordance with D2: Site regrading and D9: Landscaping of PSP SC6.8 (WRC development manual). Note— The assessment and deciding of vegetation clearing issues will include but not necessarily be limited to: (a) any current development approval attached to the land which may include conditions or measures relating to vegetation retention or protection; (b) whether the vegetation is specifically protected by a vegetation protection order, covenant, easement or similar legally binding mechanism that seeks to protect the values and functions of recognised significant vegetation; (c) whether the vegetation is identified or referred to in State or Federal legislation; (d) whether the vegetation is located on a prominent hillside, slope or ridgeline; (e) whether vegetation clearing may cause or contribute to erosion or slippage; (f) whether the vegetation is or forms part of a riparian area or other habitat network and is valuable to the functioning of that network; (g) whether the vegetation is or is capable of forming or contributing to a buffer between different land uses; (h) whether the vegetation is or is capable of forming or contributing to a visual buffer, agricultural buffer or a buffer against pollution, light spillage or noise; (i) whether the vegetation contributes to visual amenity, landscape quality or cultural heritage significance; and (j) the likely effectiveness of any proposed rehabilitation measures.
PO7	Vegetation clearing on slopes is minimised to maintain slope stability and prevent erosion and slippage to maintain slope.	**AO7.1**	Vegetation clearing on slopes15% or greater is avoided or where unavoidable, minimised. Note – This may be demonstrated by undertaking a Vegetation management plan in accordance with PSP SC6.2 Environmental features.

Performance Outcomes		Acceptable Outcomes	
PO8	Construction activities and works provide for: (a) the protection of the aesthetic and ecological values of retained vegetation; and (b) impacts on fauna to be minimised.	**AO8.1**	The health and stability of retained vegetation is maintained or enhanced during construction activities by: (a) clearly marking vegetation to be retained with temporary fencing and flagging tape; (b) installing secure barrier fencing around the outer drip line and critical root zone of the vegetation; (c) preventing any filling, excavation, stockpiling, storage of chemicals, fuel or machinery within the fenced protection area; (d) using low impact construction techniques in the vicinity of vegetation to minimise interference with the vegetation; and (e) removing all declared noxious weeds and environmental weeds from the site. Note – This may be demonstrated by undertaking a Vegetation management plan in accordance with PSP SC6.2 Environmental features.
		AO8.2	All works carried out in the vicinity of retained vegetation comply with D9: Landscaping of PSP SC6.8 WRC development manual and AS4970 (Protection of trees on development sites) and AS4687 (Temporary fencing and hoarding).
PO9	Vegetation clearing activities do not directly, indirectly or cumulatively interfere with, or have a worsening effect on, natural stormwater flows within the site.	**AO9.1**	Following any vegetation clearing, natural stormwater flows within the site are identified, captured and diverted to a lawful point of discharge.
Non-tidal artificial waterway			
PO10	The establishment of a non-tidal artificial waterway must provide a deed of agreement for the management and operation of the waterway.	**AO10.1**	Any non-tidal artificial waterway is managed and operated by a responsible entity for the life of the waterway by deed of agreement that: (a) identifies the waterway; (b) states a period of responsibility for all entities; (c) states a process for any transfer of responsibility for the waterway; (d) states required actions under the agreement for

Performance Outcomes		Acceptable Outcomes	
			monitoring the water quality of the waterway and all receiving waters; (e) states required actions under the agreement for maintaining the waterway, including any relevant conditions of a development approval; and (f) identifies funding sources for the above, such as bonds or levies.
PO11	Non-tidal artificial waterways are managed and operated by suitably qualified persons to achieve water quality objectives in natural waterways.	**AO11.1**	Any non-tidal artificial waterway is designed, constructed and managed by a suitably qualified Registered Professional Engineer Queensland (RPEQ) with experience in establishing and managing artificial waterways to achieve relevant water-quality objectives, including: (a) aquatic weeds are managed in any non-tidal artificial waterway to achieve a low percentage of coverage of the water surface area (less than 10%); and (b) pests and vectors, such as mosquitoes, are managed through avoiding stagnant water areas, establishing native fish predators or any other best practices for monitoring and treatment.
		AO11.2	Wastewater and stormwater discharge in waterways is managed to avoid, or minimise, the release of nutrients of concern to minimise the occurrence, frequency and intensity of coastal algal blooms. Note – nutrients of concern are included in the PSP 6.2.6 (Stormwater Management) and WRC Stormwater Quality Guidelines.
PO12	Non-tidal artificial waterways are designed to protect biodiversity and environmental values.	**AO12.1**	Any non-tidal artificial waterway must be designed and managed for all of the following functions: (a) aesthetic landscaping and recreation; (b) flood management;

Performance Outcomes		Acceptable Outcomes	
			(c) stormwater harvesting as part of an integrated water cycle management plan; or (d) aquatic habitat.
		AO12.2	The quality and integrity of declared fish habitat areas and water entering them is maintained.
PO13	Non-tidal artificial waterways are located in a way that is compatible with the land use constraints of the site and do not cause adverse impacts on the quality and integrity of water upstream or downstream properties and catchments, including the Great Barrier Reef Marine Park.	**AO13.1**	If the proposed development involves a non-tidal artificial waterway: (a) environmental values in existing downstream waterways and associated habitats are protected; (b) there are no adverse impacts on the long-term stability of the bed and banks of the waterway; (c) groundwater recharge areas are not affected; (d) the location of the waterway incorporates low lying areas of a catchment connected to an existing waterway; (e) existing areas of ponded water are included; and (f) non-tidal artificial waterways are located: (i) outside natural wetlands and any associated buffer areas; (ii) to minimise disturbing soils or sediments; and (iii) to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazard areas.
PO14	A non-tidal artificial waterway is located in a way that is compatible with existing tidal waterways.	**AO14.1**	Where a non-tidal artificial waterway is located adjacent to, or is connected to, a tidal waterway by means of a weir, lock, pumping system or similar: a) there is sufficient flushing or a tidal range of >0.3m; b) any tidal flow alteration does not adversely impact on the tidal waterway; or c) there is no introduction of salt water into freshwater environments.

Table 9.4.2.3.2 Stormwater management design objectives – construction phase

Issue	Design Objectives
Drainage control	1. Manage stormwater flows around or through areas of exposed soil to avoid contamination. 2. Manage sheet flows in order to avoid or minimise the generation of rill or gully erosion. 3. Provide stable concentrated flow paths to achieve the Construction phase - stormwater management design objectives for temporary drainage works (Table 9.4.2.3.3). 4. Provide emergency spillways for sediment basins to achieve the Construction phase - stormwater management design objectives for emergency spillways on temporary sediment basins (Table 9.4.2.3.4).
Erosion control	1. Stage clearing and construction works to minimise the area of exposed soil at any one time. 2. Effectively cover or stabilise exposed soils prior to predicted rainfall. 3. Prior to completion of works for the development, and prior to removal of sediment controls, all site surfaces must be effectively stabilised using methods which will achieve effective short-term stabilisation.
Sediment control	1. Direct runoff from exposed site soils to sediment controls that are appropriate to the extent of disturbance and level of erosion risk. 2. All exposed areas greater than 2500m² must be provided with sediment controls which are designed, implemented and maintained to a standard which would achieve at least 80% of the average annual runoff volume of the contributing catchment treated (i.e. 80% hydrological effectiveness) to 50mg/L Total Suspended Solids (TSS) or less, and pH in the range (6.5–8.5).
Water quality	1. Remove gross pollutants and litter. 2. Avoid the release of oil or visible sheen to released waters. 3. Dispose of waste containing contaminants at authorised facilities.
Waterway stability and flood flow management	1. Where measures are required to meet post-construction waterway stability objectives (specified in WRC Stormwater Quality Guideline), these are either installed prior to land disturbance and are integrated with erosion and sediment controls, or equivalent alternative measures are implemented during construction. 2. Earthworks and the implementation of erosion and sediment controls are undertaken in ways which ensure flooding characteristics (including stormwater quantity characteristics) external to the development site are not worsened during construction for all events up to and including the 1 in 100 year ARI (1% AEP).

Table 9.4.2.3.3 Construction phase – stormwater management design objectives for temporary drainage works

Temporary Drainage works	Anticipated operation design life and minimum design storm event		
	<12 months	12-24 months	>24 months
Drainage structure	1 in 2 year ARI/39% AEP	1 in 5 year ARI/18% AEP	1 in 10 year ARI/10% AEP
Where located immediately up-slope of an occupied property that would be adversely affected	1 in 10 year ARI/10% AEP		

by the failure or overtopping of the structure	
Culvert crossing	1 in 1 year ARI/63% AEP

Table 9.4.2.3.4 Construction phase – stormwater management design objectives for emergency spillways on temporary sediment basins

Temporary Drainage works	Anticipated operation design life and minimum design storm event		
	<3 months	3-12 months	>12 months
Emergency spillways on temporary sediment basins	1 in 10 year ARI/10% AEP	1 in 20 year ARI/5% AEP	1 in 50 year ARI/2% AEP

9.4.3 Excavation and filling code

9.4.3.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Excavation and filling code by the tables of assessment in Part 5 (Tables of assessment).

9.4.3.2 Purpose and overall outcomes

(1) The purpose of the Excavation and filling code is to ensure that development works meets the needs of the development and is undertaken in a sustainable manner in accordance with best practice.

(2) The purpose of the Excavation and filling code will be achieved through the following overall outcomes:

(a) excavation and filling is completed to a standard that meets community expectations, maintains public health and safety, prevents unacceptable off-site impacts and minimises whole of life cycle costs; and

(b) excavation and filling does not adversely or unreasonably impact on the natural environment, drainage conditions or adjacent properties.

9.4.3.3 Assessment benchmarks

Table 9.4.3.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
PO1	Filling or excavation does not prevent or create difficult access to the property.	**AO1.1**	Driveways are able to be constructed and maintained in accordance with the requirements of the D2: Site regrading and S1: Earthworks of PSP SC6.8 WRC development manual.
PO2	Excavation and filling: (a) does not cause environmental harm; (b) does not impact adversely on visual amenity or privacy; (c) maintains natural landforms as far as possible; and (d) is stable in both the short and long term.	**AO2.1**	Development provides that: (a) on sites of: (i) 15% slope or more, the extent of excavation (cut) and fill does not involve a total change of more than 1.5m relative to the natural ground level at any point; or (ii) in other areas, the extent of excavation (cut) and fill does not involve a total change of more than 1.0m relative to the natural ground level at any point; (b) no part of any cut or fill batter is within 1.5m of any property boundary except cut and fill involving a change in ground level of less than 200mm that does

Performance Outcomes		Acceptable Outcomes	
			not necessitate the removal of any vegetation; (c) retaining walls are no greater than 1.0m high; (d) retaining walls are constructed a minimum 150mm from property boundaries; (e) all stored material is: (i) contained wholly within the site; (ii) located in a single manageable area that does not exceed 50m^2; (iii) located at least 10m from any property boundary; and (f) any batter or retaining wall is structurally adequate.
PO3	Filling or excavation does not interfere with natural stormwater flows.	**AO3.1**	Any filling or excavation does not restrict or interfere with overland flow.
PO4	Filling or excavation does not directly, indirectly or cumulatively change flood characteristics which may cause adverse impacts external to the development site.	**AO4.1**	Development does not result in a reduction in flood storage capacity.
		AO4.2	Development does not change flood flows, velocities or levels external to the development site.
PO5	Filling or excavation does not result in any contamination of land or water, or pose a health or safety risk to users and neighbours of the site.	**AO5.1**	Development provides that: (a) no contaminated material is used as fill; (b) for excavation, no contaminated material is excavated or contaminant disturbed; and (c) waste materials are not used as fill, including: (i) commercial waste; (ii) construction/demolition waste; (iii) domestic waste; (iv) garden/vegetation waste; and (v) industrial waste.

9.4.4 Healthy Waters Code

9.4.4.1 Application

This code applies to assessable development identified as requiring assessment against the Healthy waters code by the table of assessment in Part 5 (Tables of Assessment) and involves:

(1) a material change of use for an urban purpose on a premises 2,500m² or greater in size that will result in:

(a) six or more dwellings; or

(b) an impervious area greater than 25% of the net developable area;

(2) reconfiguring a lot for an urban purpose on a premises 2,500m² or greater in size that will result in six or more lots, as a total of all stages of the development;

(3) operational works for an urban purpose that involves disturbing a land area 2,500m² or greater in size; or

(4) development located wholly outside the PIA that involves:

(a) a material change of use for Intensive animal industry, Medium impact industry, High impact industry, Special industry, Extractive industry, Motor sport facility or Renewable energy facility;

(b) a material change of use for Utility installation that involves waste management facilities or sewerage, drainage or stormwater services; or

(c) reconfiguring a lot to create six or more lots as a total of all stages of the development, if any resultant lot is less than 16 hectares in size and any of the lots created will rely on on-site wastewater treatment.

9.4.4.2 Purpose and Overall Outcomes

(1) The purpose of the Healthy waters code is to ensure that development layout and sustainable stormwater management infrastructure protects water quality, public health and environmental values in waterways, including ephemeral and perennial streams, creeks, rivers, lakes, estuarine areas, bays and the Great Barrier Reef, and integrates with the character of the area.

(2) The purpose of the Healthy waters code will be achieved through the following overall outcomes:

(a) development is located, designed, constructed and established to:

(i) protect and enhance the environmental values and flow regimes of waterways, wetlands, lakes and ground waters;

(ii) reflect the regional climate and the site's landscape characteristics;

(iii) enhance biodiversity, landscape and recreational values;

(iv) achieve acceptable maintenance, renewal and adaptation costs and reduce whole-of-lifecycle costs;

(v) protect public health and safety; and

(vi) minimise waste.

9.4.4.3 Assessment benchmarks

Table 9.4.4.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Stormwater quality			
PO1	Development protects or enhances the environmental values and water quality objectives of receiving waters or buffer areas within or downstream of a site.	**AO1.1**	Development achieves the water quality objectives specified in the WRC Stormwater Quality Guideline. Note – This may be demonstrated by preparing a Stormwater quality management plan in accordance with PSP SC6.2.6 Stormwater management plan.
Hydrology and waterway stability			
PO2	Development prevents increased channel bed and bank erosion in waterways by limiting changes in flow rate and flow duration within receiving waters.	**AO2.1**	Development achieves the waterway stability objectives specified in the WRC Stormwater Quality Guideline. Note – This may be demonstrated by preparing a Stormwater quality management plan in accordance with PSP SC6.2.6 Stormwater management plan.
Infrastructure			
PO3	Stormwater management devices are designed to: (a) minimise health and safety hazards; (b) minimise maintenance, renewal, adaptation costs and the requirement for specialised equipment or maintenance techniques; (c) be visually integrated into the development; and (d) enhance biodiversity.	**AO3.1**	Development achieves the integrated design objectives specified in the WRC Stormwater Quality Guideline. Note – This may be demonstrated by preparing a Stormwater quality management plan in accordance with PSP SC6.2.6 Stormwater management plan.
PO4	Stormwater management systems are established and maintained during the maintenance period to ensure optimal vegetation growth and achieve the design objectives at the end of the maintenance period.	**AO4.1**	Construction, establishment and maintenance of stormwater management systems is undertaken in accordance with the WRC Stormwater Quality Guideline and PSP SC6.8 (WRC Development manual).
Wastewater requirements			
PO5	The development does not discharge wastewater, unless demonstrated to be best practice environmental management.	**AO5.1**	A WWMP is prepared by a suitably qualified person and addresses: (a) wastewater type; (b) climatic conditions; (c) WQO; and (d) best-practice environmental management.

Performance Outcomes		Acceptable Outcomes	
		AO5.2	The WWMP provides that wastewater is managed in accordance with a waste management hierarchy that: a) avoids wastewater discharges to waterways; or b) if wastewater discharge to waterways cannot practicably be avoided, development minimises wastewater discharge to waterways by re-use, recycling, recovery and treatment for disposal to sewer, surface water or groundwater.
Non-tidal artificial waterway			
PO6	The establishment of a non-tidal artificial waterway must provide a deed of agreement for the management and operation of the waterway.	**AO6.1**	Any non-tidal artificial waterway is managed and operated by a responsible entity for the life of the waterway by deed of agreement that: (g) identifies the waterway; (h) states a period of responsibility for all entities; (i) states a process for any transfer of responsibility for the waterway; (j) states required actions under the agreement for monitoring the water quality of the waterway and all receiving waters; (k) states required actions under the agreement for maintaining the waterway, including any relevant conditions of a development approval; and (a) identifies funding sources for the above, such as bonds or levies.
PO7	Non-tidal artificial waterways are managed and operated by suitably qualified persons to achieve water quality objectives in natural waterways.	**AO7.1**	Any non-tidal artificial waterway is designed, constructed and managed by a suitably qualified Registered Professional Engineer Queensland (RPEQ) with experience in establishing and managing artificial waterways to achieve relevant water-quality objectives, including: (c) aquatic weeds are managed in any non-tidal artificial waterway to achieve a low percentage of coverage of the water surface area (less than 10%); and (a) pests and vectors, such as mosquitoes, are managed

Performance Outcomes		Acceptable Outcomes	
			through avoiding stagnant water areas, establishing native fish predators or any other best practices for monitoring and treatment.
		AO7.2	Wastewater and stormwater discharge in waterways is managed to avoid, or minimise, the release of nutrients of concern to minimise the occurrence, frequency and intensity of coastal algal blooms. Note – nutrients of concern are included in the PSP 6.2.6 (Stormwater Management) and WRC Stormwater Quality Guidelines.
PO8	Non-tidal artificial waterways are designed to protect biodiversity and environmental values.	**AO8.1**	Any non-tidal artificial waterway must be designed and managed for all of the following functions: (e) aesthetic landscaping and recreation; (f) flood management; (g) stormwater harvesting as part of an integrated water cycle management plan; or (a) aquatic habitat.
		AO8.2	The quality and integrity of declared fish habitat areas and water entering them is maintained.
PO9	Non-tidal artificial waterways are located in a way that is compatible with the land use constraints of the site and do not cause adverse impacts on the quality and integrity of water upstream or downstream properties and catchments, including the Great Barrier Reef Marine Park.	**AO9.1**	If the proposed development involves a non-tidal artificial waterway: (g) environmental values in existing downstream waterways and associated habitats are protected; (h) there are no adverse impacts on the long-term stability of the bed and banks of the waterway; (i) groundwater recharge areas are not affected; (j) the location of the waterway incorporates low lying areas of a catchment connected to an existing waterway; (k) existing areas of ponded water are included; and (l) non-tidal artificial waterways are located: (i) outside natural wetlands and any associated buffer areas; (ii) to minimise disturbing soils or sediments; and

Performance Outcomes		Acceptable Outcomes	
			to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazard areas.
PO10	A non-tidal artificial waterway is located in a way that is compatible with existing tidal waterways.	**AO10.1**	Where a non-tidal artificial waterway is located adjacent to, or is connected to, a tidal waterway by means of a weir, lock, pumping system or similar: d) there is sufficient flushing or a tidal range of >0.3m; e) any tidal flow alteration does not adversely impact on the tidal waterway; or there is no introduction of salt water into freshwater environments.

9.4.5 Infrastructure code

9.4.5.1 Application

This code applies to assessable development identified as requiring assessment against the Infrastructure code by the tables of assessment in Part 5 (Tables of assessment).

9.4.5.2 Purpose and overall outcomes

(1) The purpose of the Infrastructure code is to ensure that development works and the provision of infrastructure and services meets the needs of the development, and is undertaken in a sustainable manner in accordance with best practice.

(2) The purpose of the Infrastructure code will be achieved through the following overall outcomes:

(a) infrastructure networks that provide basic and essential services and facilities to local communities are able to meet the planned increase in demand resulting from a planned increase in development density;

(b) development is provided with an appropriate level of water, wastewater treatment and disposal, drainage, energy and communications infrastructure and other services;

(c) infrastructure is designed, constructed and provided in a manner which maximises resource efficiency and achieves acceptable maintenance, renewal and adaptation costs;

(d) infrastructure is integrated with surrounding networks; and

(e) development over or near infrastructure does not compromise or interfere with the integrity of the infrastructure.

9.4.5.3 Assessment benchmarks

Table 9.4.5.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Infrastructure, services and utilities			
PO1	Development is provided with infrastructure, services and utilities appropriate to its location and setting and commensurate with its needs.	**AO1.1**	Where available, development is provided with appropriate connection to reticulated sewerage, water supply, stormwater drainage, electricity, telecommunications and gas services, where available in the street, at no cost to the Council, including provision by way of dedicated road, public reserve or by way of easements to ensure continued access is available to these services.
		AO1.2	In an urban area, electricity infrastructure is provided underground where: (a) five or more new lots are created; (b) a new road is created; or (c) there is existing underground power in the

Performance Outcomes		Acceptable Outcomes	
			vicinity of the development site.
		AO1.3	Where reticulated sewerage is not available, an on-site treatment and disposal system is provided that complies with the requirements of the *Queensland Plumbing and Wastewater Code.*
		AO1.4	Where reticulated water supply is not available, development is provided with adequate on-site rainwater collection through: (a) a potable water supply or water potable storage collection system, having a minimum of 70,000 litres; or (b) development undertakes an on-site water needs assessment to determine water usage specific to the on-site uses. Note - Development is required to meet the firefighting requirements of the Building Code of Australia, independent of the supplies listed above. Note - Any potable water supply must be in accordance with the *Public Health Act 2005.*
PO2	Development provides for infrastructure, services and utilities that are planned, designed and constructed in a manner which: (a) ensures appropriate capacity to meet the current and planned future needs of the development; (b) is integrated with and efficiently extends existing networks; (c) minimises risk to life and property; (d) avoids ecologically important areas; (e) minimises risk of environmental harm; (f) achieves acceptable maintenance, renewal and adaptation costs; (g) can be easily and efficiently maintained; (h) minimises potable water demand and wastewater production; (i) ensures the ongoing construction or operation of	**AO2.1**	Infrastructure is planned, designed and constructed with PSP SC6.8 WRC development manual for development works, or where applicable, the requirements of the service provider.
		AO2.2	Development occurs in a logical sequence and facilitates the efficient and timely provision of infrastructure and services, taking into account the capacity of existing and future infrastructure.
		AO2.3	Compatible public utility services are co-located in common trenching, in order to minimise the land required and costs for underground services.
		AO2.4	Infrastructure, services and utilities are located and aligned to:

Performance Outcomes		Acceptable Outcomes	
	the development is not disrupted; (j) where development is staged, each stage is fully serviced before a new stage is released; (k) ensures adequate clearance zones are maintained between utilities and dwellings to protect residential amenity and health; and (l) minimises visual and amenity impacts.		(a) avoid disturbance of ecologically important areas; (b) minimise earthworks; and (c) avoid crossing waterways or wetlands.
		AO2.5	Where the crossing of a waterway or wetland cannot be avoided tunnel boring techniques are used to minimise disturbance and disturbed areas are reinstated and revegetated on completion of works.
		AO2.6	The selection of materials used in the construction of infrastructure is suitable, durable, easy to maintain and cost effective, taking into account the whole of life cycle cost, and achieves best practice environmental management and energy savings.
		AO2.7	Access easements for maintenance purposes are provided over Council infrastructure within privately owned land.
PO3	Short-term accommodation, Multi-unit uses, mixed use development with two or more uses on-site and Reconfiguration of a lot involving a private road: (a) provides an effective waste system for anticipated waste generation; (b) mitigates operational and amenity impacts of waste collection; and (c) minimises the proliferation of individual wheelie bins for collection at the road frontage of the development through a Waste management plan. Note – This may be demonstrated by undertaking a Waste management plan in accordance with PSP SC6.9 (Waste management policy).	**AO3.1**	A Waste management plan is developed in accordance with PSP SC6.9 (Waste management policy) for a: (a) residential subdivision with 4 or more lots; (b) Multiple dwelling; (c) Short-term accommodation; (d) Relocatable home park; (e) Retirement facility; (f) Tourist park; (g) Rooming accommodation; (h) Resort complex; or (i) Mixed use development with two or more uses onsite.
Community infrastructure			
PO4	Development involving essential infrastructure for community and/or services remains functional to serve community need during and immediately after a flood event.	**AO4.1**	Development identified in the Table 8.2.9.3.3 (Flood immunity for community infrastructure and services) is provided with the defined Level of immunity and: (a) is designed, sited and operated to avoid adverse impacts on the community or the environment due to the

Performance Outcomes		Acceptable Outcomes	
			impacts of flooding on infrastructure, facilities or access and egress routes; (b) retains essential site access during a flood event; and (c) is able to remain functional even when other infrastructure or services may be compromised in a flood event. Note - Essential community infrastructure is defined in the State Planning Policy 2017. Note - This may be demonstrated by preparing a Flood hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
Stormwater management infrastructure			
PO5	Development provides for the effective drainage of lots and roads in a manner that: (a) maintains the pre-existing or natural flow regime; (b) effectively manages stormwater quality and quantity; (c) prevents increased channel bed and bank erosion in waterways; and (d) ensures no adverse impacts on receiving waters, adjacent properties on surrounding land.	**AO5.1**	The development of stormwater management infrastructure is designed in accordance with Stormwater drainage of PSP SC6.8 WRC development manual.
Works over or near sewerage, water and stormwater drainage infrastructure			
PO6	Building or operational work near or over the Council's stormwater infrastructure and/or sewerage and water infrastructure: (a) protects the infrastructure from physical damage; and (b) allows ongoing necessary access for maintenance purposes.	**AO6.1**	Building or operational work near or over the Council's stormwater infrastructure and/or sewerage and water infrastructure complies with the PSP SC6.8 WRC development manual.
Fire services in developments accessed by common private title			
PO7	Hydrants are located in positions that will enable fire services to access water safely, effectively and efficiently.	**AO7.1**	Residential streets and common access ways within a common private title should have hydrants placed at intervals of no more than 120m and at each intersection. Hydrants may have a single outlet and should be situated above or below ground.
		AO5.2	Commercial and industrial streets and access ways within streets serving commercial properties, such as factories,

Performance Outcomes		Acceptable Outcomes	
			warehouses and offices, should be provided with above or below ground fire hydrants at not more than 90m intervals and at each street intersection. Above ground fire hydrants should have dual valved outlets.
PO8	Road widths and construction within the development are adequate for fire emergency vehicles to gain access to a safe working area close to dwellings and near water supplies, whether or not on-street parking spaces are occupied.	**AO8.1**	Road access minimum clearances of 3.5m wide and 4.8m high are provided for safe passage of emergency vehicles.
PO9	Hydrants are suitably identified, so that fire services can locate them at all hours.	**AO9.1**	Hydrants are identified as specified in the *Traffic and Road Use Management Manual, Volume 1: Guide to traffic management*, Part 10: Traffic Control and Communication Devices, Section 6.7.2-1 Fire hydrant indication system. Editor's Note - Document available on the Department of Transport and Main Roads Website.

9.4.6 Landscaping code

9.4.6.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Landscaping code by the tables of assessment in Part 5 (Tables of assessment).

9.4.6.2 Purpose and overall outcomes

(1) The purpose of the Landscaping code is to ensure that landscaping is provided in a manner which is consistent with the desired character and amenity of the Whitsunday region.

(2) The purpose of the Landscaping code will be achieved through the following overall outcomes:

(a) development provides landscaping that retains, as far as practicable, existing vegetation and topographic features for their biodiversity, ecological, wildlife habitat, recreational, aesthetic and cultural values;

(b) development provides landscaping that creates new landscape environments that co-ordinate and complement the natural elements of climate, vegetation, drainage, aspect, landform and soils;

(c) development provides landscaping that successfully integrates the built form with the local landscape character, enhances the tropical qualities of the Whitsunday region and mitigates the impact of increased urbanisation;

(d) development provides landscaping that minimises the consumption of energy and water, and encourages the use of local native plant species and landscape materials;

(e) public landscaping works are provided in a manner consistent with Council's relevant requirements and standards;

(f) development provides landscaping that enhances personal safety, security and universal access;

(g) development provides landscaping that is functional and durable; and

(h) development provides landscaping that is practical and economic to maintain with on-going management considered as an integral part of the overall landscape design.

9.4.6.3 Assessment benchmarks

Table 9.4.6.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Landscape design generally			
PO1	Landscaping is established on the site to maintain the amenity enjoyed by people using the premises and the adjoining premises.	**AO1.1**	Development provides for landscaping that contributes to and creates a high-quality landscape character for the site, street, local area and the Whitsunday region, by: (a) promoting the character of the Whitsunday region as a tropical environment;

Performance Outcomes		Acceptable Outcomes	
			(b) being sensitive to site conditions, natural landforms and landscape characteristics; (c) protecting and enhancing native vegetation, wildlife habitat and ecological values; (d) protecting and framing significant views, vistas and areas of high scenic quality; and (e) being of an appropriate scale to integrate successfully with development. (f) Note – This may be demonstrated by preparing a site specific Landscaping plan in accordance with PSP SC6.4 Landscaping.
Retention of vegetation and topographic features in layout and design of landscaping			
PO2	Development provides landscaping that, as far as practicable, retains, protects and enhances existing trees, vegetation and topographic features of ecological, recreational, aesthetic and cultural value.	**AO2.1**	Existing remnant vegetation and native non-remnant vegetation is retained and integrated within the landscaping concept of new development.
		AO2.2	Where established vegetation is removed or damaged to make way for new development, it is replaced with vegetation of the same or similar species within the development site.
Character and amenity			
PO3	Development provides for landscaping that protects and enhances the character and amenity of the site, streetscape and surrounding locality.	**AO3.1**	Built form is softened and integrated with the broader landscape by structured landscape planting.
		AO3.2	Unless otherwise specified, car parks and driveways are screened by: (a) a planting bed of at least 1.5m wide where adjacent to an Accommodation activity; or (b) a planting bed of at least 3m wide where adjacent to a street frontage or public open space.
		AO3.3	Car parking areas are provided with a minimum of 1 shade tree for every 4 car parking spaces. All trees are to be planted within a deep natural ground/structured soil garden bed, protected by raised kerbs,

Performance Outcomes		Acceptable Outcomes	
			wheel stops or bollards as required.
		AO3.4	Front boundary fences and walls are articulated by recesses that: (a) allow for dense vegetative screening; and (b) have a minimum depth of 1m to the full height of the fence or wall for at least 50% of the length.
		AO3.5	Storage and utility areas are completely screened by vegetation or built screens, except for access ways to these areas.
Streetscape landscaping			
PO4	Development provides for a streetscape landscaping that contributes to the character and amenity of surrounding development and assists in fostering social interaction.	**AO4.1**	Streetscape landscaping: (a) incorporates shade trees; (b) contributes to the continuity and character of existing and proposed streetscapes; (c) in established urban areas, incorporates landscape design, such as planting, pavements, furniture and structures, that reflect and enhance the character of the streetscape; (d) in new or establishing urban areas, incorporates landscape design, such as planting, pavements, furniture and structures, that is consistent with and complementary to the natural landscape character of the local area; and (e) incorporates garden planting in conjunction with street tree planting at major junctions only.
Vertical landscaping			
PO5	Development involving green roofs, walls or podiums; uses plants that are resilient to natural hazards and minimises maintenance requirements through design.	**AO5.1**	Development involving green roofs, podiums or walls incorporates the capture and re-use of stormwater or specifically designed irrigation systems to reduce maintenance.
		AO5.2	Plants are of a resilient species specific to the local climatic conditions and are planted in a structure designed to protect the root ball and enable regrowth following severe weather events.
Species selection			

Performance Outcomes		Acceptable Outcomes	
PO6	Development provides for landscaping, which incorporates plant species that are: (a) fit for the intended purpose; (b) suited to local environmental conditions; (c) non-toxic; and (d) not declared environmental weeds.	**AO6.1**	Landscaping planting utilises locally endemic and/or other native species, in accordance with the PSP SC6.4 Landscaping.
		AO6.2	Species that have the potential to become an environmental weed or are known to be toxic to people or animals are not used in any landscaping works.
Safety, security and accessibility			
PO7	Development provides for landscaping that: (a) clearly defines public and private spaces; (b) promotes passive surveillance of public and semi-public spaces; (c) enhances personal safety and security; and (d) provides universal and equitable access.	**AO7.1**	Development provides landscaping, which: (a) defines territory and ownership of public, common, semi-private and private space and does not create ambiguous spaces that encourage loitering; (b) allows passive surveillance into, and visibility within, communal recreational spaces, children's play areas/playgrounds, pathways and car parks; (c) incorporates trees with a minimum of 1.8m clear trunk and understorey planting that is a maximum of 0.3m in height where located immediately adjacent to pathways, entries, parking areas, street corners, street lighting and driveways; (d) minimises the use of dense shrubby vegetation over 1.5m in height along street frontages and adjacent to open space areas; (e) incorporates pedestrian surfaces that are slip-resistant, stable and trafficable in all weather conditions; (f) provides security and pathway level lighting to site entries, driveways, parking areas, building entries and pedestrian pathways; and (g) provides universal access in accordance with AS1428 Design for access and mobility.
		AO7.2	Fences and screens to street frontages are visually permeable for 50% of their face area to provide opportunities for passive surveillance.

Performance Outcomes		Acceptable Outcomes	
Climate control and energy efficiency			
PO8	Development provides landscaping that assists in passive solar access, the provision of shade, microclimate management and energy conservation.	**AO8.1**	Landscaping elements are positioned to shade walls, windows and outdoor areas from summer sun.
		AO8.2	Landscaping allows winter sun access to living areas, north facing windows and public spaces.
		AO8.3	Landscaping, fences and walls allow exposure of living and public areas to prevailing summer breezes and protection against winter winds.
Water sensitive urban design			
PO9	Development provides for landscaping that promotes the efficient and sensitive use of water through appropriate plant selection, layout and by maximising opportunities for water infiltration.	**AO9.1**	Landscaping maximises the infiltration and conservation of water by: (a) selecting locally endemic and/or other native plant species and appropriate turf species that require minimal irrigation after establishment; (b) grouping plants and street trees, where appropriate, in mulched beds; (c) minimising impervious surfaces; (d) incorporating semi-porous pavement surfaces as an alternative to impervious surfaces; and (e) draining hard surface areas to landscaped areas and water sensitive urban design devices.
PO10	Development provides for landscaping of stormwater management infrastructure that: (a) reduces maintenance costs and requirements; (b) integrates visually with its surroundings; and (c) facilitates the long-term health and performance of that infrastructure.	**AO10.1**	Landscaping of stormwater management infrastructure is in accordance with the WRC Stormwater Quality Guideline.
Landscaped separation buffers and environmental management			
PO11	Development provides for landscaped separation buffers that: (a) effectively protect matters of environmental significance or the edges of existing native vegetation; and (b) provide separation between incompatible land uses or between major	**AO11.1**	The ecological values of a site or adjoining land is protected and enhanced by landscaping and landscape buffers. Note – This may be demonstrated by preparing a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 Landscaping.
		AO11.2	Where a landscaped separation buffer is required, it is designed,

Performance Outcomes		Acceptable Outcomes	
	infrastructure elements, such as State-controlled roads, and land uses.		constructed and maintained to achieve visual screening and acoustic attenuation of major infrastructure elements. Note – This may be demonstrated by preparing a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 Landscaping.
Traffic safety and infrastructure			
PO12	Development ensures that landscaping does not impede traffic visibility at access points, speed control devices and intersections.	**AO12.1**	Landscaping does not: (a) unreasonably restrict sightlines for vehicles, pedestrians or cyclists; (b) obscure warning signs, information signs or road signs; (c) compromise building foundations, roads and paths; and (d) compromise services such as pipelines, underground cabling and overhead powerlines.
		AO12.2	Where restrictions occur, suitable alternative landscaping is provided.
PO13	Development ensures that landscaping does not adversely impact upon the provision, operation and maintenance of infrastructure.	**AO13.1**	Planting and landscape structures are located to enable tradespersons to access, view and inspect switchboards, substations, service meters and the like.
		AO13.2	Root barriers are installed around tree root balls to minimise the risk of damage to infrastructure, services or utilities.
		AO13.3	Trees and large shrubs are located clear of underground services and utilities and in accordance with D9.07 of PSP SC6.8 WRC development manual.
		AO13.4	Planting in landscaping areas adjacent to electricity substations or high voltage transmission line easements complies with the PSP SC6.8 WRC development manual, in addition to: (a) for Ergon Energy's assets, the Ergon Energy Vegetation management standard; and (b) for Powerlink's assets, Powerlink's Easement co-use guideline and

Performance Outcomes		Acceptable Outcomes	
			Screening your home from powerlines guideline.
		AO13.5	Where restrictions occur, suitable alternative landscaping is provided.
Requirements for Accommodation activities (Dual occupancy, Multi-unit uses, Residential care facility and retirement facility)			
PO14	Development provides for landscaping that contributes to and creates a high-quality landscape for the site and streetscape.	**AO14.1**	A landscaped buffer strip at least 3m wide is provided within the boundaries of the site, adjacent to the full street frontage of the site.
Requirements for Business activities (Business, Child care centre, Relocatable home park and tourist park and Sales office)			
PO15	The development provides streetscape landscaping that creates a high level of comfort, safety and visual attractiveness for users.	**AO15.1**	Streets are provided with turfed verges and constructed footpaths.
		AO15.2	Where provided, street trees are located between footpaths and the street or parking lanes.
		AO15.3	Shade trees are provided throughout public and semi-public spaces and provide shade to footpaths, activity areas and open car parking areas.
		AO15.4	Street furniture, including seats, bollards, grates, grilles, screens and fences, bicycle racks, flag poles, banners, litter bins, telephone booths and drinking fountains, are co-ordinated with other elements of the streetscape.
PO16	The Business activity provides for the premises to be attractively landscaped in a manner that is consistent with the function, location and setting of the premises.	**AO16.1**	A minimum of 10% of the site is provided as landscaped area.
		AO16.2	Landscaping is provided on-site, in accordance with the following: (a) shade trees, low planting and hard landscaping are provided along street frontages not occupied by buildings or driveways; (b) a landscaped buffer strip is provided between the use and any adjacent Accommodation activities, which: (i) has a minimum width of 3m; (ii) is planted with a variety of screening trees and shrubs; (iii) incorporates a minimum 2m high solid screen fence along the full length of the

Performance Outcomes		Acceptable Outcomes	
			common boundary; and (c) planting is provided on top of podium levels and on the roof or roof level of car parking structures. Note – A Landscaping plan may be prepared in accordance with the PSP SC6.4 Landscaping.
Requirements for Industry activities (Extractive industry, Industry and Service station)			
PO17	The development provides streetscape landscaping that creates a high level of comfort, safety and visual attractiveness for users.	**AO17.1**	Streets are provided with turfed verges and constructed footpaths.
PO18	The industrial use incorporates landscaping that: (a) makes a positive contribution to the streetscape; and (b) buffers the development from adjoining sensitive uses.	**AO18.1**	A minimum of 10% of the site is provided as landscaped area.
		AO18.2	Landscaping is provided on-site, in accordance with the following: (a) a 3m landscaping buffer is provided along street frontages not occupied by buildings or driveways; (b) a landscaped buffer strip is provided between the use and any adjacent Accommodation activities, which: (i) has a minimum width of 3m; (ii) is planted with a variety of screening trees and shrubs; (iii) incorporates a minimum 2m high solid screen fence along the full length of the common boundary; and (c) any security fencing is set within or located behind the landscaping strip rather than adjacent to the major road. Note – A Landscaping plan may be prepared in accordance with the PSP SC6.4 Landscaping.

9.4.7 Reconfiguring a lot code

9.4.7.1 Application

This code applies to assessable development:

(a) being reconfiguring a lot; and

(b) identified as requiring assessment against the Reconfiguring a lot code by the tables of assessment in Part 5 (Tables of assessment).

9.4.7.2 Purpose and overall outcomes

(1) The purpose of the Reconfiguring a lot code is to ensure that new lots are configured in a manner which:

(a) is appropriate for their intended use;

(b) is responsive to site constraints;

(c) provides appropriate access; and

(d) supports high quality urban design outcomes.

(2) The purpose of the Reconfiguring a lot code will be achieved through the following overall outcomes:

(a) development provides for lots that are of a size and have dimensions that:

(i) are appropriate for their intended use;

(ii) promote a range of housing types in the case of residential development;

(iii) are compatible with the prevailing character and density of surrounding development; and

(iv) sensitively respond to site constraints;

(b) development provides for lots that have a suitable and safe means of access to a public road;

(c) development provides for reconfiguration that result in the creation of safe and healthy communities by:

(i) incorporating a functional and efficient lot layout that promotes the use of active and public transport;

(ii) incorporating a transport network with a grid or modified grid street pattern that is responsive to, and integrated with, the natural topography of the site, existing or planned adjoining development and supports the circulation of public transport with no, or only minimal, route redundancy;

(iii) avoiding adverse impacts on economic or natural resource areas;

(iv) avoiding adverse impacts on native vegetation, waterways, wetlands and other ecologically important areas present on, or adjoining the site;

(v) avoiding, or if avoidance is not practicable, mitigating the risk to people and property of natural hazards, including hazards posed by bushfire, flooding, coastal erosion/inundation, landslide and steep slopes; and

(vi) providing timely, efficient and appropriate infrastructure, including reticulated water and sewerage, sealed roads, pedestrian and bicycle paths, open space and community facilities in urban areas.

9.4.7.3 Assessment benchmarks

Table 9.4.7.3.1 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Size and dimensions of lots			
PO1	Development provides for the size, dimensions and orientation of lots to: (a) be appropriate for their intended use; (b) be compatible with the preferred character for the zone and local area in which the land is located; (c) where within the Rural zone; maintain the productive use and amenity of rural lands, (d) provide suitable building envelopes and safe pedestrian, bicycle and vehicular access without the need for major earthworks and retaining walls; and (e) take account of, and respond sensitively to, site constraints.	**AO1.1**	Unless otherwise specified in this code or a Local plan code, a lot complies with the minimum lot size specified in Table 9.4.7.3.2 Minimum lot sizes and dimensions.
		AO1.2	Lots are designed to contain the minimum width and depth requirements specified in Table 9.4.7.3.2 Minimum lot sizes and dimensions.
		AO1.3	A lot located on land identified on an overlay map contains a development envelope marked on a plan of development that demonstrates that there is an area sufficient to accommodate the intended purpose of the lot, that is not subject to the constraint or valuable resource or that appropriately responds to the constraint or valuable resource.
		AO1.4	Vehicular and active transport corridors are sensitively designed with the landscape to minimise the need for major earthworks and retaining walls.
		AO1.5	A lot has a development envelope of land with a slope no greater than 15%.
		AO1.6	No additional lots are created on land included in an Extractive resource or Transport route separation area identified on the Overlay map - Extractive resources overlay.
		AO1.7	Lot boundaries are aligned to avoid traversing matters of environmental significance.
Rear Lots			
PO2	A rear lot is created only where: (a) no more than one rear lot is created;	**AO2.1**	The creation of a rear lot: (a) is only permitted behind a lot with direct road frontage;

Performance Outcomes		Acceptable Outcomes	
	(b) the amenity of the surrounding area is not compromised; (c) safe and convenient access is achieved; (d) the lot is capable of containing a suitable building envelope and sufficient area for onsite effluent disposal where relevant; (e) each lot achieves the minimum street frontage and minimum access handle width; and (f) the rear lot provides a waste bin storage area; and (g) is located within a Residential Zone or an Other Zone category.		(b) is not permitted behind another rear lot; and (c) is only located within a Residential zone or Other zone category. Editor's Note - Refer to Zone categories in Table 1.2.1.
		AO2.2	A rear lot must not gain access from a cul-de-sac head.
		AO2.3	Where a rear lot is located in a Residential zone: (a) a minimum unconstrained building envelope of 17m by 17m is capable of being contained entirely within the lot; and (b) if unable to connect to municipal sewer, sufficient area for on-site effluent disposal is provided for. Editor's Note - Refer to Zone categories in Table 1.2.1.
		AO2.4	Access handle fencing is reduced to 1m in height within 6m of the road to allow for clear sightlines when entering and exiting the site.
		AO2.5	Refuse areas for waste bins are appropriately located and screen from the streetscape.
Small residential lots (Lots less than 600m²)			
PO3	To facilitate and encourage urban consolidation and housing diversity, development may provide for small residential lots to be created where: (a) they are within easy walking distance of an activity centre or public transport stop; (b) the development will be consistent with the preferred character for the zone and local area in which the land is located; and (c) the land is fit for purpose and not subject to significant topographic constraints.	**AO3.1**	The small residential lots are located on land included in the Low-medium density residential zone, where the parent lot has a minimum area of 2,000m².
		AO3.2	The land does not have a slope of greater than 10%.
PO4	Small residential lots are dispersed across a development in a configuration that: (a) promotes variety in streetscape character; and	**AO4.1**	Not more than four lots of a particular type, such as small lots, are located in a row.
		AO4.2	A maximum of 50% of all lots within any neighbourhood block are of a particular type, such as small lots.

Performance Outcomes		Acceptable Outcomes	
	(b) avoids an area being dominated by a particular lot type.		
Irregular shaped lots			
PO5	Development provides for irregular shaped lots to be created only where: (a) the creation of regular lots is impractical, such as at a curve in the road; (b) safe access to and from the site can be provided while not adversely impacting on the functionality of the surrounding road network; and (c) the irregular lot is suitable for its intended purpose.	**AO5.1**	Irregular lots are designed to incorporate a building envelope that contains the minimum width and depth requirements specified in Table 9.4.7.3.2 Minimum lot sizes and dimensions.
Boundary Realignment/Access Easement			
PO6	Development ensures that the boundary realignment or creation of an access easement: (a) does not result in the creation of additional lots; (b) is an improvement on the existing situation that creates a more usable lot or protects environmentally significant features; and (c) the amenity of the area is not compromised from the change and existing dwelling(s) are not compromised from either dust and/or noise.	**AO6.1**	A boundary realignment or creation of an access easement results in an improvement to the existing layout whereby the size and dimensions of proposed lots comply more fully with Table 9.4.7.3.2 Minimum lot sizes and dimensions, and of the following, as applicable, is achieved: (a) the rearrangement of lots remedies an existing boundary encroachment by a building, structure or other use areas; (b) in the rural zones, the amenity of the existing dwellings is not compromised in terms of noise and dust: (i) for a new access easement, a vegetation buffer must be planted to screen adjoining sensitive uses; or (ii) for a boundary realignment, meet the requirements of Table 9.3.13.3.3, where adjoining an Intensive rural industry use; (c) the rearranged lots will be made more regular in shape; and (d) access is provided to a lot that previously had no access or an unsuitable access.

Performance Outcomes		Acceptable Outcomes	
Lot layout and site responsive design			
PO7	Development provides for a lot layout and configuration of roads and other transport corridors that sensitively respond to surrounding environmental values, development and any structure planning undertaken by Council.	**AO7.1**	Development layout and configuration responds appropriately to: (a) any Structure plans completed by Council; (b) any areas of environmental significance or natural hazards present on, or adjoining the site; (c) the location and management of natural stormwater flows present on, or adjoining the site; (d) any places of cultural heritage significance or character areas present on, or adjoining the site; (e) any important landmarks, views, vistas or other areas of high scenic value present on, or able to be viewed from the site; (f) creates legible and interconnected movement and open space networks; (g) provides for a grid or modified movement network, which avoids or minimises the use of cul-de-sac; and (h) provides defined edges to public open space and avoids or minimises direct interface between public open space and freehold lots. Note: This may be demonstrated by providing a Structure plan in accordance with PSP SC6.7 (Growth management) Note: A Traffic impact assessment report prepared in accordance with PSP SC6.7 (Growth management) may assist in demonstrating compliance with the performance outcome.
Lot layout and neighbourhood/estate design			
PO8	Development is appropriately planned, encompassing structure planning undertaken by Council, best practice lot layout and neighbourhood/estate design, whilst providing efficient land use pattern and effectively connecting the site with existing or planned development.	**AO8.1**	Development provides for a lot layout and infrastructure configuration that: (a) aligns with any Structure plans completed by Council; (b) provides for the efficient movement of pedestrians, cyclists, public transport and private motor vehicles in that order of priority;

Performance Outcomes		Acceptable Outcomes	
			(c) avoids narrow pathways and/or drainage reserves between lots; (d) provides for the creation of a diverse range of lot sizes capable of accommodating a mix of housing types and other uses required to support the community as appropriate to the zone and, where applicable, local plan area; (e) promotes a sense of community identity and belonging; (f) provides for a high level of amenity having regard to potential noise, dust, odour and lighting nuisance sources; (g) accommodates and provides for the efficient and timely delivery of infrastructure appropriate to the site's context and setting; and (h) avoids the sporadic, or out of sequence, creation of lots. Note: This may be demonstrated by providing a Structure plan in accordance with PSP SC6.7 (Growth management)
Landscaped separation buffers to sensitive land, incompatible uses and infrastructure			
PO9	Development provides for lots to be created in locations that: (a) are adequately buffered to prevent potential adverse impacts on future users of the lots; (b) separate the lots from incompatible uses and infrastructure; and (c) do not create "reverse amenity" situations where the continued operation of existing uses is compromised by the proposed development.	**AO9.1**	Where any part of a lot included in a Residential zone, Emerging community zone or Rural residential zone is adjacent to a Rural or Industry zone or existing Rural or Industry activity the following landscaped separation buffers are provided: (a) 40m from a: (i) Rural zone; (ii) Low impact industry zone; (iii) Medium impact industry zone; (iv) Rural activities; (v) Low impact industry use; (vi) Medium impact industry use; (vii) Research or technology industry; (viii) Service industry use; or

Performance Outcomes		Acceptable Outcomes	
			(ix) Warehouse use; (b) 50m from a: (i) High impact industry zone; or (ii) high impact industry use; (c) 60m from a: (i) Special industry zone; or (ii) Special industry use; and (d) 40m from a: (i) Waterfront and marine industry zone; or (ii) Marine industry use. Note – This may be demonstrated by preparing a site specific Landscaped separation buffer in accordance with PSP SC6.4 Landscaping.
		AO9.2	Where a landscaped separation buffer is required, it is designed, constructed and maintained to achieve visual screening and acoustic attenuation of major infrastructure elements. Note – This may be demonstrated by preparing a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 Landscaping.
Public parks and open space infrastructure			
PO10	Development provides for public parks and open space for the enjoyment of residents and visitors that add to the character and amenity of future and existing surrounding development.	**AO10.1**	Development provides a variety of public parks and open space infrastructure that: (a) provides for a range of passive and active recreation settings and can accommodate adequate facilities to meet the needs of the community; (b) is well distributed and contributes to the legibility, accessibility and character of the locality; (c) creates attractive settings and focal points for the community; (d) benefits the amenity of adjoining land uses; (e) incorporates appropriate measures for stormwater and flood management; (f) facilitates the retention of native vegetation, waterways, wetlands and other ecologically important areas and natural and cultural features;

Performance Outcomes		Acceptable Outcomes	
			(g) facilitates the retention or enhancement of ecological corridors and connections to surrounding areas of open space; (h) is cost effective to maintain; and (i) is dedicated as public land in the early stages of the subdivision. Note—Section 9.4.6 Landscaping code and PSP SC6.8 WRC development manual includes requirements for the design and construction of landscape elements in public parks and open space infrastructure.

Table 9.4.7.3.2 Minimum lot sizes and dimensions

Zone	Minimum lot sizes[1]	Minimum width (Road frontage)[2]	Minimum depth
Major centre	400m²	Not applicable	Not applicable
District centre	400m²	Not applicable	4:1 (depth: width)
Local centre	400m²	Not applicable	4:1 (depth: width)
Neighbourhood centre	400m²	Not applicable	4:1 (depth: width)
Mixed use	800m²	20m	40m
Low density residential	600m²	18m	20m
Low-medium density residential	450m²	15m	20m
Tourist accommodation	800m²	20m	40m
Rural residential	4000m²	40m	50m
Low impact industry	1000m²	20m	50m
Medium impact industry	2000m²	30m	50m
High impact industry	2000m²	30m	50m
Special industry	2000m²	30m	50m
Waterfront and marine industry	4000m²	40m	100m
Environmental conservation and management	Not applicable	Not applicable	Not applicable
Recreation and open space	Not applicable	Not applicable	Not applicable
Community facilities	Not applicable	Not applicable	Not applicable
Rural	100ha	200m	800m
Emerging communities	10ha	100m	400m
Industry investigation	10ha	100m	400m

[1] The area of the access handle is not used in the calculation of a lot area.
[2] A rear lot access handle is not a road frontage.

9.4.8 Transport and parking code

9.4.8.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Transport and parking code by the tables of assessment in Part 5 (Tables of assessment).

9.4.8.2 Purpose and overall outcomes

(2) The purpose of the Transport and parking code is to ensure that transport infrastructure including pathways, public transport infrastructure, roads, parking and service areas, are provided in a manner which meets the needs of the development, whilst promoting active and public transport use and preserving the character and amenity of the Whitsunday region.

(3) The purpose of the Transport and parking code will be achieved through the following overall outcomes:

(a) development is consistent with the objectives of the strategic transport network, which are to:

(i) provide for a highly permeable and integrated movement network;

(ii) improve coordination between land use and transport to maximise the potential for walking, cycling and public transport use and reduce reliance on private motor vehicle travel;

(iii) achieve acceptable levels of access, convenience, efficiency and legibility for all transport users;

(iv) limit road construction to the minimum necessary to meet the endorsed standards of service for the future development of the Whitsunday Region; and

(v) provide for staging of Council's limited trunk road construction program to maximise sustainability;

(b) transport infrastructure is designed and constructed to acceptable standards and operates in a safe and efficient manner that meets community expectations, prevents unacceptable off-site impacts and reduces whole of life cycle costs, including reduced ongoing maintenance costs; and

(c) development provides for on-site parking, access, circulation and servicing areas that are safe, convenient and meet the reasonable requirements of the development.

9.4.8.3 Assessment benchmarks

Table 9.4.8.3.1 Benchmarks for accepted and assessable development

Performance Outcomes		Acceptable Outcomes	
Layout and design of on-site parking and access			
PO1	Development ensures that the layout and design of vehicle access, on-site circulation systems and parking areas are safe, convenient and legible for all users including people with	**AO1.1**	Development provides access driveways, internal circulation and manoeuvring areas, service areas and parking areas that comply with D1: Road geometry of PSP SC6.8 WRC

Performance Outcomes		Acceptable Outcomes	
	disabilities, pedestrians, cyclists and public transport services, where relevant.		development manual and AS2890 (Parking facilities) ensuring: (a) the number and type of vehicles planned for the development can be accommodated on the site; (b) on-site vehicle parking and manoeuvring areas provide for vehicles to enter and leave the site in a forward motion; and (c) a progressive reduction in vehicle speed between the external transport corridor and internal parking spaces, such that lower speeds occur near areas of high pedestrian activity. Editor's note - A roadworks permit may be required if operational works will be undertaken on Council land.
Site access			
PO2	Development ensures that the location and design of any new site access does not interfere with the planned function, safety, capacity and operation of the transport network.	**AO2.1**	The location and design of any new site access complies with D1: Road geometry of PSP SC6.8 WRC development manual, AS2890.1 (Parking facilities: Off-street car parking), AS2890.2 (Parking facilities: Off-street commercial vehicle facilities) and, where applicable, in accordance with the Department of Transport and Main Roads requirements where state roads are affected.
Rear Lots			
PO3	A rear lot is only created where safe and convenient access is achieved.	**AO3.1**	The access handle: (a) has a minimum width of 5m; (b) is created adjacent to the side boundary of the front lot; and (c) is in accordance with standards specified in DG1.17 of the PSP SC6.8 (WRC Development Manual).
On-site car parking			
PO4	Development provides on-site car parking for the demand anticipated to be generated by the development and existing conditions.	**AO4.1**	Development provides on-site car parking spaces at the minimum rates outlined in Table 9.4.8.3.3 Minimum on-site parking requirements. Note—where the calculated number of spaces is not a whole number, the required number of parking spaces is the nearest whole number.

Performance Outcomes		Acceptable Outcomes	
PO5	Development provides for a reasonable portion of the total number of on-site car parking spaces to be wheelchair accessible spaces and to be identified and reserved for such purposes.	**AO5.1**	Development provides the number of parking spaces for people with disabilities, required by the Building code of Australia and, in any case, provides a minimum of one space.
		AO5.2	Parking spaces for people with disabilities and access to them complies with AS1428 (General requirements for access: Buildings) and AS2890.6 (Parking facilities: Off-street parking for people with disabilities).
Service vehicle requirements			
PO6	Development provides sufficient parking and access for service vehicles to meet the needs of the development.	**AO6.1**	Development provides on-site service vehicle parking bays at the minimum rates outlined in Table 9.4.8.3.3 Minimum on-site parking requirements.
		AO6.2	Service vehicle access, manoeuvring and parking is designed in accordance with AS2890.2 (Parking facilities: Off-street commercial vehicle facilities).
PO7	Development provides for driveways, internal circulation areas and service areas to be designed to: (a) ensure that proposed loading, unloading, waste collection and fuel delivery facilities, if required, can satisfactorily accommodate the number and type of service vehicles expected on-site; and (b) the movement of service vehicles on-site and loading and unloading operations do not interfere with on-site amenity and the safe and convenient movement of other vehicles and pedestrians on the site.	**AO7.1**	Driveways, internal circulation areas and service areas are provided to accommodate the nominated design vehicles for each development type.
		AO7.2	Driveways, internal circulation areas, manoeuvring areas, loading and unloading areas and refuse collection facilities are designed and constructed in accordance with D1: Road geometry of PSP SC6.8 WRC development manual and AS2890 (Parking facilities).
Access and parking site access			
PO8	Development is designed such that turning traffic minimises the impact of the development on external traffic systems.	**AO8.1**	Turns to and from the development are designed in accordance with the standards specified in D1: Road geometry of PSP SC6.8 WRC development manual.
PO9	Development provides for sight distances to and from driveways sufficient to ensure safe operation.	**AO9.1**	Available sight distances from driveways comply with the standards specified in D1: Road geometry of PSP SC6.8 WRC development manual.

Performance Outcomes		Acceptable Outcomes	
PO10	Development provides appropriate and sufficient signage to ensure safe and convenient usage of site access systems	**AO10.1**	Appropriate direction, regulatory, warning and information signage and line marking is provided in accordance with the requirements of PSP SC6.8 WRC development manual and the Department of Transport and Main Roads' *Queensland manual of uniform traffic control devices*.

Table 9.4.8.3.2 Benchmarks for assessable development

Performance Outcomes		Acceptable Outcomes	
Layout and design of on-site parking and access			
PO1	Development ensures that the layout and design of vehicle access, on-site circulation systems and parking areas are safe, convenient and legible for all users including people with disabilities, pedestrians, cyclists and public transport services, where relevant.	**AO1.1**	Development provides clearly defined pedestrian paths within and around on-site vehicle parking areas that: (a) are located in areas where people will choose to walk; and (b) ensure pedestrian movement through vehicle parking areas is along aisles rather than across them.
PO2	Mixed use development provides an efficient car parking model with consideration of temporal parking demand and cross utilisation between uses.	**AO2.1**	Mixed use development that demonstrates cross utilisation and a variation in temporal demand between uses on site can apply for a dispensation to reduce Business or Entertainment activity car parking rates by up to 30%, excluding office uses. Note – A Traffic impact assessment report prepared in accordance with PSP SC6.7 (Growth management) may assist in demonstrating compliance with the acceptable outcome.
PO3	Development ensures that car parking areas, service areas and access driveways do not impede on the useability of the network or amenity of surrounding uses.	**AO3.1**	Parking areas and service areas and access driveways are located where: (a) they will not dominate the streetscape; and (b) will not unduly intrude upon pedestrian use of footpaths, through: (i) the configuration behind buildings or landscape screening; (ii) the use of rear access lanes; (iii) car parking areas and service areas situated at the rear of the

Performance Outcomes		Acceptable Outcomes	
			premises or below ground level; or (iv) shared driveways.
PO4	Car parking is not to be provided at the primary frontage of the lot.	**AO4.1**	Car parking is integrated into the design of the development such that: (a) undercroft car parking protrudes above the adjacent ground level by less than 1m; (b) it is located to the rear or side of the building; or (c) it is screened from view with high quality landscaping.
Site access			
PO5	Development ensures that the location and design of any new site access does not interfere with the planned function, safety, capacity and operation of the transport network.	**AO5.1**	The number of site access driveways is minimised (usually one), with access to the lowest order transport corridor to which the site has frontage, consistent with amenity impact constraints.
PO6	An acceptable level of flood immune access is provided.	**AO6.1**	Roads providing access to lots have the same flood immunity as the road network they adjoin, specified in accordance with D4: Stormwater drainage of PSP SC6.8 WRC development manual.
Road and transport network			
PO7	Development, particularly where involving the creation of new roads and other transport corridors is appropriately planned, designed and managed, taking into account existing and future networks and surrounding development.	**AO7.1**	Development of roads and transport corridors ensures that the road network: (a) is in accordance with the Queensland streets and DP1: Development principles DP1 – DP1.07 and D1: Road geometry of PSP SC6.8 WRC development manual; (b) provides visible distinction of roads, based on function and design features; (c) provides convenient, safe and efficient movement for all modes of transport between land use activities with priority given to pedestrian movement and bicycle use over vehicle movements; (d) allows for unimpeded and practical access to the development site and each proposed lot; (e) accommodates or facilitates access to cycle and pedestrian pathways;

Performance Outcomes		Acceptable Outcomes	
			(f) facilitates a high standard of urban design, which reflects a grid pattern to assist in connectivity and permeability, particularly for pedestrians and cyclists; (g) connects to and integrates with existing roads and other relevant facilities within and external to the land to be developed or subdivided; (h) provides for the dedication and construction of roads where required to allow access to, and proper development of, adjoining vacant land that is intended for development; (i) provides for the construction and adequate drainage of all proposed roads, pathways, laneways and bikeways within and adjoining the land to be developed; (j) does not unreasonably adversely impact on existing vehicular traffic, active transport users or the amenity of the surrounding environment; and (k) does not adversely impact on wildlife movement corridors. Note – D1: Road geometry of PSP SC6.8 WRC development manual specifies standards and provides guidance for the design and construction of roads and transport corridors. Note: A Traffic impact assessment report prepared in accordance with PSP SC6.7 (Growth management) may assist in demonstrating compliance with the performance outcome.
PO8	Development involving high trip generating land uses minimises any adverse impacts on surrounding land uses and the external transport network.	**AO8.1**	Development of high trip generating land uses appropriately allows for the provision of infrastructure and services to increase the use of public and active transport. Note – A Traffic impact assessment report prepared in accordance with PSP SC6.7 Growth management may assist in demonstrating compliance with the performance outcome.
PO9		**AO9.1**	Development provides for upgrades or contributes to the

Performance Outcomes		Acceptable Outcomes	
	Development facilitates orderly provision of the transport network.		construction of transport network improvements.
		AO9.2	Required upgrading of the transport network is provided in accordance with the hierarchy characteristics and requirements outlined in DP1: Development principles of PSP SC6.8 WRC development manual.
Pedestrian and bicycle network and facilities			
PO10	Development provides safe and secure on-site parking and ancillary end of trip facilities for bicycles to encourage use of this mode of transport and support the demand anticipated to be generated by the development.	**AO10.1**	Development of high trip generating land uses provides lockable on-site bicycle spaces that meet the needs of all users of the development, including but not limited to, employees, customers, students and visitors. Note – A Traffic impact assessment report prepared in accordance with PSP SC6.7 Growth management may assist in demonstrating compliance with the performance outcome.
		AO10.2	Lockable bicycle spaces are provided in an area that: (a) has a high level of casual surveillance; (b) does not adversely impact on visual amenity; and (c) are designed in accordance with the Austroads: Guide to road design part 6A: Pedestrian and cyclist paths.

Performance Outcomes		Acceptable Outcomes	
PO11	Development provides for the establishment of a safe and convenient network of pedestrian and bicycle paths.	**AO11.1**	Development allows for the provision of pedestrian and bicycle networks that: (a) provide a high level of permeability and connectivity; (b) provide for joint usage where appropriate; (c) maximise opportunities to link activity centres, employment areas, residential areas, community facilities, open space and public transport stops located internally and externally to the site; (d) have an alignment that maximises visual interest, allows for the retention of trees and other significant features and does not compromise the operation of or access to other infrastructure; (e) incorporate safe street crossings with adequate sight distances, pavement markings, warning signs and safety rails; and (f) are well lit and located where there is casual surveillance from nearby premises. Note — D1: Road geometry PSP SC6.8 WRC development manual and Complete Streets specify standards and provides guidance for the design and construction of pedestrian and bicycle paths. (a)
Public transport facilities			
PO12	Development encourages the use of public transport through the appropriate provision of on-site or off-site public transport facilities, having regard to the specific nature and scale of development and the number of people or lots involved.	**AO12.1**	Development is designed and arranged to provide safe, convenient and functional linkages to existing and proposed public transport facilities.
		AO12.2	On-site public transport facilities are provided in conjunction with the following development: (a) shopping centre, where having a GFA of greater than 10,000m²; (b) tourist attraction, having a TUA of greater than 10,000m²;

Performance Outcomes		Acceptable Outcomes	
			(c) educational establishment, where accommodating more than 500 students; (d) major sport, recreation and entertainment facility; (e) indoor sport and recreation, where having a GFA of more than 1,000m^2 or for spectator sports; and (f) outdoor sport and recreation where for spectator sports.
		AO12.3	On-street public transport facilities are provided as part of the following development: (a) shopping centre, where having a GFA of 10,000m^2 or less; (b) tourist attraction, where having a GFA of 10,000m^2 or less; (c) educational establishment, where accommodating 500 or less students; and (d) indoor sport and recreation where having a GFA of 500m^2 or less and not for spectator sports.
		AO12.4	Where not otherwise specified above, on street public transport facilities are provided where development is located on an existing or future public transport route. Public transport facilities are located and designed in accordance with the standards specified in D1: Road geometry of PSP SC6.8 WRC development manual.
		AO12.5	Public transport facilities are located and designed in accordance with the standards specified in D1: Road geometry of PSP SC6.8 WRC development manual.
PO13	Development involving the creation of new roads provides for and maintains connectivity to existing and future public transport routes.	**AO13.1**	Development ensures that a network of public transport routes is provided, such that public transport can efficiently service the neighbourhood/ estate with no, or only minimal, route redundancy.
		AO13.2	Development ensures that the design of streets and roads to be used as a public transport route allows for the efficient and unimpeded movement of buses without facilitating high traffic speeds.
Amenity and environmental impacts of transport infrastructure			

Performance Outcomes		Acceptable Outcomes	
PO14	The environmental impacts of transport infrastructure are minimised by appropriate design and the use of low impact construction techniques.	**AO14.1**	Development ensures that the environmental impacts of transport infrastructure are minimised by the use of low impact construction techniques, including: (a) co-location of transport corridors within an existing or planned infrastructure corridor; (b) location of transport corridors within an area clear of, or consisting of, disturbed vegetation; (c) avoidance of clearing of native vegetation and provision of fauna underpasses and associated fencing, where appropriate; (d) minimisation of changes to the hydrological regime, including drainage patterns, run-off and water quality; (e) avoidance of crossing waterways, drainage lines and wetlands, where such crossings are unavoidable, disturbed areas are reinstated and revegetated on completion of works; and (f) minimisation of changes to the natural landform and extensive earthworks.
		AO14.2	Transport corridor design and construction is undertaken in accordance with DP1: Development principles of PSP SC6.8 WRC development manual.
PO15	A development's parking areas incorporate appropriate landscaping and, where possible, minimises adverse impacts on people, properties or activities with regard to light, noise, emissions or stormwater run-off.	**AO15.1**	Development provides appropriate landscaping for on-site vehicle access and parking areas to: (a) provide shade; (b) maximise infiltration of stormwater runoff; (c) define parking areas; and (d) soften views of hardstand areas. Note – D9: Landscaping of PSP SC6.8 WRC development manual sets out requirements for landscaping.
Transport corridor widths, pavement, surfacing and verges			
PO16	Development provides external road works along the full extent of the site frontage appropriate to the function and amenity of	**AO16.1**	The design and construction of external road works is: (a) undertaken in accordance with the D1: Road geometry

Performance Outcomes		Acceptable Outcomes	
	the transport corridor, including where applicable: (a) paved roadway; (b) kerb and channel; (c) safe vehicular access; (d) safe footpaths and bikeways; (e) safe on-road cycle lanes or verges for cycling; (f) stormwater drainage; and (g) conduits to facilitate the provision of street lighting systems and traffic signals.		of PSP SC6.8 WRC development manual; and (b) consistent with the characteristics intended for the particular type of transport corridor specified in the DP1: Development principles of PSP SC6.8 WRC development manual.
PO17	Development provides for the reserve width, pavement, edging, streetscaping and landscaping of a transport corridor to support the intended functions and amenity of the transport corridor.	**AO17.1**	Transport corridor design and construction is: (a) undertaken in accordance with the standards specified in the DP1: Development principles of PSP SC6.8 WRC development manual and (b) consistent with the characteristics intended for the particular type of transport corridor specified in DP1: Development principles of PSP SC6.8 WRC development manual.
PO18	Development provides for road pavement and surfacing that: (a) is sufficiently durable to carry wheel loads for design traffic; (b) provides adequate area for parked vehicles; (c) ensures the safe passage of vehicles, pedestrians and bicycles; (d) ensures appropriate management of stormwater and maintenance of all-weather access; and (e) allows for reasonable travel comfort.	**AO18.1**	Road pavement design and construction is undertaken in accordance with the standards specified in the D3: Road pavements and S2: Road pavements of PSP SC6.8 WRC development manual.
PO19	Development provides pavement edging that controls: (a) vehicle movements by delineating the extent of the carriageway; and (b) stormwater runoff.	**AO19.1**	Design and construction of pavement edging is undertaken in accordance with the standards specified in the D1: Road geometry and S2: Road pavements of PSP SC6.8 WRC development manual.
PO20	Development provides verges and footpaths that: (a) allow safe access for pedestrians clear of obstructions; (b) allow safe passage of wheel chairs and other mobility aids;	**AO20.1**	Verge and footpath design and construction is undertaken in accordance with the: (a) standards specified in the D1: Road geometry of PSP SC6.8 WRC development manual; and

Performance Outcomes		Acceptable Outcomes	
	(c) allow safe passage of cyclists; (d) allow access for vehicles onto properties; (e) include an area for public utility services; (f) allow signage and line marking; and (g) contribute to the amenity of transport corridors.		(b) characteristics intended for the particular type of transport corridor specified in the DP1: Development principles of PSP SC6.8 WRC development manual.
Intersections and traffic controls			
PO21	Development provides for traffic speeds and volumes to be catered for through the design and location of intersections and traffic controls to: (a) avoid stop-start conditions; (b) provide for appropriate sight distances; (c) avoid increased vehicle emissions; (d) minimise unacceptable traffic noise to adjoining land uses; (e) maintain convenience and safety levels for pedestrians, cyclists and public transport; and (f) integrate traffic controls with landscaping and streetscape design.	**AO21.1**	Intersections and speed control devices are designed and constructed in accordance with the D1: Road geometry of PSP SC6.8 WRC development manual and Part 4 of AustRoads (Intersections and crossings).
Development staging			
PO22	Staged development is planned, designed and constructed to ensure uninterrupted transport service and connectivity.	**AO22.1**	Development ensures: (a) each stage of the development can be constructed without interruption to services and utilities provided to the previous stages; (b) transport infrastructure provided is capable of servicing the entire development; (c) early bus access and circulation is achieved through the connection of collector roads; and (d) materials used are consistent throughout the development.

Table 9.4.8.3.3 Minimum on-site parking requirements

Note - Service vehicle classes are defined in AS2890.2 - Off street parking, Part 2: Commercial vehicles.

Land use	Cars	Service vehicles
Residential activities		
Caretakers residence	1 space for exclusive use by the occupants of the caretaker's accommodation	Not required
Community residence	2 plus 1 for a manager residence or resident support worker	Not required
Dwelling house	2 spaces, 1 of which is covered, spaces may be in tandem	Not required
Dual occupancy	1 bedroom: 1 space per unit 2 bedroom: 1.5 space per unit 3 or more bedroom: 2 spaces per unit	Not required
Home based business	As per dwelling house or dual occupancy: plus 1 space customer parking; plus 1 space non-resident employee; plus 1 space per guest room, where a Bed and breakfast	1 SRV
Multiple dwelling	1 bedroom: 1 space per unit 2 bedroom: 1.5 space per unit 3 or more bedroom: 2 spaces per unit Visitor spaces: 1 space per 5 units	1 SRV where more than 10 dwellings
Nature based tourism	1 space per cabin/site plus 1 manager space	Not required
Non-resident workforce accommodation	1 bedroom: 1 space per unit 2 bedroom: 1.5 space per unit 3 or more bedroom: 2 spaces per unit Visitor spaces: 1 space per 5 units	1 SRV where more than 10 dwellings
Relocatable home park	1 space van/tent/cabin site (adjacent to site) plus 1 visitors space per 4 van/tent/cabin sites	1 SRV where more than 10 relocatable home sites
Residential care facility	1 space per 6 dormitory type bed; 1 space per 4 hostel type units; 1 space per self-contained unit; and visitor parking equal to 50% of the resident parking requirement	1 MRV plus 1 ambulance
Resort complex	As per separately defined uses	As per separately defined uses
Retirement facility	1 space per 6 dormitory type bed; 1 space per 4 hostel type units;	1 MRV plus 1 ambulance

Land use	Cars	Service vehicles
	1 space per self-contained unit; and visitor parking equal to 50% of the resident parking requirement	
Rooming accommodation	1 space per 6 dormitory type bed; 1 space per 4 hostel type units; 1 space per self-contained unit; and visitor parking equal to 50% of the resident parking requirement	1 SRV plus 1 ambulance
Short-term accommodation	1 or 2 bedroom: 1 space per unit 3 or more bedroom: 2 spaces per unit Visitor spaces: 1 space per 5 units	1 SRV where more than 10 dwellings
Tourist park	1 space van/tent/cabin site (adjacent to site) plus 1 visitors space per 4 van/tent/cabin sites	1 HRV
Business activities		
Adult store	1 space per 25m^2 TUA	Not specified
Agricultural supplies store	1 space per 25m^2 of sales area plus 1 space per 200m^2 TUA	Not specified
Bulk landscape supplies	A minimum of 6 car parks plus 1 space per 25m^2 of sales area plus 1 space per 200m^2 TUA.	1 HRV
Food and drink outlet	1 space per 25m^2 TUA, excluding footpath dining areas located within the road reserve	1 SRV
Garden Centre	1 space per 25m^2 of sales area plus 1 space per 200m^2 TUA	1 SRV if less than 500m² GFA 1 SRV and 1 LRV if 500m² to 1,999m² GFA Not specified if 2,000m² GFA or above
Hardware and trade supplies	1 space per 25m^2 of sales area plus 1 space per 200m^2 TUA	1 SRV if less than 500m² GFA 1 SRV and 1 LRV if 500m² to 1,999m² GFA Not specified if 2,000m² GFA or above
Market	1 space per 25m^2 GFA or total use area	Not specified
Office	1 space per 40m^2 GFA	Not specified
Outdoor sales	1 space per 150m^2 TUA	1 AV
Service station	4 spaces per service bay plus parking requirements for ancillary uses as detailed herein, such as a Shop, with a minimum of 8 spaces	1 AV

Land use	Cars	Service vehicles
Shop	1 space per 25m^2 TUA	1 SRV if less than 500m² GFA 1 SRV and 1 LRV if 500m² to 1,999m² GFA Not specified if 2,000m² GFA or above
Shopping centre	1 space per 25m^2 GFA	1 SRV if less than 500m² GFA 1 SRV and 1 LRV if 500m² to 1,999m² GFA Not specified if 2,000m² GFA or above
Showroom	1 space per 50m^2 TUA	1 AV
Veterinary services	1 space per 25m^2 TUA	1 SRV
Entertainment activities		
Bar	1 space per 10m^2 GFA	Not specified
Club	1 space per 25m^2 TUA plus sufficient room for queuing. Accommodation and food and drink outlet as per separate defined uses	Not specified
Function facility	1 space per 15m^2 GFA	1 SRV
Hotel	1 space per 25m^2 TUA plus sufficient room for queuing. Accommodation and food and drink outlet as per separate defined uses	1 MRV
Nightclub entertainment facility	1 space per 25m^2 TUA plus sufficient room for queuing. Accommodation and food and drink outlet as per separate defined uses	1 SRV
Theatre	1 space per 20m^2 of TUA;	Not specified
Tourist attraction	Demonstration of required car parking spaces	Demonstration of required service vehicles parking
Industrial activities		
Extractive industry	1 space per 100m^2 GFA	Not specified
Low impact industry	1 space per 50m^2 GFA	Not specified
High impact industry	1 space per 100m^2 GFA	Not specified
Marina	0.6 spaces per wet berth 0.2 spaces per dry storage berth 0.5 spaces per marina employee 0.2 spaces per swing mooring licensed to the marina.	Demonstration of required service vehicles parking
Medium impact industry	1 space per 100m^2 GFA	Not specified
Service industry	1 space per 50m^2 GFA	1 MRV
Special industry	1 space per 100m^2 GFA	Not specified
Warehouse	1 space per 150m^2 site area plus provisions to provide for the loading and unloading facilities instead of car parks in self-storage facilities	Not specified
All other industrial activities	1 space per 50m^2 if less than 500m^2 GFA plus 1 space per	1 AV

Land use	Cars	Service vehicles
	100m^2 GFA for that part exceeding 500m^2 GFA	
Community activities		
Cemetery	Demonstration of required car parking spaces	Not specified
Child care centre	2 spaces for every 4 children in attendance plus 1 per employee	Not specified
Community care centre	1 space per 25m^2 plus parking for emergency service vehicles	Not specified
Community use	1 space per 15m^2 of TUA	Not specified
Crematorium	Not specified	Not specified
Educational establishment	1 space per 10 seats plus drop off pick up	Not specified
Emergency services	1 space per employee plus 1 visitor space per 4 employees	Demonstration of required service vehicles parking
Funeral parlour	1 space per 15m^2 GFA where memorials are conducted and 1 space per 40m^2 GFA for all others	1 SRV
Health care services	1 space per 25m^2 plus parking for emergency service vehicles	1 SRV plus Ambulance, however this ambulance requirement is exempt when that Health service does not use ambulances in their operations e.g. optometrist
Hospital	1 space per 25m^2 plus parking for emergency vehicles	Not specified
Place of worship	1 space per 15m^2 of TUA	SRV
Recreation activities		
Outdoor sport and recreation	6 spaces per court (tennis or court game); 50 spaces per pitch/field (cricket or football); 30 spaces per green (lawn bowls); and 15 spaces, plus one space per 100m^2 of site area (swimming pool)	Not specified
Indoor sport and recreation	1 space per 20m^2 of TUA	Not specified
All other recreational activities	Demonstration of required car parking spaces	Demonstration of required service vehicles parking
Rural activities		
Rural industry	1 space per 50m^2 GFA	1 AV
Wholesale nursery	1 space per 25m^2 of sales area plus 1 space per 200m^2 TUA	1 AV
All other Rural activities	Not specified	Not required
Other activities		
All Other activities	Sufficient car parking is demonstrated by a Traffic assessment report prepared in accordance with PSP SC6.7 Growth management.	Demonstration of required service vehicles parking

Contents of Part 10

Part 10 Other plans

Part 10 Other plans

There are no other plans for the planning scheme.

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Schedule 1 Definitions

SC1.1 Use definitions

(1) Use definitions have a particular meaning for the purpose of the Planning Scheme.

(2) Any use not listed in Table SC1.1.2 (Use definitions) column 1 is an undefined use.

Note—development comprising a combination of defined uses is not considered to be an undefined use.

(3) A use listed in Table SC1.1.2 (Use definitions) column 1 has the meaning set out beside that term in column 2.

(4) The use definitions listed here are the definitions used in this Planning Scheme.

(5) Column 3 of Table SC1.1.2 (Use definitions) identifies examples of the types of activities that are consistent with the use identified in column 1.

(6) Column 4 of Table SC1.1.2 (Use definitions) identifies examples of activities that are not consistent with the use identified in column 1.

(7) Columns 3 and 4 of Table SC1.1.2 (Use definitions) are not exhaustive lists.

(8) Uses listed in Table SC1.1.2 (Use definitions) columns 3 and 4 that are not listed in column 1 do not form part of the definition.

(9) All use definitions are derived from the Planning Regulations 2017, where any discrepancy occurs the Planning Regulation 2017 use definition prevails.

Table SC 1.1.1 Index of use definitions

Adult store	Health care services	Port services
Agricultural supplies store	High impact industry	Relocatable home park
Air service	Home based business	Renewable energy facility
Animal husbandry	Hospital	Research and technology industry
Animal keeping	Hotel	Residential care facility
Aquaculture	Indoor sport and recreation	Resort complex
Bar	Intensive animal industry	Retirement facility
Brothel	Intensive horticulture	Roadside stall
Bulk landscape supplies	Landing	Rooming accommodation
Caretaker's accommodation	Low impact industry	Rural industry
Car wash	Major electricity infrastructure	Rural workers' accommodation
Cemetery	Major sport, recreation and entertainment facility	Sales office
Child care centre	Marine industry	Service industry
Club	Market	Service station
Community care centre	Medium impact industry	Shop
Community residence	Motor sport facility	Shopping centre
Community use	Multiple dwelling	Short-term accommodation
Crematorium	Nature-based tourism	Showroom
Cropping		Special industry

Detention facility Dual occupancy Dwelling house Dwelling unit Educational establishment Emergency services Environment facility Extractive industry Food and drink outlet Function facility Funeral parlour Garden centre Hardware and trade supplies	Nightclub entertainment facility Non-resident workforce accommodation Office Outdoor sales Outdoor sport and recreation Outstation Park Parking station Party house Permanent plantation Place of worship	Substation Telecommunications facility Theatre Tourist attraction Tourist park Transport depot Utility installation Veterinary services Warehouse Wholesale nursery Winery

Table SC 1.1.2 Use definitions

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Adult store	Premises for the primary purpose of displaying or selling sexually explicit materials; or products and devices that are associated with, or used in, a sexual practice or activity.	Sex shop	Shop, newsagent, registered pharmacist or video hire, where the primary use of these are concerned with: • the sale, display or hire of printed or recorded matter (not of a sexually explicit nature); or • the sale or display of underwear or lingerie; or • the sale or display of an article or thing primarily concerned with or used in association with a medically recognised purpose.
Agricultural supplies store	Premises used for the sale of agricultural supplies and products. Examples of agricultural supplies		Bulk landscape supplies, garden centre, outdoor sales wholesale nursery

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	and products include animal feed, bulk veterinary supplies, chemicals, farm clothing, fertilisers, irrigation materials, saddlery, and seeds.		
Air services	Premises used for— • the arrival or departure of aircraft; • housing, servicing, refuelling, maintaining or repairing aircraft; • the assembly and dispersal of passengers or goods on or from an aircraft; • training and education facilities relating to aviation; • aviation facilities; or • an activity that is ancillary to an activity or facility that directly services the needs of aircraft passengers.	Airport, airstrip, helipad, public or private airfield	
Animal husbandry	Premises used for producing animals or animal products on native or improved pastures or vegetation. Where ancillary the use may include yards, stables, temporary holding facilities or machinery repairs and servicing.	Cattle studs, grazing of livestock, non-feedlot dairy	Animal keeping, intensive animal industry, aquaculture, feedlots, piggeries
Animal keeping	Premises used for boarding, breeding or training of animals. Where ancillary the use may include holding facilities and repair and servicing of machinery.	Aviaries, catteries, kennels, stables, wildlife refuge	Aquaculture, cattle studs, domestic pets, feedlots, grazing of livestock, non-feedlot dairying, piggeries, poultry meat and egg production, animal husbandry
Aquaculture	Premises used cultivation of live fisheries resources for sale.	Pond farms, tank systems, hatcheries, raceway system, rack and	Intensive animal industry

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
		line systems, sea cages	
Bar	Premises used primarily to sell liquor for consumption on the premises and that has seating for 60 or less people. Where ancillary the use may include entertainment activity, or preparing and selling food and drink for consumption on the premises.		Club, hotel, nightclub entertainment facility, tavern
Brothel	Premises made available for prostitution by two or more prostitutes at the premises. (Source - *Prostitution Act 1999)*		Adult store, club, nightclub entertainment facility, shop
Bulk landscape supplies	Premises used for the bulk storage and sale of mainly non-packaged landscaping and gardening supplies, including, for example, soil, gravel, potting mix or mulch.		Garden centre, outdoor sales, wholesale nursery
Caretaker's accommodation	Premises used for a dwelling for a caretaker of a non-residential use on the same premises.		Dwelling house
Car wash	Premises primarily used for commercially cleaning motor vehicles.		Service station
Cemetery	Premises used for interment of bodies or ashes after death.	Burial ground, crypt, columbarium, lawn cemetery, pet cemetery, mausoleum	Crematorium, funeral parlour
Child care centre	Premises used for minding, education and care, but not residence, of children.	Crèche, early childhood centre, kindergarten, outside hours school care, vacation care	Educational establishment, home based child care, family day care

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Club	Premises used by an association established for social, literary, political, sporting, athletic or other similar purposes. Where ancillary the use may include the preparation and selling of food and drink.	Club house, guide and scout clubs, surf lifesaving club, RSL, bowls club	Hotel, nightclub entertainment facility, place of worship, theatre
Community care centre	Premises used for providing social support to members of the public. Where ancillary the use may include medical care.	Disability support services, drop in centre, respite centre, integrated Indigenous support centre	Child care centre, family day care, home based child care, health care services, accommodation activities
Community residence	Premises used for residential accommodation for no more than 6 children if the accommodation is provided as part of a program or service under the Youth Justice Act 1992; or 6 persons who require assistance or support with daily living needs; and no more than 1 support worker. It includes a building or structure that is reasonably associated with the primary use.	Hospice	Dwelling house, dwelling unit, residential care facility, rooming accommodation, short-term accommodation
Community use	Premises used for providing artistic, social or cultural facilities or community services to the public. The ancillary use may include the preparation and selling of food and drink.	Art gallery, community centre, community hall, library, museum	Cinema, club, hotel, nightclub entertainment facility, place of worship
Crematorium	Premises used for the cremation or aquamation of bodies.		Cemetery
Cropping	Premises used for growing and harvesting	Forestry for wood production, fodder	Permanent plantations,

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	plants, or plant material, that are cultivated in soil, for commercial purposes. Where ancillary the use may include harvesting, storing or packing plants or plant material grown on the premises, or repairing and servicing machinery used on the premises.	and pasture production, producing fruit, nuts, vegetables and grains, plant fibre production, sugar cane growing, vineyard	intensive horticulture, rural industry
Detention facility	Premises used for the lawful detention of persons.	Prison, detention centre	
Dual occupancy	A residential use of premises for 2 households involving 2 dwellings (whether attached or detached) on a single lot or 2 dwellings (whether attached or detached) on separate lots that share a common property. The use may include any domestic outbuilding associated with the dwellings; but does not include a residential use of premises that involves a secondary dwelling.	Duplex, 2 dwellings on a single lot (whether or not attached), 2 dwellings within one single community title scheme under the *Body Corporate and Community Management Act 1997, 2* dwellings within the 1 body corporate to which the *Building Units and Group Title Act 1980* continues to apply	Dwelling house, multiple dwelling
Dwelling house	Residential use of premises involving 1 dwelling for a single household and any domestic outbuildings associated with the dwelling; or 1 dwelling for a single household, a secondary dwelling and any domestic outbuildings associated with either dwelling.		Caretaker's accommodation, dual occupancy, rooming accommodation, short-term accommodation, student accommodation, multiple dwelling
Dwelling unit	Premises containing a non-residential use for a single dwelling, other than a dwelling for a caretaker of the non-residential use.	Shop-top apartment	Caretaker's accommodation, dwelling house

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Educational establishment	Premises used for training and instruction to impart knowledge and develop skills. Where ancillary the use may include student accommodation, before or after school care or vacation care.	College, outdoor education centre, primary school, secondary school, special education facility, technical institute, university	Child care centre, home based child care, family day care
Emergency services	Premises used by a government entity or community organisations to provide essential emergency services or disaster management services or management support facilities for the services.	Ambulance station, evacuation centre, fire station, police station	Community use, hospital, residential care facility
Environment facility	Premises used for a Facility for the appreciation, conservation or interpretation of an area of cultural, environmental or heritage value, but does not include the provision of accommodation for tourists and travellers.	Nature-based attractions, walking tracks, seating, shelters, boardwalks, observation decks, bird hides	Accommodation activities
Extractive industry	Premises used for extracting or processing extractive resources and any related activities including, for example, transporting the resources to market.	Quarry	
Food and drink outlet	Premises used for preparation and sale of food and drink for consumption on or off the premises. Where ancillary the use may include the sale of liquor for consumption on premises.	Bistro, café, coffee shop, drive-through facility, kiosk, milk bar, restaurant, snack bar, take-away, tea room	Bar, club, hotel, shop, theatre, nightclub entertainment facility
Function facility	Premises used for receptions or functions	Conference centre, reception centre	Community use, hotel

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	that may include the preparation and provision of food and liquor for consumption on premises as part of a reception or function.		
Funeral parlour	Premises used to arrange and conduct funerals, memorial and other similar events. The premises may include a mortuary or the storage and preparation of bodies for burial or cremation, but does not include the use of premises for the burial or cremation of bodies.		Cemetery, crematorium, place of worship
Garden centre	Premises used for the selling of plants; or selling gardening and landscape products and supplies that are mainly in pre-packaged form. Where ancillary the use may include a food and drink outlet.	Retail plant nursery	Bulk landscape supplies, wholesale nursery, outdoor sales
Hardware and trade supplies	Premises used for the sale, display or hire of hardware and trade supplies including, for example, household fixtures, timber, tools, paint, wallpaper and plumbing supplies.		Shop, showroom, outdoor sales and warehouse
Health care services	Premises used for medical purposes, paramedical purposes, alternative health therapies or general health care, if overnight accommodation is not provided on the premises.	Dental clinics, medical centres, natural medicine practices, nursing services, physiotherapy clinic	Community care centre, hospital
High impact industry	Premises used for an industrial activity that is the manufacturing, producing, processing, repairing, altering,	Abattoirs, concrete batching plant, boiler making and engineering and metal foundry	Tanneries, rendering plants, oil refineries, waste incineration, manufacturing or

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	recycling, storing, distributing, transferring or treating of products, the use must be identified in, and not exceed the thresholds of the Industry thresholds table SC1.1.2.1.	Note—additional examples may be shown in SC1.1.2.1 Industry thresholds.	storing explosives, power plants, manufacturing fertilisers, service industry, low impact industry, medium impact industry, special industry
Home based business	A dwelling or domestic outbuilding on premises used for a business activity that is subordinate to the residential use of the premises.	Bed and breakfast, home office, home based child care	Hobby, office, shop, warehouse, transport depot
Hospital	Premises used for medical or surgical care or treatment of patients, or providing accommodation for patients. Any other use, including providing accommodation for employees, must be ancillary to the hospital use.		Health care services, residential care facility
Hotel	Premises used primarily to sell liquor for consumption on the premises. Where ancillary the use may include accommodation to tourists or travellers, dining and entertainment activities. The use does not include a bar.	Pub, tavern	Nightclub entertainment facility, bar
Indoor sport and recreation	Premises used for leisure, sport or recreation conducted wholly or mainly indoors.	Amusement parlour, bowling alley, gymnasium, squash courts, enclosed tennis courts	Cinema, hotel, nightclub entertainment facility, theatre
Intensive animal industry	Premises used for the intensive production of animals or animal products in an	Feedlots, piggeries, poultry and egg production	Animal husbandry, aquaculture, drought feeding, milking sheds,

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	enclosure that requires the provision of food and water either mechanically or by hand. Where ancillary the use may include storage and packing of feed and produce, but does not include the cultivation of aquatic animals.		shearing sheds, weaning pens, cultivation of aquatic animals
Intensive horticulture	Premises used for the intensive production of plants or plant material carried out indoors on imported media; or the intensive production of plants or plant material carried out outside using artificial lights or containers. Where ancillary the use may include storage and packing of plants or plant material grown on the premises, but does not include the cultivation of aquatic plants.	Greenhouse and shade house plant production, hydroponic farms, mushroom farms	Wholesale nursery, cultivation of aquatic plants
Landing	Premises used for a structure for mooring, launching, storage and retrieval of vessels and from which passengers embark and disembark.	Boat ramp, jetty, pontoon	Marina
Low impact industry	Premises used for an industrial activity that is the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products; and the use be identified in, and not exceed the thresholds of the Industry thresholds table SC1.1.2.1.	Repairing motor vehicles, fitting and turning workshop Note—additional examples may be shown in SC1.1.2.1 Industry thresholds.	Panel beating, spray painting or surface coating, tyre recycling, drum re-conditioning, wooden and laminated product manufacturing, service industry, medium impact industry, high impact industry, special industry

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Major electricity infrastructure	Premises used for a transmission grid or supply network, or an ancillary telecommunication facility. It does not include a supply network or private electricity works being development for a supply network or for private electricity works that form an extension of, or provide service connections to, properties from the network if the network operates at standard voltages up to and including 66kV. The use may involve a new zone substation or bulk supply substation; or the augmentation of a zone substation or bulk supply substation that significantly increases the input or output standard voltage.	Power lines greater than 66kV	Minor electricity infrastructure, substation
Major sport, recreation and entertainment facility	Premises used for large-scale events including, for example, major sporting, recreation, conference or entertainment events.	Convention and exhibition centres, entertainment centres, sports stadiums, horse racing facility	Indoor sport and recreation, local sporting field, motor sport, park, outdoor sport and recreation
Marine industry	Waterfront premises used for the manufacturing, storage, repair or servicing of vessels and maritime infrastructure. Where ancillary the use may include the provision of fuel and disposal of waste.	Boat building, boat storage, dry dock	Marina
Market	Premises used on a regular basis for the selling of goods to the	Flea market, farmers market, car boot sales	Shop, roadside stall

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	public mainly from temporary structures, including for example, stalls, booths or trestle tables. Where ancillary the use may include entertainment.		
Medium impact industry	The use of premises for an industrial activity that is the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products; and the use be identified in, and not exceed the thresholds of the Industry thresholds table SC1.1.2.1.	Spray painting and surface coating, wooden and laminated product manufacturing (including cabinet making, joining, timber truss making or wood working) Note—additional examples may be shown in SC1.1.2.1 Industry thresholds.	Concrete batching, tyre manufacturing and retreading, metal recovery (involving a fragmentiser), textile manufacture, chemically treating timber and plastic product manufacture, service industry, low impact industry, high impact industry, special industry
Motor sport facility	Premises used for organised or recreational motor sports. Where ancillary the use may include facilities for spectators including stands, amenities and food and drink outlets.	Go-karting, lawn mower race tracks, trail bike parks, 4WD and all terrain parks, motocross tracks, off road motorcycle facility, motorcycle or car race tracks	Major sport, recreation and entertainment facility, outdoor sport and recreation
Multiple dwelling	Residential use of premises involving three or more dwellings, whether attached or detached, for separate households.	Apartments, flats, units, townhouses, row housing, triplex	Rooming accommodation, dual occupancy, duplex, granny flat, residential care facility, retirement facility
Nature-based tourism	The use of premises for a tourism activity, including accommodation for tourists, for the conservation, interpretation and appreciation of an area of environmental, cultural or heritage value, a local	Environmentally responsible accommodation facilities including lodges, cabins, huts and tents	Environment facility

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	ecosystem or the natural environment.		
Nightclub entertainment facility	Premises used to provide entertainment, that is cabaret, dancing or music. Where ancillary the use may include the sale of liquor and the preparing and selling of food for consumption on site.		Club, hotel, tavern, pub, indoor sport and recreation, theatre, concert hall
Non-resident workforce accommodation	Premises used to provide accommodation for non-resident workers. Where ancillary the use may include recreational and entertainment facilities for persons residing at the premises and their visitors.	Contractor's camp, construction camp, single person's quarters, temporary workers' accommodation	Relocatable home park, short-term accommodation, tourist park
Office	Premises used for • providing an administrative, financial, management or secretarial service or function; • the practice of a profession; or • providing business or professional advice or services. The use does not include the use of premises for making, selling or hiring goods.	Bank, real estate agent, administration building	Home based business, home office, shop, outdoor sales
Outdoor sales	Premises used for the display, sale, hire or lease of vehicles, boats, caravans, machinery, equipment or other similar products where the use is conducted mainly outdoors. Where ancillary the use may include the repair or servicing activities	Agricultural machinery sales yard, motor vehicles sales yard	Bulk landscape supplies, market

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	and sale or fitting of accessories for the above products.		
Outdoor sport and recreation	Premises used for a recreation or sport activity that is carried on outdoors and requires areas of open space. Where ancillary the use may include providing and selling of food and drink, change room facilities or storage facilities	Driving range, golf course, swimming pool, tennis courts, football ground, cricket oval	Major sport, recreation and entertainment facility, motor sport, park, community use
Outstation	Premises used for cultural and/or recreational activities undertaken by Aboriginal and Torres Strait Islander people. Where ancillary the use may include facilities for short-term or long-term camping activities.	Indigenous camp site	Dwelling house, hostel, multiple dwelling, relocatable home park, short term accommodation, tourist park
Park	The use of premises, accessible to the public free of charge, for sport, recreation and leisure activities and facilities.	Urban common	Tourist attraction, outdoor sport and recreation
Parking station	Premises used for parking vehicles, other than parking that is ancillary to another use.	Car park, park and ride, bicycle parking	
Party house	Premises containing a dwelling that is used to provide, for a fee, accommodation or facilities for guests if— (a) guests regularly use all or part of the premises for parties (bucks parties, hens parties, raves, or wedding receptions, for example); (b) the accommodation or facilities are		

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	provided for a period of less than 10 days; and (c) the owner of the premises does not occupy the premises during that period.		
Permanent plantation	Premises used for growing, but not harvesting, plants for carbon sequestration, biodiversity, natural resource management or another similar purpose.	Permanent plantations for carbon sequestration, biodiversity or natural resource management	Forestry for wood production, biofuel production
Place of worship	Premises used by an organised group for worship and religious activities. Where ancillary the use may include social, educational or charitable activities.	Church, chapel, mosque, synagogue, temple	Community use, child care centre, funeral parlour, crematorium
Port services	Premises used for the following: • the arrival and departure of vessels; • the movement of passengers or goods on or off vessels; • storing, servicing, maintaining or repairing vessels; or • ancillary uses that directly service the needs of the passengers of the vessels.	Marina, ferry terminal	Landing
Relocatable home park	Premises used for relocatable dwellings for long-term residential accommodation. Where ancillary the use may include a manager's residence, amenity facilities, food and drink outlets, or recreation facilities for the exclusive use of residents.		Tourist park

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Renewable energy facility	Premises used for the generation of electricity or energy from a renewable energy source, but does not include the use of premises to generate electricity or energy to be used mainly on the premises.	Solar farm, tidal power, bioenergy, geothermal energy, hydropower, ocean energy production	Wind turbine or solar panels supplying energy to domestic or rural activities on the same site
Research and technology industry	Premises used for an innovative or emerging industry that involves designing and researching, assembling, manufacturing, maintaining, storing or testing machinery or equipment.	Aeronautical engineering, biotechnology industries, computer component manufacturing, computer server facilities, energy industries, medical laboratories	
Residential care facility	The use of premises for supervised accommodation, medical and other support services, for persons who cannot live independently, and require regular nursing or personal care.	Convalescent home, nursing home	Community residence, dwelling house, dual occupancy, hospital, multiple dwelling, retirement facility
Resort complex	Premises used for tourist and visitor accommodation that includes integrated leisure facilities, ancillary staff accommodation, and transport facilities for the premises including, for example, a ferry terminal or air service. Examples of integrated leisure facilities includes bars, meeting and function facilities, restaurants, sporting and fitness facilities.	Island resort	
Retirement facility	A residential use of premises for accommodation for older members of the community, or retired persons, in	Retirement village	Residential care facility

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	independent living units or serviced units. Where ancillary the use may include amenity and community facilities, a manager's residence, health care and support services, preparing food and drink or staff accommodation.		
Roadside stall	Premises used for the roadside display and sale of goods in a rural area.	Produce stall	Market
Rooming accommodation	Premises used for residential accommodation, if each resident— • has a right to occupy 1 or more rooms on the premises; • does not have a right to occupy the whole of the premises; • does not occupy a self-contained unit, as defined under the *Residential Tenancies and Rooming Accommodation Act 2008*, schedule 2, or has only limited facilities available for private use; and • shares other rooms, facilities, furniture or equipment outside of the resident's room with 1 or more other residents, whether or not the rooms, facilities, furniture or equipment are on the same or different premises. Where ancillary the use may include a	Boarding house, hostel, monastery, off-site student accommodation	Hospice, community residence, dwelling house, short-term accommodation, multiple dwelling

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	manager's residence, an office or providing food or other services to residents.		
Rural industry	Premises used for storing, processing or packaging products from a rural use carried out on the premises or adjoining premise. Where ancillary the use may include selling products from a rural use carried out on the premises or adjoining premises.	Packing shed	Intensive animal husbandry, intensive horticulture, roadside stall, wholesale nursery, winery, abattoir, agricultural supply store
Rural workers' accommodation	Any premises used as accommodation, whether or not self-contained, for employees of a rural use, if the premises, and the premises where the rural use is carried out, are owned by the same person; and the employees are not non-resident workers.	Farm workers' accommodation	Short-term accommodation, caretaker's accommodation, dual occupancy, dwelling house, nature or rural based tourist accommodation, non-resident workforce accommodation, multiple dwellings
Sales office	The use of premises for the temporary display of land parcels or buildings that are for sale, or proposed to be sold; or can be won as a prize in a competition.	Display dwelling	Bank, office
Service industry	Premises used for an industrial activity that does not result in off-site air, noise or odour emissions; and is suitable for location with other non-industrial uses.	Audio visual equipment repair, film processing, bicycle repairs, clock and watch repairs, computer repairs, dry cleaning, hand engraving, jewellery making, laundromat, locksmith, picture framing, shoe repairs, tailor	Small engine mechanical repair workshop, cabinet making, shop fitting, sign writing, tyre depot, low impact industry, medium impact, high impact industry, special industry

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Service station	Premises used for the sale of fuel including, for example, petrol, liquid petroleum gas, automotive distillate and alternative fuels. Where ancillary the use may include a food and drink outlet, shop, trailer hire, or maintaining, repairing, servicing or washing vehicles.		Car wash
Shop	Premises used for the display, sale or hire of goods or the provision of personal services or betting to the public.	Betting agency, corner store, department store, discount variety store, hair dressing salon, liquor store, supermarket	Adult store, food and drink outlet, showroom, market
Shopping centre	Premises used for an integrated shopping complex consisting mainly of shops.		
Short-term accommodation	Premises used to provide accommodation of less than 3 consecutive months to tourists or travellers. Where ancillary the use may include a manager's residence, office, or recreation facilities for the exclusive use of guests.	Motel, backpacker's accommodation, cabins, serviced apartments, hotel, farm stay	Hostel, rooming accommodation, tourist park hotel, nature-based tourism, resort complex or tourist park.
Showroom	Premises used the sale of goods that are of in a related product line, and a size, shape or weight that requires a large area for handling, display or storage, and direct vehicle access to the building that contains the goods, by members of the public, to enable the loading and unloading of the goods.	Bulky goods sales, motor vehicles sales showroom, bulk stationary supplies, bulk home supplies	Food and drink outlet, shop, outdoor sales

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Special industry	The use of premises for an industrial activity that is the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products, and the use be identified in, and not exceed the thresholds of the Industry thresholds table SC1.1.2.1.	Tanneries, rendering plants, oil refineries, waste incineration, manufacturing or storing explosives, power plants, manufacturing fertilisers Note—additional examples may be shown in SC1.1.2.1 Industry thresholds.	Low impact industry, medium impact industry, high impact industry, service industry
Substation	The use of premises— • as part of a transmission grid or supply network to— ○ convert or transform electrical energy from one voltage to another; ○ regulate voltage in an electrical circuit; ○ control electrical circuits; or ○ switch electrical current between circuits; or • for a telecommunications facility for works are anything used for, or in association with, the generation, transmission or supply of electricity; or workforce operational and safety communications.	Substations, switching yards	Major electricity infrastructure, minor electricity infrastructure
Telecommunications facility	Premises used for a facility that is capable of carrying	Telecommunication tower, broadcasting	Aviation facility, “low-impact telecommunications

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	communications and signals by guided or unguided electromagnetic energy.	station, television station	facility" as defined under the *Telecommunications Act 1997*
Theatre	Premises used for presenting movies, live entertainment or music to the public or the production of film or music. Where ancillary the use may include preparing and selling food and drink for consumption on the premises, facilities for editing and post-production, facilities for wardrobe, laundry and make-up, set construction workshops, and sound stages.	Cinema, movie house, concert hall, dance hall, film studio, music recording studio	Community hall, hotel, indoor sport and recreation facility, temporary film studio
Tourist attraction	Premises used for providing entertainment to, or a recreation facility for, the general public. Where ancillary the use may include preparing and selling food and drink for consumption on the premises.	Theme park, zoo	Hotel, major sport, recreation and entertainment facility, nightclub entertainment facility
Tourist park	Premises used to provide for holiday accommodation in caravans, self-contained cabins, tents or other similar structures. Where ancillary the use may include amenity facilities, a food and drink outlet, a manager's residence, offices, recreation facilities for the use of occupants and their visitors or staff accommodation.	Camping ground, caravan park, holiday cabins	Relocatable home park, tourist attraction, short-term accommodation, non-resident workforce accommodation

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Transport depot	Premises used for storing vehicles, or machinery, that are used for a commercial or public purpose. Where ancillary the use may include cleaning, repairing or servicing vehicles or machinery.	Contractor's depot, bus depot, truck yard, heavy machinery yard	Home based business, warehouse, low impact industry, service industry
Utility installation	Premises used for: • a service for supplying or treating water, hydraulic power or gas; • a sewerage, drainage or stormwater service; • a transport service; or • a waste management service. Where ancillary the use may include maintenance and storage depots or other facility for a service.	Sewerage treatment plant, mail depot, pumping station, water treatment plant	Telecommunications tower, major electricity infrastructure, minor electricity infrastructure, substation, renewable energy facility, transport depot
Veterinary services	Premises used for the medical or surgical treatment of animals. Where ancillary the use may include the short-term stay of animals.		Animal keeping
Warehouse	Premises used for storing or distributing goods, whether or not carried out in a building. Where ancillary the use may include the wholesale of goods.	Self-storage sheds	Hardware and trade supplies, outdoor sales, showroom, shop
Wholesale nursery	Premises used for the wholesale of plants grown on or next to the premises. Where ancillary the use may include selling garden materials.		Bulk landscape supplies, garden centre

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Winery	Premises used for making wine, or selling wine that is made on the premises.		Rural industry

SC1.1.1 Defined activity groups

(1) Defined use terms listed in Table SC1.1.2 (Defined uses) are able to be clustered into activity groups.

(2) An activity group listed in Table SC1.1.1.2 (Defined activity groups) column 1 clusters the defined use terms listed in column 2.

(3) An activity group is able to be referenced in Part 5 (tables of assessment).

(4) The activity groups listed here are the defined activity groups for the purpose of the Planning Scheme.

Table SC 1.1.1.1 Index of defined activity groups

Accommodation activities	Entertainment activities	Rural activities
Business activities	Industry activities	Other activities
Community activities	Recreation activities	

Table SC 1.1.1.2 Defined activity groups

Column 1 Activity group	Column 2 Use Terms
Accommodation activities	Caretaker's accommodation Community residence Dual occupancy Dwelling house Dwelling unit Home based business Multiple dwelling Nature-based tourism Non-resident workforce accommodation Relocatable home park Residential care facility Resort complex Retirement facility Rooming accommodation Rural workers' accommodation Short term accommodation Tourist park
Business activities	Adult store Agricultural supplies store Brothel Bulk landscape supplies Car wash Food and drink outlet Garden centre Hardware trade supplies Market Office Outdoor sales Sales office Service station Shop Shopping centre Showroom Veterinary services

Column 1 Activity group	Column 2 Use Terms
Community activities	Cemetery Child care centre Community care centre Community use Crematorium Educational; establishment Emergency services Funeral parlour Health care services Hospital Outstation Place of worship
Entertainment activities	Bar Club Function facility Hotel Nightclub entertainment facility Theatre Tourist attraction
Industry activities	Extractive industries High impact industry Low impact industry Marine industry Medium impact industry Research and technology industry Service industry Special industry Warehouse
Recreation activities	Environment facility Indoor sport and recreation Major sport, recreation and entertainment facility Motor sports facility Outdoor sport and recreation Park
Rural activities	Animal husbandry Animal keeping Aquaculture Cropping Intensive animal industry Intensive horticulture Permanent plantation Roadside stall Rural industry Wholesale nursery Winery
Other activities	Air services Detention facility Landing Major electrical infrastructure Parking station Port services Renewable energy facility Substation Telecommunications facility Transport depot Utility installation

SC1.1.2 Industry thresholds

The industry thresholds listed below are to be used in conjunction with the defined uses listed in Table SC1.1.2 (Defined use terms) - Low impact industry, Medium impact industry, High impact industry and Special industry.

Table SC 1.1.2.1 Industry thresholds

Column 1 Use Terms	Column 2 Additional examples include
High impact industry	(1) Metal foundry producing 10 tonnes or greater of metal castings per annum; (2) Boiler making or engineering works producing 10 000 tonnes or greater of metal product per annum; (3) Major hazard facility for the storage and distribution of dangerous goods not involving manufacturing processes; (4) Scrap metal yard including a fragmentiser; (5) Manufacturing clay or ceramic products including bricks, tiles, pipes and pottery goods, greater than 200 tonnes per annum; (6) Processing, smoking, drying, curing, milling, bottling or canning food, beverages or pet food, greater than 200 tonnes per annum; (7) Vegetable oil or oilseed processing in works with a design production capacity of greater than 1000 tonnes per annum; (8) Manufacturing wooden products including cabinet making, joinery, wood working, producing greater than 500 tonnes per annum; (9) Manufacturing medium density fibreboard, chipboard, particle board, plywood, laminated board or wood veneer products, 250 tonnes or greater per annum; (10) Sawmilling, wood chipping and kiln drying timber and logs, producing greater than 500 tonnes per annum; (11) Manufacturing or processing plaster, producing greater than 5000 tonnes per annum; (12) Enamelling workshop using 15 000 litres or greater of enamel per annum; (13) Galvanising works using 100 tonnes or greater of zinc per annum; (14) Anodising or electroplating workshop where tank area is 400 square metres or greater; (15) Powder coating workshop using 500 tonnes or greater of coating per annum; (16) Spray painting workshop (including spray painting vehicles, plant, equipment or boats) using 20 000 litres or greater of paint per annum; (17) Concrete batching and producing concrete products; (18) Treating timber for preservation using chemicals including copper, chromium, arsenic, borax and creosote; (19) Manufacturing soil conditioners by receiving, blending, storing, processing, drying or composting organic material or organic waste, including animal manures, sewage, septic sludge and domestic waste; (20) Manufacturing fibreglass pools, tanks and boats;

Column 1 Use Terms	Column 2 Additional examples include
	(21) Manufacturing, fibreglass, foam plastic, composite plastic or rigid fibre-reinforced plastic or plastic products, 5 tonnes or greater per annum (except fibreglass boats, tanks and swimming pools); (22) Manufacturing PET, PETE, polypropylene and polystyrene plastic or plastic products, 10 000 tonnes or greater per annum; (23) Manufacturing tyres, asbestos products, asphalt, cement, glass or glass fibre, mineral wool or ceramic fibre; (24) Abattoir; (25) Recycling chemicals, oils or solvents; (26) Waste disposal facility (other than waste incinerator); (27) Recycling, storing or reprocessing regulated waste; (28) Manufacturing batteries; (29) Manufacturing wooden products including cabinet making, joinery, wood working, producing greater than 500 tonnes per annum; (30) Abrasive blasting facility using 10 tonnes or greater of abrasive material per annum; (31) Crematoria; (32) Glass fibre manufacture producing 200 tonnes or greater per annum; and (33) Manufacturing glass or glass products, where not glass fibre, less than 250 tonnes per annum.
Low impact industry	(1) Repairing and servicing motor vehicles, including mechanical components, radiators, electrical components, wheel alignments, exhausts, tyres, suspension or air conditioning, not including spray painting; (2) Repairing and servicing lawn mowers and outboard engines; (3) Fitting and turning workshop; (4) Assembling or fabricating products from sheet metal or welding steel, producing less than 10 tonnes a year and not including spray painting; (5) Assembling wood products not involving cutting, routing, sanding or spray painting; (6) Dismantling automotive or mechanical equipment, not including debonding brake or clutch components; (7) Micro-brewery, limited to beer or cider, producing less than 300,000 litres per annum; and (8) Coffee roasting, producing less than 100 tonnes per annum.
Medium impact industry	(1) Metal foundry producing less than 10 tonnes of metal castings per annum; (2) Boiler making or engineering works producing less than 10 000 tonnes of metal product per annum; (3) Facility, goods yard or warehouse for the storage and distribution of dangerous goods not involving manufacturing processes and not a major hazard facility under the *Work Health and Safety Act 2011*; (4) Abrasive blasting facility using less than 10 tonnes of abrasive material per annum; (5) Enamelling workshop using less than 15 000 litres of enamel per annum; (6) Galvanising works using less than 100 tonnes of zinc per annum;

Column 1 Use Terms	Column 2 Additional examples include
	(7) Anodising or electroplating workshop where tank area is less than 400 square metres; (8) Powder coating workshop using less than 500 tonnes of coating per annum; (9) Spray painting workshop (including spray painting vehicles, plant, equipment or boats) using less than 20 000 litres of paint per annum; (10) Scrap metal yard (not including a fragmentiser), dismantling automotive or mechanical equipment including debonding brake or clutch components; (11) Manufacturing clay or ceramic products including bricks, tiles, pipes and pottery goods, less than 200 tonnes per annum; (12) Processing, smoking, drying, curing, milling, bottling or canning food, beverages or pet food, less than 200 tonnes per annum; (13) Brewery, limited to beer or cider, producing 300,000 litres or greater per annum; (14) Coffee roasting, producing 100 tonnes or greater per annum; (15) Vegetable oil or oilseed processing in works with a design production capacity of less than 1000 tonnes per annum; (16) Manufacturing wooden products including cabinet making, joinery, wood working, producing less than 500 tonnes per annum; (17) Manufacturing medium density fibreboard, chipboard, particle board, plywood, laminated board or wood veneer products, less than 250 tonnes per annum; (18) Sawmilling, wood chipping and kiln drying timber and logs, producing less than 500 tonnes per annum; (19) Recycling and reprocessing batteries; (20) Repairing or maintaining boats; (21) Manufacturing substrate for mushroom growing; (22) Manufacturing or processing plaster, producing less than 5000 tonnes per annum; (23) Recycling or reprocessing tyres including retreading; (24) Printing advertising material, magazines, newspapers, packaging and stationery; (25) Transport depot, distribution centre, contractors depot and storage yard; (26) Manufacturing fibreglass, foam plastic, composite plastic or rigid fibre-reinforced plastic or plastic products, less than 5 tonnes per annum (except fibreglass boats, tanks and swimming pools); (27) Manufacturing PET, PETE, polypropylene and polystyrene plastic or plastic products, less than 10 000 tonnes per annum; (28) Reconditioning metal or plastic drums; (29) Glass fibre manufacture less than 200 tonnes per annum; and (30) Manufacturing glass or glass products, where not glass fibre, less than 250 tonnes per annum.
Special industry	a) Oil refining or processing; b) Producing, refining or processing gas or fuel gas; c) Distilling alcohol in works, other than beer and cider, producing greater than 2 500 litres per annum;

Column 1 Use Terms	Column 2 Additional examples include
	d) Power station; e) Producing, quenching, cutting, crushing or grading coke; f) Waste incinerator; g) Sugar milling or refining; h) Pulp or paper manufacturing; i) Tobacco processing; j) Tannery or works for curing animal skins, hides or finishing leather; k) Textile manufacturing, including carpet manufacturing, wool scouring or carbonising, cotton milling, or textile bleaching, dyeing or finishing; l) Rendering plant; m) Manufacturing chemicals, poisons and explosives; n) Manufacturing fertilisers involving ammonia; and o) Manufacturing polyvinyl chloride plastic.

SC1.2 Administrative terms

(1) Administrative terms and definitions assist with the interpretation of the Planning Scheme but do not have a meaning in relation to a use.

(2) An administrative term listed in Table SC1.2.2 (Administrative definitions) column 1 has the meaning set out beside that administrative term in column 2.

(3) The administrative terms and definitions listed here are the terms and definitions for the purpose of the Planning Scheme.

Table SC 1.2.1 Index of administrative definitions

Access handle	Demand unit	Non-resident workers
Active uses	Development footprint	Non-tidal artificial waterways
Adjoining premises	Display home	Obstacle limitation surfaces
Advertising device	Domestic outbuilding	Outermost projection
Affordable housing	Dune crest height	Planning assumptions
Agricultural land	Dwelling	Plot ratio
Annual exceedance probability (AEP)	Engineering work	Projection area(s)
Area of environmental significance	Essential service uses	Rear lot
Average building height (ABH)	Flood hazard area	Secondary dwelling
Average width	Future State transport corridor	Semi-public space
Base date	Gross floor area	Sensitive use
Basement	Gross leasable area	Service catchment
Boundary clearance	Ground level	Setback
Building height	Hazardous chemical facility uses	Short-term accommodation (Dwelling)
Bushfire prone area	Hazardous material	Significant attributes
Centre zones	Hazardous material in bulk	Site
Coastal dependant development	Heritage place	Site cover
Coastal hazard area	Household	Social housing
Coastal environment work	Industrial zones	Solar panel farm
Communal open space	Isolated areas	Storey
Communal space	Landslide hazard	Stream order
Community infrastructure	Landscaping works	Temporary development
Corner store	Minor building work	Total use area
Country living	Minor electricity infrastructure	Transit oriented development
Defined flood event (DFE)	Minor marine development	Ultimate development
Defined flood level (DFL)	Multi-unit uses	Urban area
Defined storm tide event (DSTE)	Net developable area	Urban purposes
	Netserv plan	Urban services
		Vulnerable uses

Table SC 1.2.2 Administrative definitions

Column 1 Term	Column 2 Definition
Access handle	That part of a lot which is used for providing access to a road from a rear lot. An access easement may also be an access handle.
Active uses	Includes uses which directly address the street frontage with building accesses and open or transparent frontages that attract a pedestrian to look in and allow casual surveillance looking outward. May include uses such as food and drink outlets, bars, beer gardens, outdoor venues, shops, community uses, offices and Accommodation activities, where communal space or foyer adjoins the frontage.
Adjoining premises	Premises that share a common boundary, including premises that meet at a single point on a common boundary. (Source— Planning Regulation 2017)
Advertising device	A permanent sign, structure or other device used, or intended to be used, for advertising and includes a structure, or part of a building, the primary purpose of which is to support the sign, structure or device. (Source—Planning Regulation 2017)
Affordable housing	Housing that is appropriate to the needs of households with low to moderate incomes, if the members of the households will spend no more than 30% of gross income on housing costs. (Source—Planning Regulation 2017)
Agricultural land	An area that is identified as agricultural land classification class A, agricultural land classification class B or locally important agricultural land on the Agricultural land overlay.
Annual exceedance probability (AEP)	The likelihood of occurrence of a flood of a given size or larger in any one year, usually expressed as a percentage. Editor's Note—for example, if a peak flood discharge of 500m^3/ second has an AEP of five percent; it means that there is a five percent risk, that is the probability of 0.05 or a likelihood of one in twenty, of a peak flood discharge of 500m^3/second or larger occurring in any one year. Note—the AEP of a flood event gives no indication of when a flood of that size will occur next. (Source—State Planning Policy July 2014)
Area of environmental significance	An area that is: (a) identified as a Matter of local, State or National environmental significance on the Biodiversity, waterways and wetlands overlay map; or (b) if not identified on the map above, an area included in a riparian buffer for waterbodies or a protected or wildlife habitat as per Table 8.2.4.3.3 of the Planning Scheme. Note: Matters of Local Environmental Significance (MLES), Matters of State Environmental Significance (MSES) and Matters of National Environmental Significance (MNES) are defined under the State Planning Policy 2017.

Column 1 Term	Column 2 Definition
Average building height (ABH)	The building height calculation for development on premises with excessive slope (greater than 25%), measured as ABH = (A+B) ÷ 2, where: (a) (A) is the greatest building height of the building's primary street frontage façade; and (b) (B) is the greatest building height at any point of the building.
Average width	In regard to a lot, the distance measured in metres, between the midpoint on each side boundary of the lot. (Source—Planning Regulation 2017)
Base date	The date from which a local government has estimated its projected infrastructure demands and costs for the local government area. (Source—Planning Regulation 2017)
Basement	A space that is situated between one floor level and the floor level immediately below it where no part of the space projects more than one metre above ground level. (Source—Planning Regulation 2017)
Boundary clearance	The distance between a building or structure on premises and the boundary of the premises, measured from the part of the building or structure that is closest to the boundary, other than a part that is— (a) an architectural or ornamental attachment; or (b) a rainwater fitting. (Source—Planning Regulation 2017)
Building height	Building height, of a building, means: (a) the vertical distance, measured in metres, between the ground level of the building and the highest point on the roof of the building, other than a point that is part of an aerial, chimney, flagpole or load-bearing antenna; or (b) the number of storeys in the building above ground level. (Source—Planning Regulation 2017)
Bushfire prone area	An area that is: (a) identified as medium, high or very high risk on Overlay map - Bushfire hazard overlay; or (b) if not identified on the Bushfire hazard overlay map, an area of land with a medium, high or very high risk on the relevant State mapping.
Centre zones	Centre zones is an Area classification for the purposes of the Local government infrastructure plan only and includes the following zones: • Major centre; • District centre; • Local centre; and • Neighbourhood centre.

Column 1 Term	Column 2 Definition
Coastal dependent development	Development that in order to function must be located in tidal waters or be able to access tidal water and: (a) may include, but is not limited to: (i) industrial and commercial facilities such as ports, public marine development, harbours and navigation channels and facilities, aquaculture involving marine species, desalination plants, tidal generators, coastal protection works, erosion control structures and beach nourishment; (ii) tourism facilities for marine (boating) purposes; (iii) community facilities and sporting facilities which require access to tidal water in order to function, such as surf clubs, marine rescue, rowing and sailing clubs; or (iv) co-located residential and tourist uses that are part of an integrated development proposal (e.g. mixed use development) incorporating a marina, if these uses are located directly land ward of the marina and appropriately protected from natural hazards; but (b) does not include: (i) residential development, including canal development, as the primary use; (ii) waste management facilities, such as landfills, sewage treatment plants; or (iii) transport infrastructure, other than for access to the coast. (Source – State Planning Policy July 2017)
Coastal hazard area	An area that is: (a) identified as wave run-up or inundation area on Coastal hazard overlay map - Storm tide inundation; (i) wave run-up area is considered to affect premises 200m landward from the highest astronomical tide. It represents the peak elevation of the intermittent process of advancement and retreat of the shoreline associated with wave processes during the coastal inundation event; and (ii) inundation area is located landward of the wave run-up area and is assumed to persist for a sufficient duration to cause inundation of land below this design water level; (b) identified as coastal erosion subcategory or permanent inundation due to seal level rise at 2100 sub category on Coastal hazard overlay map - Erosion prone areas and Permanent inundation; or (c) if not identified on the Coastal hazard overlay maps, an area of land affected by the Defined Storm Tide Event (DSTE).
Coastal environment work	Any permanent or periodic work undertaken primarily to manage the impacts of coastal hazards, including altering physical coastal processes, such as sediment transport.

Column 1 Term	Column 2 Definition
Communal open space	Common outdoor open space which is accessible to and shared by all residents of a development. This space can be used for recreation and/or relaxation purposes.
Communal space	A space that is access controlled and accessible to residents, employees or business owners and associated people, for the purposes of promoting social interaction. Examples include a foyer, shared kitchen, shared resting area for an office, or communal BBQ area in a residential building. Examples do not include areas connecting spaces, such as communal staircases or hallways.
Community infrastructure	Any one or more of the following: (a) Accommodation activities; or (b) Community activities; or (c) Industry activities; or (d) Other activities; or (e) Recreation activities. (Source—Planning Act 2016)
Corner store	A single small store, no larger than 150m^2 in an accessible location that sells a limited variety of daily necessities to local residents and visitors.
Country living	Country living is an Area classification for the purposes of the Local government infrastructure plan only and includes the following zones: • Emerging communities; • Rural residential; and • Rural.
Defined flood event (DFE)	A defined flood event (DFE) is the flood event adopted by a local government for the management of development in a particular locality. For the purposes of the Planning Scheme, the DFE is the 1% Annual Exceedance Probability (AEP) event, equivalent to a 1 in 100 year average recurrence interval (ARI) event unless indicated otherwise.
Defined flood level (DFL)	The level to which it is reasonably expected flood waters may rise. (Source – Building Regulation 2006) A flood water level adopted by the Council that represents the defined flood event (DFE) at the development site. (Source—State Planning Policy July 2017)
Defined storm tide event (DSTE)	The event (measured in terms of the likelihood of reoccurrence) and associated inundation level adopted to manage the development of a particular area. The DSTE is the 1% annual exceedance probability (AEP) storm tide, equivalent to a 1 in 100 year average recurrence interval (ARI) storm event incorporating 2100 climate change projections, including: (a) sea level rise; and (b) an increase in cyclone intensity by 10 per cent relative to maximum potential intensity.

Column 1 Term	Column 2 Definition
Demand unit	Demand units provide a standard of unit measurement to measure the level of demand for infrastructure. (Source—Planning Regulation 2017)
Development footprint	A part of the premises that the development relates to, including, for example, any part of the premises that, after the development is carried out, will be covered by— (a) buildings or structures measured to their outermost projection; (b) landscaping or open space; (c) facilities relating to the development; (d) on-site stormwater drainage or wastewater treatment; (e) a car park, road, access track or area used for vehicle movement; or (f) another area of disturbance. (Source— Planning Regulation 2017)
Display home	The temporary use of premises for: (a) display to the general public as a type of Accommodation activity that can be built; (b) the display of an Accommodation activity for the general public for some other business or commercial purpose including the promotion of a contest for which the premises are offered as a prize; or (c) the promotion and sale of land within a residential estate or other Accommodation activities within which it is located.
Domestic outbuilding	A non-habitable Class 10a building, as defined in the Building Code of Australia, that is ancillary to a residential use on the premises and is limited to a shed, garage and carport. (Source—Planning Regulation 2017)
Dwelling	A building or part of a building used or capable of being used as a self-contained residence that must include the following: (a) food preparation facilities; (b) a bath or shower; (c) a toilet and wash basin; and (d) clothes washing facilities. (Source—Planning Regulation 2017)
Engineering work	All works associated with private or public car parking, footpath, sewer, water or stormwater infrastructure, excluding building, plumbing or drainage work.
Essential service uses	The provision of essential services, such as utility installations, telecommunications facilities, substations and major electricity infrastructure. (Source—Planning Regulation 2017)
Flood hazard area	An area that is identified as a flood hazard area on the Flood hazard overlay map. (Source—State Planning Policy 2017)

Column 1 Term	Column 2 Definition
Future State transport corridor	Is an area for: (a) a future busway corridor; (b) a future light rail corridor; (c) a future railway corridor; or (d) a future State-controlled road. (Source—Planning Regulation 2017)
Gross floor area	The total floor area of all storeys of a building (measured from the outside of the external walls or the centre of a common wall), other than areas used for the following: (a) building services, plant and equipment; (b) access between levels; (c) ground floor public lobby; (d) a mall; (e) the parking, loading and manoeuvring of motor vehicles; or (f) unenclosed private balconies, whether roofed or not. (Source—Planning Regulation 2017)
Ground level	The level of the natural ground; or level of the natural ground has been changed, the level as lawfully changed. (Source – Planning Regulation 2017)
Habitable room	A room used for normal domestic activities, and: (a) includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, and sunroom; but (b) excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes-drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods. (Source—Building Code of Australia 1996 – Volume One)
Hazardous chemical facility uses	The use of premises for a facility at which a prescribed hazardous chemical is present or likely to be present in a quantity that exceeds 10% of the chemical's threshold quantity under the Work Health and Safety Regulation, Schedule 15. (Source – Planning Regulation 2017)
Hazardous chemicals flood hazard threshold	One of the following: (a) a hazardous chemical listed in schedule 11 of the *Work Health and Safety Regulation 2011* in a quantity that exceeds a threshold quantity stated in column 5 of schedule 11; (b) a chemical classified as hazardous to the aquatic environment under the Australian Dangerous Goods (ADG) code in the Acute I or Chronic I category that exceeds 2500 litres or kilograms; (c) a chemical classified as hazardous to the aquatic environment under the ADG code in the Chronic II category that exceeds 10,000 litres or kilograms; (d) a chemical classified as hazardous to the aquatic environment under the ADG code and assigned to

Column 1 Term	Column 2 Definition
	Packing Group III that exceeds 10,000 litres or kilograms; or (e) a chemical classified as hazardous to the aquatic environment under the Globally Harmonised System of Classification and Labelling of Chemicals that exceeds 10,000 litres or kilograms. (Source—State Planning Policy 2017)
Hazardous material	A substance with potential to cause harm to persons, property or the environment because of one or more of the following: (a) the chemical properties of the substance; or (b) the physical properties of the substance; or (c) the biological properties of the substance. (Source – State Planning Policy July 2017)
Hazardous material in bulk	Hazardous materials as defined in the Dangerous Goods Safety Management Act 2001 (except that radioactive substances and infectious substances are excluded) in quantities that: (a) would be equivalent to or exceed the minimum quantities set out to determine a Large Dangerous Goods Location in the Dangerous Goods Safety Management Regulation; or (b) would require a licence for a magazine for the storage of an explosive under the Explosives Regulation 1955.
Heritage place	A Queensland heritage place or a local heritage place. A place that is: (a) identified as a Local heritage place on Overlay map - HER - 01:29 (Heritage overlay); or (b) listed on the Whitsunday Regional Council Local Heritage Register. (Source – Queensland Heritage Act 1992)
Household	1 or more individuals who live in a dwelling with the intent of living together on a long-term basis and make common provision for food and other essentials for living. (Source—Planning Regulations 2017)
Industrial zones	Industrial zones is an Area classification for the purposes of the Local government infrastructure plan only and includes the following zones: • High impact industry; • Medium impact industry; • Low impact industry; • Special industry; • Waterfront and marine industry; and • Industry investigation.
Isolated areas	An area that is: (a) isolated solely by floodwaters; or (b) isolated by a combination of floodwaters and impassable terrain.

Column 1 Term	Column 2 Definition
	(Source – State Planning Policy July 2017)
Landslide hazard	An area that is: (c) identified as slope greater than, or equal to 15% on Overlay map - LH - 01:29 (Landslide hazard overlay); or (d) if not identified on the Landslide hazard overlay map, an area of land with a slope greater than, or equal to 15%.
Landscaping works	Planning, design and implementation of all hardscape and softscape treatment of the surface of the land in all areas external to a building envelope. This may include both public and private open space areas and road reserve areas for the purposes of amenity and function.
Minor building work	building work that increases the gross floor area of a building by no more than the lesser of the following— (a) 50m²; (b) an area equal to 5% of the gross floor area of the building. (Source—Planning Regulation 2017)
Minor electricity infrastructure	Development for a supply network or for private electricity works that form an extension of, or provide service connections to, properties from the network, if the network operates at standard voltages up to and including 66kV, other than development for— (a) a new zone substation or bulk supply substation; or (b) the augmentation of a zone substation or bulk supply substation that significantly increases the input or output standard voltage. (Source—Planning Regulation 2017)
Minor marine development	An alteration, addition or extension to an existing maritime development where the floor area, including balconies, is less than five per cent of the building or 50m^2, whichever is the lesser.
Multi-unit uses	A premise that contains three or more separate, short-term or long-term residences on the premises.
Net developable area	The area of the premises that is able to be developed; and is not subject to a development constraint, including, for example, a constraint relating to acid sulfate soils, flooding or slope. Note—for the purpose of a local government infrastructure plan, net developable area is usually measured in hectares, net developable hectares (net dev ha). (Source— Planning Regulations 2017)
Netserv plan	A distributor-retailer's plan about its water and wastewater networks and provision of water service and wastewater service pursuant to section 99BJ of the *South East Queensland water (Distribution and retail restructuring) Act 2009*. (Source—Planning Regulation 2017)

Column 1 Term	Column 2 Definition
Non-resident workers	Means a person who— a) performs work as part of— i. a resource extraction project; ii. a project identified in a Planning Scheme as a major industry or infrastructure project; or iii. a rural use; and b) lives, for extended periods, in the locality of the project, but has a permanent residence elsewhere. (Source—Planning Regulation 2017)
Non-tidal artificial waterway	Means a constructed canal, constructed urban lake or other body of water that is designed to be: (a) a permanent body of open water; (b) ringed with hard edges or aquatic plants; (c) indirectly connected to tidal water (by a lock or weir or other system); or (d) an artificial lake (generally land locked without a direct connection to tidal waterways). (State Planning Policy Guidance Material 2017)
Obstacle limitation surface	The surface that defines the height limit for obstacles located on land surrounding an airport and includes the obstacle limitation surface area and associated obstacle limitation surface contours, as shown on the mapping. (Source – State Planning Policy July 2017)
Outermost projection	The outermost projection of a building or structure, means the outermost part of the building or structure, other than a part that is a retractable blind, a fixed screen, a rainwater fitting, an ornamental attachment. (Source—Planning Regulation 2017)
Planning assumptions	Assumptions about the type, scale, location and timing of future growth in the local government area. (Source – Planning Regulation 2017)
Plot ratio	The ratio of the gross floor area of a building on a site to the area of the site. (Source—Planning Regulation 2017)
Projection area(s)	A part of the local government area for which the local government has carried out demand growth projection. (Source—Planning Regulation 2017)
Rear lot	A lot that has access to a road only by means of an access handle that forms part of the lot.
Secondary dwelling	A dwelling, whether attached or detached, that is used in conjunction with, and subordinate to, a dwelling house on the same lot. (Source—Planning Regulation 2017)
Semi-public space	A privately owned space accessible to the general public. Examples include private or public areas managed by a

Column 1 Term	Column 2 Definition
	private entity but open to the public for use such as shops, internal dining, al-fresco dining or beer gardens.
Sensitive land use	Any of the following defined uses— (a) caretaker's accommodation; (b) a childcare centre; (c) a community care centre; (d) a community residence; (e) a detention facility; (f) a dual occupancy; (g) a dwelling house; (h) a dwelling unit; (i) an educational establishment; (j) a health care service; (k) a hospital; (l) a hotel, to the extent the hotel provides accommodation for tourists or travellers; (m) a multiple dwelling; (n) non-resident workforce accommodation; (o) a relocatable home park; (p) a residential care facility; (q) a resort complex; (r) a retirement facility; (s) rooming accommodation; (t) rural workers' accommodation; (u) short-term accommodation; (v) a supervised accommodation service; or (w) a tourist park. (Source – Planning Regulation 2017)
Service catchment	An area serviced by an infrastructure network. (Source—Planning Regulation 2017)
Setback	For a building or structure, the shortest distance measured horizontally from the outer most projection of a building or structure to the vertical projection of the boundary of the lot where the building or structure is. (Source — Planning Regulation 2017)
Short-term accommodation (Dwelling)	The use of one or two, existing or proposed Dwellings for short-term accommodation for tourists for a temporary period of time not exceeding three consecutive months.
Significant attributes	The significant attributes of a heritage place or area include the streetscape, heritage character, landscape, topography, landmarks and views.
Site	The land that the development is to be carried out on. Examples— a) If development is to be carried out on part of a lot, the site of the development is that part of the lot. b) If development is to be carried out on part of 1 lot and part of an adjoining lot, the site of the development is both of those parts. (Source—Planning Regulation 2017)

Column 1 Term	Column 2 Definition
Site cover	The portion of the site, expressed as a percentage, that will be covered by a building or structure, measured to its outermost projection, after the development is carried out, other than a building or structure, or part of a building or structure, that is— (a) in a landscaped or open space area, including, for example, a gazebo or shade structure; (b) a basement that is completely below ground level and used for car parking; (c) the eaves of a building; or (d) a sun shade. (Source—Planning Regulation 2017)
Social housing	Housing for a residential use, other than crisis accommodation, that is either provided by: (a) the State as public housing, as defined in the *Planning Regulation 2017*; or (b) an entity other than the State (e.g. a not-for-profit organisation or local government) as community housing. (Source—State Planning Policy July 2017)
Solar panel farm	Is a group of photovoltaic solar arrays and associated infrastructure, producing energy at scale, mainly for use off-site, but does not include solar thermal farms.
Storey	A space within a building between 2 floor levels, or a floor level and a ceiling or roof, other than— (a) a space containing only a lift shaft, stairway or meter room, a space containing only a bathroom, shower room, laundry, toilet or other sanitary compartment, or a combination of the above; (b) a basement with a ceiling that is not more than 1m above ground level; and includes a messanine; and a roofed structured that is on, or part of, a rooftop, if the structure does not only accommodate building plant and equipment. (Source—Planning Regulation 2017)
Stream order	A watercourse shown on the Biodiversity, waterways and wetlands overlay map – Regulated vegetation (watercourse) and classified as stream order 1 to 5 under the Strahler stream order classification system. (Source – Planning Regulation 2017)
Temporary use	A use that— (a) is carried out on a non-permanent basis; and (b) does not involve the construction of, or significant changes to, permanent buildings or structures. (Source—Planning Regulation 2017)
Total use area (TUA)	The sum of all the areas (exclusive of all walls and columns) of all storeys of a building which are used or intended for use for a particular purpose, plus any other area of a site which is used, or intended to be used, for the same purpose. The term does not include:

Column 1 Term	Column 2 Definition
	(a) areas (inclusive of all walls and columns) of any lift wells, lift motor rooms, air conditioning and associated mechanical or electrical plant and equipment rooms; (b) areas of any staircases; (c) areas of any common foyer where these are not being used for commercial or retail purposes; (d) areas of any public toilets; (e) areas of any staff toilets, washrooms, recreation areas and lunchrooms, provided that such areas are not open to persons other than staff; and (f) areas used for the access, parking and associated manoeuvring of motor vehicles.
Ultimate development	The likely extent of development anticipated to be achieved when a site (or projection area or infrastructure service catchment) is fully developed. (Source—Planning Regulation 2017)
Urban area	Means: (a) an area identified in a gazette notice by the chief executive as an urban area; or (b) if no gazette notice has been published—an area identified as an area intended specifically for urban purposes, including future urban purposes (but not rural residential or future rural residential purposes) on a map in a Planning Scheme that— (i) identifies the areas using cadastral boundaries; and (ii) is used exclusively or primarily to assess development applications. (Source—Planning Regulation 2017)
Urban purposes	A purpose for which land is used in cities or towns— (a) including residential, industrial, sporting, recreation and commercial purposes; but (b) not including rural residential, environmental, conservation, rural, natural or wilderness area purposes. (Source—Planning Regulation 2017)
Urban services	Public services and public facilities at an intensity historically and typically provided in cities. Urban services specifically include: (a) sanitary sewer systems; (b) storm drainage systems; (c) domestic water systems; (d) street cleaning services; (e) fire and police protection services; (f) public transit services; and (g) other public utilities associated with urban areas and normally not associated with rural areas.
Vulnerable uses	Includes a childcare centre, community care centre, community residence, community use, detention facility, educational establishment, emergency services, hospital, non-resident workforce accommodation, relocatable home park, residential care facility, retirement facility, rooming

Column 1 Term	Column 2 Definition
	accommodation, rural workers' accommodation and tourist park. (Source—State Planning Policy 2017)

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Schedule 2 Mapping

SC2.1 Map index

The table below lists any strategic framework, zoning, local plan and overlay maps applicable to the planning scheme area

Editor's note—Mapping for the LGIP is contained in Schedule 3 (LGIP mapping and supporting material).

Table SC 2.1.1 Map index

Map number(s)	Map title	Gazettal date
Overview map		
WRC	Local government planning scheme area and context	
Strategic framework maps		
SFM	Strategic framework map	
Zone maps		
ZM	Zoning map	
Local plan maps		
ABLPT	Airlie Beach Local Plan Transport Map	
ALLPP	Airlie Beach Local Plan Boundary and Precinct Map	
BLPBP	Bowen Local Plan Boundary and Precinct Map	
HILPP	Hamilton island local plan: Precinct Plan	
Overlay maps		
ASS	Acid sulfate soil overlay	
AL	Agriculture land overlay	
AE	Airport environs overlay	
BWW	Biodiversity, waterways and wetlands overlay	
BH	Building heights overlay	
BH	Bushfire hazard overlay	
CP1	Coastal hazard overlay: Storm tide inundation	
CP2	Coastal hazard overlay: Erosion prone areas and permanent inundation	
ER	Extractive resources overlay	
FH	Flood hazard overlay	
HER	Heritage overlay	
INF1	Infrastructure overlay: Transport infrastructure	
INF2	Infrastructure overlay: Utility infrastructure	
LH	Landslide hazard overlay	

SC2.2 Overview map

SC2.3 Strategic framework maps

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Local government infrastructure plan map – PFTI SN – 01:05 (Sewerage network plans for trunk infrastructure map)

Local government infrastructure plan map – PFTI SWN – 01:05 (Stormwater network plans for trunk infrastructure map)

Local government infrastructure plan map – PFTI TN – 01:05 (Transport network plans for trunk infrastructure map)

Local government infrastructure plan map – PFTI PCFN – 01:06 (Parks and land for community facilities network plans for trunk infrastructure map)

Schedule 3 Local government infrastructure plan mapping and tables

SC3.1 Planning assumption tables

Table SC 3.1.1 Existing and projected population

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected population				
		2016	2021	2026	2031	Ultimate development
Abbot Point	Single dwellings	1,491	801	801	801	809
	Multiple dwellings	92	50	50	50	51
	Other dwellings	277	149	149	149	157
	Total	1,860	1,000	1,000	1,000	1,017
Bowen North	Single dwellings	6,113	6,109	6,152	6,171	6,617
	Multiple dwellings	2,136	2,254	2,395	2,531	2,762
	Other dwellings	21	27	33	38	45
	Total	8,270	8,390	8,580	8,740	9,425
Bowen South	Single dwellings	828	1,124	1,452	1,769	7,211
	Multiple dwellings	287	399	526	654	770
	Other dwellings	5	8	12	17	110
	Total	1,120	1,530	1,990	2,440	8,091
Collinsville	Single dwellings	1,345	1,324	1,352	1,362	2,914
	Multiple dwellings	816	820	854	878	901
	Other dwellings	799	796	824	841	858
	Total	2,960	2,940	3,030	3,080	4,673
Balance former Bowen Shire	Single dwellings	1,021	1,020	1,004	1,003	994
	Multiple dwellings	194	196	194	196	196
	Other dwellings	214	214	211	211	210
	Total	1,430	1,430	1,410	1,410	1,400
Whitsunday Islands	Single dwellings	127	128	129	130	132
	Multiple dwellings	622	612	603	593	586
	Other dwellings	1,091	1,109	1,128	1,147	1,172
	Total	1,840	1,850	1,860	1,870	1,890
Jubilee Pocket / Shute Harbour	Single dwellings	1,817	2,219	2,639	3,116	4,792
	Multiple dwellings	785	1,002	1,246	1,537	1,843
	Other dwellings	8	19	35	57	100
	Total	2,610	3,240	3,920	4,710	6,735
Cannonvale / Airlie Beach	Single dwellings	4,384	5,161	6,024	6,859	15,059
	Multiple dwellings	2,869	3,365	3,913	4,438	7,102
	Other dwellings	27	34	43	53	81
	Total	7,280	8,560	9,980	11,350	22,242

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected population				
		2016	2021	2026	2031	Ultimate development
Proserpine	Single dwellings	2,985	3,056	3,124	3,197	3,260
	Multiple dwellings	647	703	761	823	886
	Other dwellings	18	22	25	29	231
	Total	3,650	3,780	3,910	4,050	4,377
Balance former Whitsunday Shire	Single dwellings	4,893	5,157	5,457	5,737	5,989
	Multiple dwellings	454	485	521	556	588
	Other dwellings	13	17	22	28	33
	Total	5,360	5,660	6,000	6,320	6,610
Inside priority infrastructure area (total)	Single dwellings	17,151	18,646	20,438	22,205	39,853
	Multiple dwellings	6,107	7,062	8,037	9,028	14,265
	Other dwellings	1,696	1,712	1,804	1,893	1,425
	Total	24,953	27,420	30,279	33,127	55,542
Outside priority infrastructure area (total)	Single dwellings	7,853	7,452	7,695	7,939	7,924
	Multiple dwellings	2,796	2,823	3,026	3,228	1,421
	Other dwellings	777	684	679	677	1,572
	Total	11,426	10,960	11,400	11,844	10,917
Whitsunday Region	Single dwellings	25,005	26,098	28,134	30,144	47,777
	Multiple dwellings	8,903	9,885	11,063	12,256	15,686
	Other dwellings	2,473	2,396	2,483	2,570	2,997
	Total	36,380	38,380	41,680	44,970	66,460

Table SC 3.1.2 Existing and projected employees

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected employees				
		2016	2021	2026	2031	Ultimate development
Abbot Point	Retail	20	21	22	22	23
	Commercial	75	78	80	83	85
	Industrial	131	166	200	234	269
	Community	38	40	41	43	44
	Other	161	182	203	224	245
	Total	425	486	546	607	667
Bowen North	Retail	624	634	643	653	663
	Commercial	1,030	1,075	1,120	1,165	1,210
	Industrial	798	816	834	852	870
	Community	529	563	596	629	662
	Other	923	914	905	896	887
	Total	3,903	4,000	4,097	4,194	4,291
Bowen South	Retail	45	50	55	59	64
	Commercial	87	91	94	97	100
	Industrial	61	63	64	66	68
	Community	41	45	49	53	57
	Other	92	100	108	116	124
	Total	327	348	369	391	412
Collinsville	Retail	101	103	105	108	110
	Commercial	194	198	202	206	210
	Industrial	125	153	181	209	238
	Community	123	124	126	127	129
	Other	146	160	174	188	202
	Total	689	739	788	838	888
Balance former Bowen Shire	Retail	57	58	59	59	60
	Commercial	93	92	92	91	90
	Industrial	37	32	27	22	18
	Community	39	37	35	33	31
	Other	1,442	1,567	1,692	1,817	1,941
	Total	1,668	1,786	1,904	2,022	2,140
Whitsunday Islands	Retail	166	174	181	189	197
	Commercial	701	740	778	817	855
	Industrial	9	9	9	9	10
	Community	31	34	36	38	40
	Other	33	36	39	43	46
	Total	940	992	1,044	1,096	1,148
Jubilee Pocket / Shute Harbour	Retail	235	247	259	270	282
	Commercial	378	401	424	447	470
	Industrial	116	118	119	121	123

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected employees				
		2016	2021	2026	2031	Ultimate development
	Community	77	91	104	117	130
	Other	149	153	156	160	164
	Total	955	1,008	1,061	1,115	1,168
Cannonvale / Airlie Beach	Retail	785	906	1,027	1,148	1,269
	Commercial	1,565	1,924	2,283	2,643	3,002
	Industrial	575	685	795	905	1,015
	Community	580	674	768	863	957
	Other	542	596	649	702	755
	Total	4,047	4,785	5,522	6,260	6,998
Proserpine	Retail	233	235	238	240	243
	Commercial	556	576	596	617	637
	Industrial	393	404	415	426	437
	Community	301	319	337	355	374
	Other	305	311	317	323	329
	Total	1,787	1,845	1,903	1,961	2,019
Balance former Whitsunday Shire	Retail	162	168	174	180	186
	Commercial	454	480	506	532	559
	Industrial	245	245	245	245	245
	Community	286	298	310	323	335
	Other	1,072	1,067	1,063	1,058	1,054
	Total	2,218	2,258	2,298	2,338	2,378
Inside priority infrastructure area (total)	Retail	1,680	1,819	1,956	2,095	2,233
	Commercial	3,551	3,962	4,374	4,788	5,205
	Industrial	1,722	1,884	2,047	2,210	2,373
	Community	1,415	1,558	1,701	1,845	1,989
	Other	3,365	3,564	3,759	3,952	4,145
	Total	11,731	12,787	13,837	14,889	15,945
Outside priority infrastructure area (total)	Retail	749	777	806	835	864
	Commercial	1,583	1,694	1,801	1,908	2,014
	Industrial	768	806	843	881	918
	Community	631	666	700	735	770
	Other	1,500	1,523	1,548	1,575	1,604
	Total	5,230	5,466	5,698	5,934	6,169
Whitsunday Region	Retail	2,428	2,595	2,762	2,929	3,096
	Commercial	5,133	5,654	6,175	6,696	7,217
	Industrial	2,489	2,689	2,890	3,090	3,290
	Community	2,045	2,223	2,401	2,580	2,758
	Other	4,864	5,085	5,306	5,527	5,748
	Total	16,959	18,246	19,534	20,821	22,109

Table SC 3.1.3 Planned density and demand generation rate for a trunk infrastructure network

Column 1 Area classification	Column 2 LGIP development type	Column 3 Planned density		Column 4 Demand generation rate for a trunk infrastructure network			
		Non-residential plot ratio (m^2 of GFA/dev ha)	Residential density (dwellings/dev ha)	Water supply network (EP/dev ha)	Sewerage network (EP/dev ha)	Transport network (vpd/dev ha)	Parks and land for community facilities network (ha/1000 persons)
Residential development							
Low density	Single dwellings	Not applicable	10	28	28	90	3.5
Low medium density	Single dwellings Multiple dwellings	Not applicable	20	48	48	110	3.5
Mixed use[1]	Multiple dwellings	Not applicable	30	57	57	87	3.5
Tourist Accommodation[1]	Multiple dwellings Other dwellings	Not applicable	8	38	38	58	3.5
Country living	Single dwellings Multiple dwellings Other dwellings	Not applicable	2	Not applicable	Not applicable	18	3.5
Non-residential development and mixed development							
Centre zones	Retail Commercial	4000	Not applicable	88	52	4840	Not applicable
Industrial zones	Industry	2500	Not applicable	32.5	17.5	112.5	Not applicable
Community facilities	Community purpose	2000	Not applicable	22	14	90	Not applicable
Mixed use[1]	Retail Commercial	4000	Not applicable	88	52	4840	Not applicable
Tourist accommodation[1]	Retail Commercial	100	Not applicable	33	27	1800	Not applicable

Note—1. Table SC 3.1.3 Column 1 Mixed use and Tourist accommodation development may generate residential or non-residential demand or both. Where development has elements of both residential and non-residential demand generation rates must be applied accumulatively considering the nature of all uses.

Table SC 3.1.4 Existing and projected residential dwellings

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected residential dwellings				
		2016	2021	2026	2031	Ultimate development
Abbot Point	Single dwellings	537	292	294	297	303
	Multiple dwellings	59	32	32	32	32
	Other dwellings	277	149	149	149	157
	Total	873	473	475	478	492
Bowen North	Single dwellings	2,416	2,434	2,471	2,498	2,701
	Multiple dwellings	1,180	1,246	1,323	1,398	1,526
	Other dwellings	21	27	33	38	45
	Total	3,617	3,707	3,827	3,934	4,271
Bowen South	Single dwellings	279	382	499	613	2,519
	Multiple dwellings	172	237	311	385	450
	Other dwellings	5	8	12	17	110
	Total	456	627	822	1,015	3,079
Collinsville	Single dwellings	587	581	596	603	1,294
	Multiple dwellings	396	398	415	426	438
	Other dwellings	799	796	824	841	858
	Total	1,782	1,775	1,835	1,870	2,590
Balance former Bowen Shire	Single dwellings	404	406	403	406	406
	Multiple dwellings	92	93	93	93	93
	Other dwellings	214	214	211	211	210
	Total	710	713	707	710	709
Whitsunday Islands	Single dwellings	50	51	52	52	54
	Multiple dwellings	295	290	286	281	278
	Other dwellings	1,091	1,109	1,128	1,147	1,172
	Total	1,436	1,450	1,466	1,480	1,504
Jubilee Pocket / Shute Harbour	Single dwellings	721	887	1,064	1,267	1,964
	Multiple dwellings	429	548	681	840	1,007
	Other dwellings	8	19	35	57	100
	Total	1,158	1,454	1,780	2,164	3,071
Cannonvale / Airlie Beach	Single dwellings	1,713	2,032	2,391	2,744	6,073
	Multiple dwellings	1,479	1,734	2,017	2,288	3,661
	Other dwellings	27	34	43	53	81
	Total	3,219	3,800	4,451	5,085	9,815
Proserpine	Single dwellings	1,166	1,203	1,240	1,279	1,315
	Multiple dwellings	412	448	485	524	564
	Other dwellings	18	22	25	29	231
	Total	1,596	1,673	1,750	1,832	2,110
Balance former Whitsunday Shire	Single dwellings	1,897	2,015	2,148	2,277	2,395
	Multiple dwellings	238	254	273	291	308
	Other dwellings	13	17	22	28	33

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected residential dwellings				
		2016	2021	2026	2031	Ultimate development
	Total	2,148	2,286	2,443	2,596	2,736
Inside priority infrastructure area (total)	Single dwellings	6,513	7,154	7,910	8,663	15,866
	Multiple dwellings	3,168	3,674	4,193	4,721	7,645
	Other dwellings	1,649	1,667	1,760	1,850	1,425
	Total	11,330	12,496	13,864	15,234	24,936
Outside priority infrastructure area (total)	Single dwellings	3,257	3,128	3,248	3,372	3,158
	Multiple dwellings	1,584	1,606	1,722	1,838	711
	Other dwellings	824	729	723	720	1,572
	Total	5,665	5,463	5,692	5,930	5,441
Whitsunday Region	Single dwellings	9,770	10,282	11,157	12,035	19,024
	Multiple dwellings	4,752	5,280	5,914	6,559	8,357
	Other dwellings	2,473	2,396	2,483	2,570	2,997
	Total	16,995	17,958	19,554	21,164	30,378

Table SC 3.1.5 Existing and projected non-residential floor space

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected non-residential floor space (m^2 GFA)				
		2016	2021	2026	2031	Ultimate development
Abbot Point	Retail	629	659	688	718	747
	Commercial	1,501	1,552	1,602	1,653	1,703
	Industrial	15,779	19,899	24,018	28,137	32,256
	Community	2,671	2,778	2,884	2,991	3,098
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	20,580	24,888	29,192	33,499	37,804
Bowen North	Retail	19,963	20,275	20,586	20,898	21,210
	Commercial	20,592	21,493	22,394	23,294	24,195
	Industrial	95,724	97,884	100,044	102,204	104,364
	Community	37,057	39,378	41,699	44,019	46,340
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	173,337	179,030	184,723	190,416	196,109
Bowen South	Retail	1,441	1,593	1,745	1,896	2,048
	Commercial	1,749	1,810	1,871	1,931	1,992
	Industrial	7,319	7,517	7,715	7,914	8,112
	Community	2,890	3,157	3,424	3,691	3,959
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	13,400	14,078	14,755	15,433	16,111
Collinsville	Retail	3,231	3,303	3,375	3,448	3,520
	Commercial	3,889	3,965	4,042	4,118	4,195
	Industrial	15,008	18,381	21,754	25,127	28,500
	Community	8,575	8,680	8,785	8,890	8,995
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	30,702	34,329	37,956	41,583	45,210
Balance former Bowen Shire	Retail	1,836	1,855	1,875	1,894	1,914
	Commercial	1,858	1,844	1,830	1,817	1,803
	Industrial	4,408	3,834	3,260	2,686	2,112
	Community	2,709	2,574	2,439	2,305	2,170
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	10,810	10,107	9,404	8,701	7,999
Whitsunday Islands	Retail	5,310	5,556	5,803	6,049	6,296
	Commercial	14,020	14,792	15,564	16,335	17,107
	Industrial	1,100	1,113	1,126	1,139	1,152
	Community	2,196	2,351	2,505	2,660	2,814
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	22,626	23,811	24,997	26,183	27,369
Jubilee Pocket / Shute Harbour	Retail	7,531	7,906	8,280	8,655	9,030
	Commercial	7,551	8,011	8,471	8,931	9,391
	Industrial	13,907	14,105	14,303	14,502	14,700

Column 1 Projection area	Column 2 LGIP development type	Column 3 Existing and projected non-residential floor space (m^2 GFA)				
		2016	2021	2026	2031	Ultimate development
	Community	5,417	6,338	7,259	8,179	9,100
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	34,406	36,360	38,314	40,268	42,221
Cannonvale / Airlie Beach	Retail	25,126	28,993	32,859	36,726	40,592
	Commercial	31,294	38,482	45,669	52,857	60,044
	Industrial	68,970	82,181	95,391	108,602	121,812
	Community	40,571	47,173	53,775	60,377	66,980
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	165,962	196,829	227,695	258,561	289,428
Proserpine	Retail	7,448	7,530	7,612	7,694	7,776
	Commercial	11,119	11,523	11,927	12,331	12,735
	Industrial	47,121	48,436	49,750	51,065	52,380
	Community	21,062	22,333	23,604	24,874	26,145
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	86,750	89,822	92,893	95,965	99,036
Balance former Whitsunday Shire	Retail	5,182	5,370	5,559	5,747	5,936
	Commercial	9,078	9,601	10,124	10,647	11,170
	Industrial	29,344	29,370	29,396	29,422	29,448
	Community	20,024	20,876	21,728	22,580	23,433
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	63,627	65,217	66,807	68,397	69,987
Inside priority infrastructure area (total)	Retail	63,065	67,927	72,775	77,614	82,445
	Commercial	83,321	92,495	101,687	110,894	120,115
	Industrial	242,434	263,988	285,527	307,057	328,582
	Community	116,213	127,314	138,419	149,528	160,641
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	505,033	551,723	598,407	645,094	691,784
Outside priority infrastructure area (total)	Retail	14,631	15,112	15,607	16,111	16,624
	Commercial	19,330	20,578	21,807	23,020	24,220
	Industrial	56,244	58,732	61,231	63,739	66,255
	Community	26,961	28,325	29,684	31,039	32,392
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	117,166	122,748	128,328	133,909	139,491
Whitsunday Region	Retail	77,696	83,039	88,382	93,725	99,069
	Commercial	102,652	113,073	123,494	133,914	144,336
	Industrial	298,678	322,720	346,758	370,797	394,837
	Community	143,174	155,638	168,103	180,567	193,033
	Other	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Total	622,199	674,471	726,735	779,003	831,275

Table 3.1.6 Existing and projected demand for the water supply network

Column 1 Service catchment[1]	Column 2 LGIP development category	Column 3 Existing and projected demand (EP)				
		2016	2021	2026	2031	Ultimate development
Catchment 1- Town of Whitsunday	Residential	10,847	13,021	15,440	17,962	31,853
	Non-residential	3,166	3,700	4,234	4,769	5,302
	Total	14,012	16,721	19,674	22,730	37,155
Catchment 2 - Bowen	Residential	10,124	10,789	11,590	12,353	18,513
	Non-residential	2,743	2,835	2,927	3,020	3,112
	Total	12,866	13,624	14,518	15,373	21,625
Catchment 3 - Collinsville	Residential	4,157	4,140	4,279	4,360	6,262
	Non-residential	446	494	543	591	639
	Total	4,603	4,635	4,822	4,950	6,901
Catchment 4 - Proserpine	Residential	4,227	4,425	4,623	4,834	5,414
	Non-residential	1,253	1,294	1,336	1,378	1,420
	Total	5,480	5,719	5,959	6,212	6,834
Inside priority infrastructure area (total)	Residential	29,355	32,375	35,933	39,508	62,042
	Non-residential	7,607	8,324	9,040	9,757	10,473
	Total	36,962	40,699	44,973	49,265	72,515
Outside priority infrastructure area (total)	Residential	3,418	3,218	3,279	3,347	3,623
	Non-residential	1,818	1,898	1,978	2,058	2,138
	Total	5,236	5,116	5,257	5,404	5,761
Whitsunday Region	Residential	32,773	35,593	39,212	42,855	65,665
	Non-residential	9,425	10,222	11,018	11,815	12,611
	Total	42,198	45,815	50,230	54,669	78,276

Note—2. Table SC 3.1.6 Column 1 The service catchments for the water supply network are identified on Local government infrastructure plan maps – PFTI WN – 01A:01E (LGIP Plans for Trunk Infrastructure Water Network Catchment Map) in Schedule 3 (local government infrastructure mapping and tables).

Table 3.1.7 Existing and projected demand for the sewerage network

Column 1 Service catchment[2]	Column 2 LGIP development category	Column 3 Existing and projected demand (EP)				
		2016	2021	2026	2031	Ultimate development
Catchment 1 - Town of Whitsunday	Residential	10,847	13,021	15,440	17,962	31,853
	Non-residential	1,837	2,147	2,458	2,768	3,078
	Total	12,684	15,168	17,898	20,730	34,931
Catchment 2 - Bowen	Residential	10,124	10,789	11,590	12,353	18,513
	Non-residential	1,570	1,625	1,679	1,733	1,787
	Total	11,694	12,413	13,269	14,086	20,300
Catchment 3 - Collinsville	Residential	4,157	4,140	4,279	4,360	6,262
	Non-residential	258	284	310	336	363
	Total	4,415	4,424	4,589	4,696	6,625
Catchment 4 - Proserpine	Residential	4,227	4,425	4,623	4,834	5,414
	Non-residential	719	743	767	792	816
	Total	4,946	5,168	5,391	5,625	6,231
Inside priority infrastructure area (total)	Residential	29,355	32,375	35,933	39,508	62,042
	Non-residential	4,384	4,799	5,214	5,630	6,045
	Total	33,739	37,174	41,147	45,137	68,087
Outside priority infrastructure area (total)	Residential	3,418	3,218	3,279	3,347	3,623
	Non-residential	1,054	1,099	1,144	1,189	1,234
	Total	4,472	4,317	4,424	4,536	4,857
Whitsunday Region	Residential	32,773	35,593	39,212	42,855	65,665
	Non-residential	5,437	5,898	6,358	6,819	7,279
	Total	38,211	41,491	45,570	49,674	72,945

Note—3. Table SC 3.1.7 Column 1 The service catchments for the sewer network are identified on Local government infrastructure plan maps – PFTI SN – 01A:01E (LGIP Plans for Trunk Infrastructure Sewer Network Catchment Map) in Schedule 3 (local government infrastructure mapping and tables).

Table 3.1.8 Existing and projected demand for the stormwater network

Column 1 Service catchment[3]	Column 2 LGIP development category	Column 3 Existing and projected demand (imp ha)				
		2016	2021	2026	2031	Ultimate development
Catchment 1 - Town of Whitsunday	Residential					
	Non-residential					
	Total					
Catchment 2 - Bowen	Residential					
	Non-residential					
	Total					
Catchment 3 - Collinsville	Residential					
	Non-residential					
	Total					
Catchment 4 - Proserpine	Residential					
	Non-residential					
	Total					
Inside priority infrastructure area (total)	Residential					
	Non-residential					
	Total					
Outside priority infrastructure area (total)	Residential					
	Non-residential					
	Total					
Whitsunday Region	Residential					
	Non-residential					
	Total					

Due to incomplete network information, a table of existing and projected demand for the stormwater network is unable to be included.

Recommendations identified as a result of future network planning is anticipated to be incorporated into future amendments to the LGIP.

Note—4. Table SC 3.1.8 Column 1 The service catchments for the stormwater network are identified on Local government infrastructure plan maps – PFTI SWN – 01A:01E (LGIP Plans for Trunk Infrastructure Stormwater Network Catchment Map) in Schedule 3 (local government infrastructure mapping and tables).

Table SC 3.1.9 Existing and projected demand for the transport network

Column 1 Service catchment[4]	Column 2 LGIP development category	Column 3 Existing and projected demand (vpd)				
		2016	2021	2026	2031	Ultimate development
Catchment 1 - Town of Whitsunday	Residential	29,645	35,567	42,130	48,960	88,532
	Non-residential	111,458	130,694	149,928	169,163	188,398
	Total	141,103	166,261	192,058	218,123	276,930
Catchment 2 - Bowen	Residential	28,068	30,004	32,335	34,554	53,733
	Non-residential	75,608	78,708	81,805	84,903	88,002
	Total	103,676	108,712	114,140	119,457	141,735
Catchment 3 - Collinsville	Residential	12,307	12,251	12,655	12,886	18,975
	Non-residential	13,149	13,527	13,907	14,286	14,667
	Total	25,456	25,778	26,562	27,172	33,642
Catchment 4 - Proserpine	Residential	12,284	12,826	13,372	13,949	15,081
	Non-residential	34,063	35,284	36,503	37,721	38,939
	Total	46,347	48,110	49,875	51,670	54,020
Catchment 5 – Non-urban Balance	Residential	42,938	41,524	43,378	45,252	50,323
	Non-residential	61,809	63,644	65,477	67,310	69,145
	Total	104,747	105,168	108,855	112,562	119,468
Inside priority infrastructure area (total)	Residential	82,303	90,647	100,491	110,350	176,321
	Non-residential	234,278	258,213	282,143	306,073	330,006
	Total	316,581	348,860	382,634	416,423	506,327
Outside priority infrastructure area (total)	Residential	42,938	41,524	43,378	45,252	50,323
	Non-residential	61,809	63,644	65,477	67,310	69,145
	Total	104,747	105,168	108,855	112,562	119,468
Whitsunday Region	Residential	125,241	132,171	143,869	155,601	226,644
	Non-residential	296,087	321,857	347,620	373,383	399,151
	Total	421,328	454,028	491,489	528,984	625,795

Note—5. Table SC 3.1.9 Column 1 The service catchments for the transport network are identified on Local government infrastructure plan map – PFTI TN – 01A:1E (LGIP Plans for Trunk Infrastructure Transport Network Catchment Map) in Schedule 3 (local government infrastructure mapping and tables).

Table SC 3.1.10 Existing and projected demand for the parks and land for community facilities network

Column 1 Service catchment[5]	Column 2 LGIP development category	Column 3 Existing and projected demand (ha/1000 persons)				
		2016	2021	2026	2031	Ultimate development
Catchment 1 - Town of Whitsunday	Residential	33.3	39.9	47.1	54.5	99.0
	Non-residential	0	0	0	0	0
	Total	33.3	39.9	47.1	54.5	99.0
Catchment 2 - Bowen	Residential	31.6	33.4	35.6	37.7	58.7
	Non-residential	0	0	0	0	0
	Total	31.6	33.4	35.6	37.7	58.7
Catchment 3 - Collinsville	Residential	9.6	9.4	9.6	9.6	13.7
	Non-residential	0	0	0	0	0
	Total	9.6	9.4	9.6	9.6	13.7
Catchment 4 - Proserpine	Residential	12.8	13.2	13.7	14.2	15.3
	Non-residential	0	0	0	0	0
	Total	12.8	13.2	13.7	14.2	15.3
Catchment 5 – Non-urban Balance	Residential	40.0	38.4	39.9	41.5	46.0
	Non-residential	0	0	0	0	0
	Total	40.0	38.4	39.9	41.5	46.0
Inside priority infrastructure area (total)	Residential	87.3	96.0	106.0	115.9	186.7
	Non-residential	0	0	0	0	0
	Total	87.3	96.0	106.0	115.9	186.7
Outside priority infrastructure area (total)	Residential	40.0	38.4	39.9	41.5	46.0
	Non-residential	0.0	0.0	0.0	0.0	0.0
	Total	40.0	38.4	39.9	41.5	46.0
Whitsunday Region	Residential	127.3	134.3	145.9	157.4	232.6
	Non-residential	0	0	0	0	0
	Total	127.3	134.3	145.9	157.4	232.6

Note—6. Table SC 3.1.10 Column 1 The service catchments for the parks and land for community facilities network are identified on Local government infrastructure plan map – PFTI PCFN – 01A:1E (LGIP Plans for Trunk Infrastructure Parks and Land for Community Facilities Network Catchment Map) in Schedule 3 (local government infrastructure mapping and tables).

SC3.2 Schedules of works

Table SC3.2.1 Water supply network schedule of works

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost[7]
W1	New DN500 Main 9050m long from Lot 104 N25576 Proserpine Water Treatment Plant to Lot 22 RP882994 Coastal Water Treatment Plant, Proserpine to Mount Marlow	2017	$15,542,325
W2	Upgrade DN450 Main 333m long from Proserpine high level tank to existing DN250 in Faust St, Proserpine (replacing WM_P_964; WM_P_981; WM_P_1078; WM_P_971; & WM_P_852)	2017	$408,156
W3	New DN250 Main 130m long from Faust Street to Ann Street, Proserpine (joining WM_P_971 to WM_P_837)	2017	$111,644
W4	New Water Intake System for Bowen Water Treatment Plant at Proserpine River - Up River Road, Crystal Brook	2017	$1,130,000
W5	Upgrade Booster Pump Station No.2 capacity to 200L/s at Lot 1 RP739344 Coastal Water Treatment Plant, Mount Marlow (WCGR20)	2017/2018	$581,950
W6	New DN200 Main 100m long connecting Anzac Road to Hinschen Street (joining WM_P_844 to WM_P_1346 under railway line), Proserpine	2022-2026	$200,688
W7	One new 12ML Reservoir including two new DN500 Mains 790m long each from new Reservoir to existing trunk Main at Shute Harbour Road and 60mx100m Land (6000m²) on Lot 9 SP218209, Cannonvale	2022-2026	$13,288,800
W8	**LGIP ID W8 has been left intentionally blank**		
W9a	Upgrade DN200 Main 164m long in Bruce Highway from Main Street to Fuljames Street, Proserpine (replacing WM_P_925)	2022-2026	$151,951
W9b	New DN200 Main 186m long from Bruce Highway to Horsford Place, Proserpine (joining WM_P_925 to WM_P_1048)	2022-2026	$160,889
W10	Upgrade DN200 Main 190m long in Stanbury Street from Holmes Street to Ruge Street, Proserpine (replacing WM_P_872; & WM_P_874)	2022-2026	$171,331
W11	Upgrade DN200 Main 368m long in Ridge View Road, Cannonvale (replacing WM_P_346; WM_P_487; & WM_P_504 - first 42m only)	2022-2026	$331,840
W12	Upgrade Reservoir capacity to 90kL at Pepperberry Lane, Lot 990 SP178725, Cannon Valley (WCGR14)	2022-2026	$714,725
W13	Two new Bores including associated new DN300 Main 157m long at Foxdale Road, Foxdale and new DN300 Main 10m long at Bruce Highway, Foxdale	2027-2031	$655,400
W14	Two new Bores including two associated new DN300 Mains 100m long each at Proserpine Water Treatment Plant Crystalbrook Road, Proserpine	2027-2031	$655,400

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost[8]
W15	Upgrade DN250 Main 1124m long in Jubilee Pocket Road, Jubilee Pocket (replacing WM_P_616; WM_P_726; WM_P_727; WM_P_729; & WM_P_730)	2027-2031	$1,115,753
W16	Upgrade DN200 Main 731m long in Erromango Drive, Jubilee Pocket (replacing WM_P_668; WM_P_748; WM_P_707; WM_P_710; WM_P_712; & WM_P_714)	2027-2031	$669,819
W17	Upgrade Reservoir capacity to 100kL at Lot 94 RP748476 Moonlight Drive, Jubilee Pocket (WCGR01)	2027-2031	$991,575
W18	Upgrade Reservoir capacity to 160kL at Lot 103 RP743876 Macona Crescent, Cannonvale (WCGR07)	2027-2031	$413,354
W19	Upgrade Reservoir capacity to 110kL at Lot 163 HR1525 Parkwood Terrace, Cannonvale (WCGR06)	2027-2031	$346,684
W20	Upgrade Booster Pump Station No.2 capacity to 260L/s at Lot 1 RP739344 Coastal Water Treatment Plant, Mount Marlow (WCGR20)	2027-2031	$1,115,753
TOTAL			**$38,314,634**

[7] The establishment cost is expressed in current cost terms as at the base date.

[8] The establishment cost is expressed in current cost terms as at the base date.

Table SC3.2.2 Sewerage network schedule of works

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost[9]
S1	Upgrade Sewer Pump Station 1 capacity to 88L/s @ 62m at Lot 1 RP742660 Shute Harbour Road, Jubilee Pocket (JUBI1-PS1), including bypass of Cannonvale Sewer Pump Station 6	2018	$151,307
S2	Upgrade Sewer Pump Station 12 capacity to 64L/s @ 24m at Lot 61 RP800716 Carlo Drive, Cannonvale (CANN12-PS12)	2018	$104,751
S3	Upgrade Bowen Sewer Treatment Plant capacity at Lot 207 RP800719 Elphinstone Street, Bowen, inclusive of a recycled local water system	2021	$44,748,000
S4	Upgrade Sewer Pump Station 3 capacity to 62L/s @ 57m at Lot 1 RP725974 Dalrymple Street, Bowen (PS3)	2022-2026	$140,459
S5	Upgrade DN225 Rising Main 925m long from Cannonvale Pump Station 12 (CANN12-PS12) to Cannonvale Sewer Treatment Plant (CANN1-STP at Lot 164 HR1551), Cannonvale (replacing SM_P_3076)	2022-2026	$778,717
S6	New DN375 Combined Rising Main 870m long from SM_P_3428 at Edwards Street to Proserpine Sewer Treatment Plant Lot 1 SP241784 Bruce Highway, Proserpine, incorporating an aerial crossing at Proserpine River and a DN200 Main 40m long micro-tunnelled under Bruce Highway	2022-2026	$908,915
S7	Upgrade Sewer Pump Station Z capacity to 92L/s @ 21m (Bowen Z)	2022-2026	$115,938
TOTAL			**$46,984,087**

[9] The establishment cost is expressed in current cost terms as at the base date.

Table SC3.2.3 Stormwater network schedule of works

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost
TOTAL			

Due to incomplete network information, a schedule of works for the stormwater network is unable to be included.

Recommendations identified as a result of future network planning is anticipated to be incorporated into future amendments to the LGIP.

Table SC3.2.4 Transport network schedule of works

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost[10]
T1	Upgrade Beach Road to Minor Collector 200m from Herring Lane to Schnapper Street, Cannonvale (21085) including road upgrade, widening and drainage	2017	$581,700
T2	Upgrade Dalrymple Street to Minor Collector 245m from Brisbane Street to Hay Street, Bowen (10185) including road upgrade, widening and drainage	2017/2018	$811,112
T3	Upgrade Leichhardt Street to Minor Collector 705m from Don Street to Sunset Crescent, Bowen (10345) including road upgrade, widening, drainage and footpath	2017/2018	$1,001,804
T4	Upgrade West Street to Minor Collector 760m from Richmond Road to Russell Street, Bowen (10585) including road upgrade, widening and drainage	2017/2018	$759,223
T5	Upgrade Abell Road to Major Collector 180m from Hamilton Avenue to Parker Road, Cannonvale (21005) including road upgrade, widening and drainage	2019	$549,707
T6	Upgrade Erromango Drive to Major Collector 695m from Shute Harbour Road to end, Jubilee Pocket (21275) including road upgrade, widening and drainage	2019	$2,122,478
T7	New road part Erromango Drive to Major Collector 640m from Erromango Drive end to St Bees Boulevarde, Jubliee Pocket (new part 21275) including road resumption and new road construction to Major Collector standard	2020	$2,001,048
T8	Upgrade Bootooloo Road to Minor Collector 1000m from Bruce Highway to Catherine Drive, Bowen (10095) including road upgrade, widening and drainage	2020	$1,720,892
T9	Upgrade Dalrymple Street to Minor Collector 245m from Herbert Street to Brisbane Street, Bowen (10185) including road upgrade, widening and drainage	2021	$653,672
T10	Upgrade Golf Links Road to Minor Collector 1300m from Tollington Road to Mt Nutt Road, Bowen (11165) including road upgrade, widening and drainage	2022-2026	$3,499,997
T11	Upgrade Jasinique Drive to Rural Collector 889m from Shute Harbour Road to end, Flametree (21425) including road upgrade, widening and drainage	2022-2026	$1,521,710
T12	Upgrade Mt Nutt Road to Major Collector 2000m from Richmond Road to Golf Links Road, Bowen (11285) including road upgrade, widening and drainage	2022-2026	$6,631,380
T13	**LGIP ID T13 has been left intentionally blank**		
T14	Upgrade Riordanvale Road to Sub-Arterial 1650m from Dunning Road to Cutuli Road, Cannon Valley/Cannonvale (21730) including road upgrade, widening and drainage	2027-2031	$6,832,980
T15	Upgrade Tollington Road to Major Collector 980m from Soldiers Road to Argyle Park Road, Bowen (11435) including road upgrade, widening and drainage	2027-2031	$3,306,383

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost[10]
T16	Upgrade Country Road to Minor Collector 545m from Links Drive to Tropic Road, Cannonvale (21215) including road upgrade, widening and drainage	2027-2031	$1,533,401
T17	New road part Parker Road to Major Collector 200m from end Parker Road to start new Quarry Road, Cannonvale (new part 21645) including new road construction to Major Collector standard	2027-2031	$680,589
T18	Upgrade Argyle Park Road to Major Collector 1400m from Hillview Road to Golflinks Road, Bowen (11005) including road upgrade, widening and drainage	2027-2031	$4,764,123
T19	New road Quarry Road to Major Collector 1200m from Shute Harbour Road to new part Parker Road, Cannonvale including road resumption and new road construction to Major Collector standard	2027-2031	$4,083,534
T20	Upgrade Riordanvale Road to Rural Collector 1350m from Dunning Road to Sugarloaf Road, Cannonvale (21730) including road upgrade, widening and drainage	2027-2031	$2,391,890
T21	Upgrade Queens Road to Major Collector 960m from Powell Street to Avoca Road, Bowen (10463) including road upgrade, widening and drainage	2027-2031	$3,322,670
T22	Upgrade Queens Road to Major Collector 1100m from Avoca Road to Tollington Road, Bowen (10463) including road upgrade, widening and drainage	2027-2031	$3,807,227
T23	Upgrade Richardson Road to Sub-Arterial 3310m from Gregory-Cannon Valley Road to Riordanvale Road, Cannon Valley (21725) including part new road, part road resumption, road upgrade, widening and drainage	2027-2031	$14,180,040
T24	Upgrade Chapman Street to Major Collector 500m from Taylor Street to Marathon Street, Proserpine (20085) including road upgrade, widening and drainage	2027-2031	$1,745,100
T25	Upgrade Links Drive to Minor Collector 310m from Valley Drive to Country Road, Cannonvale (21500) including road upgrade, widening and drainage	2027-2031	$902,286
TOTAL			**$69,404,945**

[10] The establishment cost is expressed in current cost terms as at the base date.

Table SC3.2.5 Parks and land for community facilities schedule of works

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost[11]
P1	New Regional Sports Park 10-18Ha, Cannon Valley area	2027-2031	$5,327,700
TOTAL			**$5,327,700**

[11] The establishment cost is expressed in current cost terms as at the base date.

SC3.3 Local government infrastructure plan maps

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Local government infrastructure plan map – PFTI WN – 01:06 Water network plans for trunk infrastructure map

Local government infrastructure plan map – PFTI SN – 01:05 Sewerage network plans for trunk infrastructure map

Local government infrastructure plan map – PFTI SWN – 01:05 Stormwater network plans for trunk infrastructure map

Local government infrastructure plan map – PFTI TN – 01:05 Transport network plans for trunk infrastructure map

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Schedule 4 Notations required under the *Planning Act 2016*

SC4.1 Notation of decisions affecting the planning scheme under section 89 of the Act

Table SC 4.1.1 Notation of decisions under section 89 of the Act

Date of decision	Location (real property description)	Decision type	File/Map reference
20/04/2004	2SP220384 155 Main Street, Proserpine	Development permit for material change of use and era - roof and sheet metal manufacturing.	20040024
19/12/2005	900, 901, 951, 953, 957 & 959SP194473 & 1& 2SP172275 Mount Gordon	Preliminary approval - all stages including residential use, tavern, golf club, service station, commercial uses, child care centre, medical centre, motel and motor home site and retirement resort.	DA04/398
28/09/2006	4RP743558 Africandar Road, Bowen	Development permit for material change of use and reconfiguration of a lot - 34 lots.	DA05/388
20/12/2006	6, 14, 15, 131, 132, 200 & 201 SP225070 & 16SP178753 Riordanvale Road, Riordanvale	Preliminary approval for a material change of use to override council planning scheme under section 3.1.6 of the integrated planning act for a staged integrated community titled development comprising residential (short and long term accommodation), retail and commercial premises, eighteen (18) hole golf course and ancillary uses in accordance with the Whitsunday springs master plan.	20050622
12/12/2006	2RP741932, 4RP726985 Riordanvale Road, Riordanvale	Preliminary approval for a material change of use overriding Council's Planning scheme under Section 3.1.6 of the Integrated Planning Act for Stage Integrated Development comprising residential, showroom and commercial premises in accordance with the Whitsunday Springs Master Plan.	20050619
18/12/2007	102SP219982 Cascara Street, Proserpine	Development permit for reconfiguration of a lot - two (2) lots into two hundred and fifty two (252) lots comprising two hundred and forty (240) residential lots, two (2) buffer lots, ten (10) public open space lots in stages.	20070500
4/12/2008	31RP885979 Bruce Highway, Delta	Development permit for material change of use - rural service industry and reconfiguration of a lot - one (1) lot into thirteen (13) lots.	DA07/414

Date of decision	Location (real property description)	Decision type	File/Map reference
4/12/2008	Part of 2RP729167, being proposed 21SP201458 80 Collinsville Road, Bowen	Development permit for material change of use - rural service industry/produce store and warehouse.	DA08/013
11/12/2008	101 & 100 SP167803 Seaview Drive, Airlie Beach	Development permit for reconfiguration of a lot and material change of use of land - residential subdivision comprising sixty eight (68) dwelling house lots including two (2) lots for multiple dwellings/accommodation units and preliminary approval for material change of use for accommodation units/multiple dwelling units over proposed lot 76 (175 persons) and proposed lot 100 (216 persons) and clearing of vegetation.	20070807
17/04/2009	6RP737335 Valley Drive, Cannonvale	Development permit for material change of use from rural zone to urban residential zone; development permit for staged reconfiguration of a lot - stage 1a - one (1) lot into twenty residential lots, one (1) drainage lot and balance lot; and stage 1c - one (1) lot into twenty (20) urban residential lots and one(1) single dwelling lose, easement and preliminary approval overriding the planning scheme to alter the level of assessment for material change of use of premises for eleven (11) code assessable dual occupancy lots.	20070720
19/01/2010	1 & 8 HR1875 Hayman Island	Preliminary approval – overriding the *Whitsunday Shire Scheme 2009* for an integrated island resort complex and associated infrastructure. PA is valid for a period of 15 years from date of approval.	20090005
10/03/2010	35RP705716 23 Argyle Park Road, Bowen	Development permit for material change of use of premises for forty-three (43) dwelling houses & reconfiguration of a lot - one (1) lot into forty-three (43) lots.	DA09/035
11/08/2010	1 & 2 RP710765 182A Main Street, Proserpine	Development permit for material change of use - sales or hire premises.	20100051
28/10/2010	42RP727501 17 Bowen Developmental Road, Bowen	Preliminary permit to override the planning scheme for a material change of use of premises to facilitate industrial development in accordance with the industrial zone.	DA09/006

Date of decision	Location (real property description)	Decision type	File/Map reference
13/12/2011	6SP171809 Botanica Drive, Woodwark	Development permit for reconfiguration of lot (1 into 43 lots) and material change of use (43 dwelling houses).	20101136
26/04/2012	6RP706708 & 5K103854 174 Main Street, Proserpine	Development permit for material change of use - commercial premises consisting of four (4) refreshment premises and ancillary car parks and structures.	20110549
15/07/2013	7RP729788 & 259HR1534 Parker Road, Cannonvale	Development permit for reconfiguration of a lot - stage development - two (2) lots into one hundred and fifty two (152) lots and open space/parkland.	20120784
25/07/2013	111SP129633 Ricks Lane, Collinsville	Preliminary approval for material change of use and reconfiguration of a lot to vary the effect of the 2006 Bowen shire planning scheme to facilitate future industrial development.	20121022
23/04/2014	121SP232106, T: EMT I, 122 SP232106, T: EMT J 28 Cove Road, Airlie Beach	Preliminary approval – Overriding the Whitsunday Shire Scheme 2009 for the development of 'The Cove and The Landing', Port of Airlie, comprising multiple dwelling units and accommodation units.	20130990
14/04/2014	102 & 103 SP232115 2 Ocean Road, Airlie Beach	Preliminary approval – for development of 'The Point', Port of Airlie, comprising Material change of use of premises for ten (10) dwelling houses with guest accommodation and ancillary recreation facilities and development permit for Reconfiguring a lot – one (1) lot into ten (10).	20130884
9/12/2015	122SP260214 28 Cove Road, Airlie Beach	Development application for a material change of use - multiple dwelling under section 242 preliminary approval.	20150932
2/06/2015	2RP743420 2549 Shute Harbour Road, Jubilee Pocket	Preliminary approval (s242) varying the effect of the planning scheme for material change of use, reconfiguration of a lot and operational works development applications.	20150033
2/03/2015	1-13 SP232114 Jurgens Place, Bowen	Development application for development permit for preliminary approval overriding the Planning Scheme and Bowen TLPI for material change of use for thirteen (13) industrial allotments.	20140365
09/09/2017	7SP137723 159 Duval Road, Preston	Development Application for Material Change of Use of Premises - Eco-Community (Integrated Resort/Residential Development) comprising One-hundred and Eighty-five	20090030

Date of decision	Location (real property description)	Decision type	File/Map reference
		(185) Accommodation Units & Tourist Facilities; One-hundred and Ninety-one (191) Detached Dwellings; Community Centre; General Store and Associated Community Facilities & Infrastructure; Reconfiguration of a Lot - Four (4) Lots into approximately Two-hundred and Eighty-four (284) Lots; Environmentally Relevant Activity - Sewerage Treatment Plan (ERA No. 15B); and Operational Works for the proposed building of a Retaining Wall	
13/09/2017	101SP289278, 101SP167803 R/SP248725; Q/SP248743, 101SP271519, 100SP268394 Kara Crescent, Airlie Beach and 39-53 Seaview Drive, Airlie Beach	Development application for preliminary approval varying the effect of the Whitsunday Shire Planning Scheme 2009 for sixteen (16) residential house lots; and development permit for reconfiguration of a lot- two (2) lots into sixteen (16) residential lots and one (1) balance (Englobo) lot.	20150770
4/04/2018	110HR1989, 1SP285375, 2SP285375 T: & EMT H & K 19329 Bruce Highway, Bowen	Development application for preliminary approval overriding the planning scheme - material change of use, reconfiguration of a lot, operational works and building works- staged industrial estate.	DA09479
14/06/2018	901SP299922 Langford Road, Flametree	Development Approval - Preliminary Approval - for Material Change of Use for Mainland Urban Tourist Facility Focus Comprising Of: One (1) Integrated Eco-Tourism Resort Precinct Including Accommodation Units (172 X Dwelling Units And/or Rooming Units), Hotel (Resort Hotel), Indoor Entertainment (Function Centre), Place Of Assembly (Wedding Chapel), Refreshment Premises (Resort Restaurants, Bars And Cafes), Shop (Resort Retail); Dwelling House And Ancillary Uses; And One (1) Local Community Facility Precinct (Environmental, Cultural and Interpretive Research Centre) and Ancillary Uses; And Five (5) Holiday Apartment Resort Precincts Including Indoor Entertainment (Amenity Centres, Spas And Gymnasiums), Multiple Dwellings (402 X Dwelling Units), Refreshment Premises (Resort Cafes) and Ancillary Uses; and Development Permit For Operational Works (Marine Plants Disturbance)	20060232

Date of decision	Location (real property description)	Decision type	File/Map reference
27/02/2019	105CP894264 2489 Shute Harbour Road, Jubilee Pocket	Development application for preliminary approval to vary the Whitsunday Regional Planning Scheme 2017 for building works (height relaxation).	20181676
27/03/2020	22SP208207 T: PT TL239765, 23SP208207 Shute Harbour Road, Shute Harbour	Development application for preliminary approval to vary the Whitsunday Regional Council Planning Scheme - material change of use - Shute Harbour Marina Resort Development Code.	20181552
27/05/2020	80SP189752, 164SP285380, 165SP285380 Sanctuary Avenue, Jubilee Pocket	Development Permit for Reconfiguration Of A Lot – One (1) Lot into One Hundred and Fifteen (115) Lots; and Preliminary Approval Under Section 3.1.6 of the Integrated Planning Act 1997 to override the Whitsunday Shire Planning Scheme 2000	20080306
29/05/2020	69SP289273 4 Marina View Court, Airlie Beach	Preliminary approval for building works and development permit for material change of use - dwelling house.	20191370
11/06/2020	15RP734591 17 Woodwark Crescent, Cannonvale	Preliminary approval for building works and development permit for material change of use - dwelling house.	20191226
25/09/2020	56SP303776, 57SP303776, Part Lot 400 SP303773 Air Whitsunday Road, Flametree	Preliminary approval (variation request) for material change of use and reconfiguration of a lot to vary the Whitsunday Regional Council Planning Scheme 2017.	20181728
28/10/2020	1SP172275, 1SP303790, 2SP172275, 959SP194473, 958SP194473, 902SP212269, 900SP225370, 15SP194473 McDonald Close Mount Gordon, Turquoise Way Bowen, Ocean View Drive, Bowen and Bruce Highway, Mount Gordon	Preliminary Approval for Variation Approval Pursuant to Section 50 of the Planning Act; and Development Permit For Reconfiguration of a Lot: Four (4) Lots into One Hundred and Ninety-eight (198) Lots; Park; Road and Access Easements; and Development Permit for Material Change Of Use: Drive-Thru Takeaways; Tavern; Sporting Ground, Club House & Park; Service Station; Shopping Centre; Child Care Centre; Food and Drink Outlet; Medical Centre; Shops and Supermarket; and Development Permit for Operational Works for Excavation or Filling	20180816
29/10/2020	70SP289273 4 Marina View Court, Airlie Beach	Preliminary approval for building works and development permit for material change of use - dwelling house.	20190655

Editor's note—This schedule must include details of:

- Development approvals that are substantially inconsistent with the planning scheme
- variation approvals

- decisions agreeing to a superseded planning scheme request to apply to a superseded scheme to a particular development.

SC4.2 Notation of resolution(s) under Chapter 4, Part 2, Division 2 of the Act

Table SC 4.2.1 Notation of resolutions under Chapter 4, Part 2, Division 2 of the Act

Date of	Date of effect	Details	Contact
13/06/2018	29/08/2018	Infrastructure Charges Resolution (No. 3) 2018	Strategic Planning 4945 0200
13/08/2019	15/08/2019	Infrastructure Charges Resolution (No.1) 2019	Strategic Planning 4945 0200
25/11/2020	26/11/2020.	Infrastructure Charges Resolution (No.1) 2020	Strategic Planning 4945 0200

Editor's note—This schedule must provide information about the adopted infrastructure charges for the local government and where a copy of the adopted charges can be obtained.

SC4.3 Notation of registration for urban encroachment provisions under section 267 of the Act

Table SC 4.3.1 Notation of registrations made under section 267 of the Act

Date of decision	Location of premises (real property description)	Details of registration	Term of registration

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Schedule 5 Designation of premises for development

Table SC 5.1 Designation of premises for development of infrastructure under section 42 of the Act

Date the designation, amendment, extension or repeal takes effect	Location of premises (real property description)	Street address	Type of infrastructure
23/11/2012	2SP204635	Power House Road, Collinsville	Powerlink Queensland's proposed Collinsville Substation Replacement (Collinsville North) Project, which consists of a new 132 kilovolt substation to replace the existing Collinsville Substation, and reconfiguration of the transmission lines from the existing Collinsville Substation into the new Collinsville North Substation.
Designation matters Nil			
18/11/2011	5 on Crown Plan B6677, 1 & 3 RP700122, 11 & 12 SP166797, 13 & 14 SP194471	Gregory Street, Bowen	Bowen Health Service which will provide public and private health facilities plus support facilities including relative, staff and non-acute accommodation, paediatric, commercial and medical services, engineering and maintenance services, teaching and research facilities, car parking and helipad.
Designation matters Nil			
27/02/2009	2RP742329, 61 & 86 DK155, 5047PH370, 33RP802431, 38RP908340, 161SP122361, 31SP108590, 3RP739389, 121SP122358, 101SP122357, 28HR410, 3RP738754, 4RP738754, 25HR1317, 1SP115943, 551H12423, 698, 491 & 162 SP138969, 1RP730524, 1 & 4 RP730832, 1RP740830		Whitsunday Regional Council - Powerlink Queensland's proposed Strathmore to Bowen 132 kilovolt transmission line (Stage 1).
Designation matters			

Date the designation, amendment, extension or repeal takes effect	Location of premises (real property description)	Street address	Type of infrastructure
Nil			
17/04/2009	AP12411, AP12412, AP12413, SR2500, SR2501	Unnamed road, Springlands Strathalbyn Road, Bogie Unnamed Road, Bogie Tabletop Road, Springlands Johnny Cake Road, Springlands	Whitsunday Regional Council; Burdekin Shire Council; Townsville City Council - Queensland Electricity Transmission Corporation Limited, trading as Powerlink Queensland, proposes to build community infrastructure.
Designation matters Nil			
30/10/2009	43K12448, 33RP746283, 41SP122354, 23SP106414, 3RP742547, 16SP129649, 3RP742546, 111HR1821, 110HR1989, 72 – 79 M4881		Whitsunday Regional Council - Powerlink Queensland's proposed Strathmore to Bowen 132 kilovolt (kV) transmission line (Stage 2) and Bowen North substation.
Designation matters Nil			
29/06/2001	121HR687	18 Mill Street, Proserpine	Proserpine Magistrates Court & Queensland Police Service (joint facility)
Designation matters Nil			
06/02/2016	121SP117924	56 Coral Esplanade, Cannonvale	Cannonvale State School
Designation matters Nil			
10/04/2015	25C74042	Garrick St Collinsville QLD 4804	Collinsville Healthcare Precinct
Designation matters Nil			
27/11/2015	170SP277854, 236HR1153	Kelsey Creek Road Proserpine	Proserpine Substation and the Upgrade Project consisting of the installation of a new 132/66 kV transformer, capacitor bank and associated equipment to expand the existing Powerlink Queensland substation at Kelsey Creek Road, Kelsey Creek, which is located approximately 4.3

Date the designation, amendment, extension or repeal takes effect	Location of premises (real property description)	Street address	Type of infrastructure
			kilometres north of Proserpine.
Designation matters Nil			

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Schedule 6 Planning scheme policies

SC6.1 Planning scheme policy index

The table below lists all the planning scheme policies applicable to the Planning Scheme area.

Table SC 6.1.1 Planning scheme policy index

Policy	Planning scheme policy title
SC6.2	Environmental features planning scheme policy
SC6.3	Heritage planning scheme policy
SC6.4	Landscaping planning scheme policy
SC6.5	Natural hazards planning scheme policy
SC6.6	Third party advice or comment planning scheme policy
SC6.7	Growth management planning scheme policy
SC6.8	Whitsunday Regional Council development manual planning scheme policy
SC6.9	Waste Management Policy

SC6.1.1 Scope of the Planning Scheme Policies

The table below lists the scope of all the planning scheme policies, providing an indication as to when Council may request an applicant to provide further information in the form of a planning scheme policy.

Table SC 6.1.1.1: Scope of the Planning Scheme Policies

Planning Scheme Policy/Report	Scope
Environmental features planning scheme policy	
Acid sulfate soils assessment report	Applications triggering assessment against the Acid sulfate soils overlay code.
Acid sulfate soils management plan	Applications triggering assessment against the Acid sulfate soils overlay code and found to be disturbing acid sulfate soils within the acid sulfate soils assessment report.
Ecological assessment report	Applications triggering assessment against the: a) Biodiversity, waterways and wetland overlay code.
Renewable energy facility visual impact report	Applications triggering assessment against the Renewable energy facilities code.
Stormwater Management Plan	Applications triggering assessment against the Healthy Waters Code.
Vegetation management plan	Applications triggering assessment against the: a) Construction management code; or b) Biodiversity, Waterway and wetlands overlay code.
Heritage planning scheme policy	
Heritage impact assessment report	Applications triggering assessment against the Heritage overlay code.
Heritage management plan	Applications triggering assessment against the Heritage overlay code.
Archaeological management plan	Applications triggering assessment against the Heritage overlay code.

Landscaping planning scheme policy	
Landscaping plan	Applications triggering assessment against the Landscaping code.
Landscaped separation buffer	Applications triggering assessment against the: a) Landscaping code; or b) Reconfiguring a lot code; or c) Agricultural land overlay code.
Planting species list	All development is to have regard for the Planting species list.
Natural hazard planning scheme policy	
Bushfire hazard assessment report	Applications triggering assessment against the Bushfire hazard overlay code.
Bushfire hazard management plan	Applications triggering assessment against the Bushfire hazard overlay code.
Coastal hazard assessment report	Applications triggering assessment against the Coastal environment overlay code.
Flood hazard assessment report	Applications triggering assessment against the Flood hazard overlay code
Landslide hazard (geotechnical) assessment report	Application triggering assessment against the Landslide hazard overlay code.
Growth management planning scheme policy	
Development needs assessment report	At Council discretion. Applications proposing the development of five (5) or more lots (including those lots created under a community title scheme), outside of the existing urban footprint may be required to undertake this report.
Economic impact assessment report	At Councils discretion. Applications proposing the development of Business or Entertainment Activities may be required to undertake this report where the development is: a) outside of a designated Centre zone and exceeding a GFA of 150m^2; or b) within a designated Centre zone, but exceeding the maximum GFA for that Centre zone; or c) within the Mixed use zone and exceeding a GFA of 1,500m^2.
Structure plan	At Councils discretion. Applications proposing the development of five (5) or more lots (including those lots created under a community title scheme) may be required to undertake this report.
Traffic impact assessment report	At Councils discretion. Applications proposing the development of the following activities may be required to undertake this report: a) Accommodation activities: Five (5) or more lots (including those lots created under a community title scheme); or b) Business, Entertainment, Industry, Recreation or Other Activities: Exceeding a GFA of 1,500m^2; or c) Community Activities: Exceeding a GFA of 500m^2.

Waste Management planning scheme policy	
Waste Management Policy	Applications proposing development of: (a) residential subdivision with 4 or more lots; (b) Multiple dwelling; (c) Short-term accommodation; (d) Relocatable home park; (e) Retirement facility; (f) Tourist park; (g) Rooming accommodation; (h) Resort complex; or (i) Mixed use development with two or more uses onsite.

SC6.2 Environmental features planning scheme policy

SC6.2.1 Introduction

SC6.2.1.1 Relationship to the Planning Scheme

(1) This planning scheme policy provides:

(a) information the Council may request for a development application; and

(b) guidance or advice about satisfying an assessment benchmark which identifies this planning scheme policy as providing that guidance or advice.

SC6.2.1.2 Purpose

(1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:

(a) Acid sulfate soil assessment report;

(b) Acid sulfate soils management plan;

(c) Ecological assessment report;

(d) Renewable energy facility visual impact assessment report;

(e) Stormwater management plan; and

(f) Vegetation management plan.

SC6.2.1.3 Environmental features overlay mapping

(1) Environmental features overlay mapping has been prepared for the local government area, showing the areas of environmental and waterway (water quality) health. This mapping has been prepared in accordance with the requirements of the State Planning Policy (SPP). The specific environmental and waterways overlays to which this PSP applies are:

(a) Acid sulphate soils overlay code. Mapping:
  (i) identifies the Known presence of acid sulfate soils for; Land at or below 5m AHD and Land above 5m AHD and below 20m AHD sub-categories; and
  (ii) has been prepared at a scale at which a site specific investigation of acid sulfate soils will be necessary to determine the presence and extent of acid sulfate soil on a site (Acid sulfate soils assessment report) and the necessity for an Acid sulfate soils management plan;

(b) Biodiversity, waterways and wetlands overlay code. Mapping:
  (i) identifies Regulated vegetation, Wildlife habitat, Protected and Regulated vegetation features; and
  (ii) is not a substitute for a site based assessment. A site specific Ecological assessment report should be undertaken and prepared to verify, specific to the site, the presence of Matters of environmental significance on a site and necessity for a Vegetation management plan;

(iii) identifies Matters of state environmental significance: High ecological value waters (watercourse), High ecological value waters (wetlands), High ecological significance wetlands, Marine parks and Declared fish habitat area and Matters of local environmental significance: Stream order 1 - 5 sub-categories; and

(iv) is not a substitute for a site based assessment. A site specific Ecological assessment report should be undertaken and prepared to verify, specific to the site, the presence of matters of environmental significance on a site and necessity for a Vegetation management plan.

SC6.2.2 Requirements of environmental features documentation

(1) Environmental features documentation is to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.2.2.1 (Requirements of Environmental features documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

Table SC 6.2.2.1 Requirements of environmental features documentation

Documentation	Preparation	Report requirements
Acid sulfate soils assessment report	• Prepared by a suitably qualified professional with appropriate technical expertise in the field of acid sulfate soils identification and management. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Acid sulfate soils assessment report may be requested to provide additional information to Council. • A site specific Acid sulfate soil assessment report is to be prepared in accordance with SC6.2.3 (Acid sulfate soils assessment report). • An Acid sulfate soils assessment is to be prepared in accordance with the Queensland Acid Sulfate Soils Technical manual (Queensland Government, 2014), or any later guideline as agreed by Council and is to be provided as part of the site specific Acid sulphate soil assessment report. • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.
Acid sulfate soils management plan	• Prepared by a suitably qualified professional with appropriate technical expertise in the field of acid sulfate soils identification and management. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Acid sulfate soils management plan may be requested to provide additional information to Council. • A site specific Acid sulfate soil management plan is to be prepared in accordance with: a) SC6.2.4 (Acid sulfate soils management plan); and b) State Planning Policy – State interest guideline: Water quality, August 2014, or any later guideline as agreed by Council.
Ecological assessment report	• Prepared by a suitably qualified professional with a relevant tertiary qualification in ecology, conservation biology or environmental planning and at least 5 years' experience in ecology surveys, assessment and reporting. • Consultation with other entities may also be necessary including Council, State	• A site specific Ecological assessment report may be requested to provide additional information to Council. • A site specific Ecological assessment report is to be prepared in accordance with SC6.2.5 (Ecological assessment report).

	government and other relevant agencies or individuals.	
Renewable energy facility visual impact assessment report	• Prepared by a suitably qualified professional with appropriate technical expertise in visual impact assessment. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (eg business owners)	• A site specific Renewable energy facility visual impact assessment report in accordance with SC6.2.6 may be requested to provide additional information to Council.
Stormwater Quality Management Plan	• Prepared by a suitably qualified professional with appropriate technical expertise in stormwater assessment • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (eg business owners)	• A site specific Stormwater Quality Management Plan may be requested to provide additional information to Council. • A site specific stormwater quality management plan is to be prepared in accordance with SC6.2.7 (Stormwater Management Plan) and the Whitsunday Regional Council Stormwater Quality Guidelines, or any later guideline as agreed by Council.
Vegetation management plan	• Prepared by a suitably qualified professional with a relevant tertiary qualification in ecology, conservation biology or environmental planning and at least 5 years' experience in vegetation management, assessment and reporting. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Vegetation management plan may be requested to provide additional information to Council. • A site specific Vegetation management plan is to be prepared in accordance with SC6.2.8 (Vegetation management plan).

SC6.2.3 Acid sulfate soils assessment report

SC6.2.3.1 Purpose of an Acid sulfate soils assessment report

(1) An Acid sulfate soils assessment report is required to:

(a) quantify the extent and severity of acid sulfate soils for a particular site;

(b) ensure appropriate methods are implemented to mitigate or avoid the disturbance of acid sulfate soils; and

(c) provide information and guidance to support the outcomes required by the Acid sulfate soils overlay code.

SC6.2.3.2 Preparation of an Acid sulfate soils assessment report

(1) The site-specific Acid sulfate soils assessment report is to include an acid sulfate soils assessment, as detailed in Table SC 6.2.2 (Requirements of environmental features documentation) of this planning scheme policy.

(2) An Acid sulfate soil assessment report is to:

(a) explain the methodology and findings of the acid sulfate soils assessment to determine the presence, extent and severity of any actual acid sulfate soils or potential acid sulfate soils on the site;

(b) evaluate the potential for harm to the environment or to constructed assets as a result of the development; and

(c) make recommendations as to whether management measures are needed.

(2) If the acid sulfate soil assessment report finds that acid sulfate soils will be affected by the development, then an Acid sulfate soil management plan is to be prepared in accordance with SC6.2.4 (Acid sulfate soils management plan).

SC6.2.4 Acid sulfate soils management plan

SC6.2.4.1 Purpose of an Acid sulfate soils management plan

(1) An Acid sulfate soils management plan is required to:

(a) explain how acid sulfate soils will be managed on the site to minimise or prevent harm to the environment or to constructed assets; and

(b) provide information and guidance to support the outcomes required by the Acid sulfate soil overlay code.

SC6.2.4.2 Preparation of an Acid sulfate soils management plan

(1) An Acid sulfate soil management plan is to include at a minimum:

(a) a two-dimensional map of the actual or potential acid sulfate soils to the depth of disturbance;

(b) details that reflect potential on-site and off-site impacts of the disturbance on the soil and the groundwater levels;

(c) the methods that will be used to avoid, treat or otherwise manage acid sulfate soils, including the contained on-site management and treatment of potential and actual acid sulfate soils;

(d) the details of any pilot project or field trial to be undertaken to prove the effectiveness of any new technology or innovative management practice being proposed;

(e) details of the management of the height of the groundwater table on-site and off-site both during and after construction;

(f) details of all soil and water monitoring, both manual and automated, to be performed during and after treatment, and including verification testing of soils;

(g) details of the handling and storage of neutralising agents;

(h) details of contained on-site treatment and management of potentially contaminated stormwater run-off, and leachate including details of groundwater management associated with the works both in the short and long term;

(i) a description of contingency measures to be implemented on and off the site if the management procedures prove to be unsuccessful and acid is generated or leachate problems occur; and

(j) details of the treatment and management of surface drainage waters for disturbed acid sulfate soils.

(2) The Acid sulfate soil management plan is to provide for the ongoing management and monitoring of impacts of acid sulfate soil material throughout the construction and operation of the project and describe the construction schedules and environmental management procedures.

(3) The development is to be staged so that the potential impact of any area disturbed at any one time is limited and easily managed. Documentation containing the schedule of monitoring is to be made available for Council inspections.

(4) Action is to be taken to prevent or minimise any adverse impacts on surface water, groundwater, the site and surrounding areas. These actions are to be documented in the acid sulfate soil management plan and include:

(a) objectives and outcomes;

(b) management measures;

(c) performance indicators;

(d) elements to be monitored;

(e) a monitoring schedule;

(f) contingency plans;

(g) responsibilities;

(h) reporting and review requirements; and

(i) training arrangements.

SC6.2.5 Ecological assessment report

SC6.2.5.1 Purpose of an Ecological assessment report

(1) An Ecological assessment report is required to:

(a) quantify the matters of environmental significance on a particular site;

(b) ensure appropriate methods are implemented to appropriately protect, manage or restore matters of environmental significance on the site; and

(c) provide information and guidance to support the outcomes required by the Biodiversity, waterways and wetlands overlay code.

SC6.2.5.2 Undertaking an Ecological assessment report

(1) An Ecological assessment report is to incorporate a tree survey plan in accordance with SC6.2.5.3 (Preparation of a Tree survey plan), which identifies all the trees on the development site.

(2) Prior to any field survey work commencing, records are to be investigated to identify likely regional ecosystems, flora, and fauna species (including weed and pest animal species) which may occur on the site or on adjoining lands within a one kilometre radius of the site. Records to be investigated include:

(a) research reports;

(b) local knowledge (such as from local catchment and environment groups);

(c) databases, such as the Council and Queensland Government regional ecosystem mapping, and flora and fauna records held by the Queensland Government (Wildnet), Queensland Museum and Queensland Herbarium; and

(d) published literature.

(3) The field survey is to assess the presence or likely presence of ecological features, significant vegetation communities, and flora and fauna species (including weed and pest animal species) on the site. Specifically, it should:

(a) incorporate coverage of all major habitat types on the site;

(b) use survey techniques suited to a diversity of flora and fauna; and

(c) consider seasonal variations, survey duration and climatic conditions.

(4) Ecological features and processes are essential to the conservation of biodiversity and the maintenance of ecosystem services. Some examples of ecological features and processes which need to be identified on or adjoining the site are:

(a) areas that contain nationally and internationally important flora, fauna, ecological communities and heritage places as identified in the *Environment Protection and Biodiversity Conservation Act 1999*;

(b) areas declared as Fish Habitat Areas under the *Fisheries Act 1994*;

(c) areas prescribed under the *Nature Conservation Act 1992*, including areas subject to an Interim Conservation Order and areas subject to a conservation plan;

(d) areas identified as having conservation significance under the *Coastal Protection and Management Act 1995*;

(e) important habitat features or evidence of fauna species, such as trees supporting scratch marks and hollows, stags, scats, tracks and other traces, fruit and seed falls, fauna trails, fallen logs, termite mounds, ground diggings, rock outcrops, nests in banks and roost, nest and den trees;

(f) areas that would be suitable for habitat restoration, consolidating any existing habitat on site or on adjoining sites.

(5) To identify flora and vegetation communities, plot or transect-based survey methods are to be used when establishing a flora species inventory, weed survey, or searching for significant flora species. All vegetation communities, including wetlands and, within these, all microhabitats (such as dry gullies) are to be identified. The regional ecosystem type is to be classified and the age, structure, composition and condition of the vegetation is to be assessed. Plans and literature may also have flora and fauna records.

(6) For fauna surveys, a minimum of 4 days and 4 nights of survey time are recommended to minimise any sampling duration influences within any given sampling period. Regard must also be had for any migratory species which may not be present but habitually use the location. In circumstances where less sampling effort is proposed, appropriate justification is to be provided in the ecological assessment report. The biodiversity survey principles to be considered when undertaking a fauna survey include:

(a) survey methodology which accounts for habitat diversity and species requirements;

(b) survey design to minimise factors which may reduce the quality of the survey results;

(c) data is collected in a consistent format; and

(d) ecological investigations in accordance with best-practice research ethics.

(7) Fauna data is to be supported by the start and end dates of the survey, coordinates of the survey location, scientific and common name of identified species and the location precision.

(8) Identify any existing impacts or threatening processes to the ecological features, vegetation communities (regional ecosystems) and flora and fauna species on the site.

(9) Outline the likely impacts of development on the ecological features and flora and fauna species. Examples of spatial and temporal impacts from development include:

(d) loss or fragmentation of habitat;

(e) decrease or change in structure, composition, complexity and connectivity of vegetation;

(f) increased edge effects, such as noise and light;

(g) earthworks and installation of infrastructure, such as retaining walls, paths, roads, stormwater treatment devices;

(h) weed and pest animal invasion;

(i) changes to fire risks and regimes;

(j) changes to flow regimes, nutrients, sediment and pollutant loads;

(k) barriers to safe wildlife movement such as roads or fences; and

(l) introduction of domestic animals.

SC6.2.5.3 Preparation of a Tree survey plan

(1) A Tree survey plan forms part of the Ecological assessment report (SC6.2.5.4 Preparation of an Ecological assessment report) and involves identifying, assessing and surveying all trees on a site and provides a description of the site and the proposed works.

(2) The Tree survey plan comprises a map and a supporting table or report outlining the location and other attributes of trees located on the site. It is to incorporate the following information:

(a) a scaled tree survey map overlaid on the development layout, identifying the location of:
  (i) individual trees, ensuring each tree is numbered and the area of the canopy spread is shown indicatively;
  (ii) those trees proposed for retention;
  (iii) those trees proposed for removal; and
  (iv) any tree protection zones;

(b) a table which includes:
  (i) the number for each tree identified on the tree survey map;
  (ii) tree species (botanical and common names);
  (iii) height;
  (iv) diameter at breast height;
  (v) canopy spread (in square metres);
  (vi) condition/health;
  (vii) evidence of fauna use or habitat value including scratch marks, hollows, nests, termites and scats;
  (viii) trees to be removed or root zones to be impacted; and
  (ix) trees to be retained;

(c) photographs of the site, key tree species and evidence of fauna use, where relevant; and

(d) any other supporting information provided by a qualified arborist.

SC6.2.5.4 Preparation of an Ecological assessment report

(1) The Ecological assessment report informs the design of the development layout and footprint and is to be completed prior to the development design and layout.

(2) The level of detail contained within the Ecological assessment report will vary, reflecting the nature of the development and site attributes. The report is to include at a minimum:

(a) a description of the methodology used to complete the assessment:
  (i) provide a full description of the field survey methodology used and assumptions made;
  (ii) detail all background investigations undertaken including literature reviewed, and recognised specialists, authorities and local naturalists consulted or referenced; and

(iii) reports that rely primarily on desktop research with little or no field-based work are not acceptable;

(b) a description and map of the ecological features and processes, vegetation communities and flora and fauna species of the site and adjacent lands will at a minimum:
  (i) identify and detail ecological features and provide a map displaying the location and extent of the ecological features. This is referred to as an ecological features map. Appropriate photographs and figures will enable the identification and location of ecological features on the ground;
  (ii) in addition to identifying ecological features, the Ecological Features map is also to include:
    (A) 1m contours for the existing site topography;
    (B) areas included in the Biodiversity, waterways and wetlands overlay map;
    (C) location of waterway corridors and wetlands as shown on the Waterway and wetlands overlay map;
    (D) existing buildings and infrastructure such as roads or sewer lines; and
    (E) nature and extent of any vegetation protected under the *Vegetation Management Act 1999*;
  (iii) describe key ecological processes occurring on the site and adjacent lands;
  (iv) include appropriate photographs, figures and maps that will enable the identification and location of ecological features on the ground;
  (v) accurately map and describe the vegetation communities, (remnant and non-remnant vegetation) in the site and on adjacent lands. Include details such as age, structure, composition and condition of vegetation communities on the site and on adjacent lands;
  (vi) describe and map accurately the terrestrial and aquatic flora species and vegetation communities (including details such as age, structure, composition, condition, State/national significance and regional ecosystem status) in the site and on adjacent lands. A table outlining the location and attributes of trees on the development site should also be provided;
  (vii) document and describe the presence of any flora species listed as threatened under Commonwealth or State legislation;
  (viii) provide any past flora and fauna records of the site and adjoining lands within a 1km radius of the site. Records include research reports, local knowledge and databases, such as the Queensland Museum and Queensland Herbarium records;
  (ix) identify terrestrial and aquatic fauna species present or likely to be present within the site and adjacent lands;
  (x) prepare an appropriately scaled map identifying the location of key habitat features or evidence of fauna species, including trees supporting scratch marks and hollows, stags, fruit and seed falls, fauna trails, fallen logs, termite mounds, ground diggings, rock outcrops, nests in banks and roost, nest and den trees; and
  (xi) document and describe the presence of any fauna species.

(c) document potential development impacts on ecological features and processes including:
  (i) an outline of the proposed development:
    (A) nature of the land use;
    (B) the extent of the development footprint and details of the site layout; and

(C) development design including the building height in metres, location of any outdoor lighting, audio systems or other noise generating activities;

(ii) identification of the proposed hours of operation if non-residential including:
  (A) the number of people anticipated on site at various times during the day and night; and
  (B) the number and type of vehicle movements anticipated on site during the ongoing operation phase;

(iii) for the construction phase, details of the sequence of any proposed vegetation clearing, type of construction machinery and proposed barriers to restrict site access to ecologically sensitive areas;

(iv) differentiation between the impacts likely to occur during the construction of the development versus those impacts resulting from the ongoing operation of the development (including cumulative impacts of the development); and

(v) details of potential spatial (on-site and off-site) and temporal (short- and long-term) direct and in-direct impacts from the development on flora and fauna species and vegetation communities, including consideration of the construction and operational phases of the development. Specifically discuss the likely consequences of the identified impacts for the site and adjacent lands;

(vi) the degree of confidence with which the impacts of the action are known and understood;

(d) detail how the layout of the development avoids impacts to the ecological features and processes and significant flora and fauna species and outline the impact mitigation measures that will be undertaken to reduce the impacts to ecological features and processes by:

(i) clearly demonstrating how the proposed mitigation strategies will enable the development to meet the nature conservation obligations as described in the relevant statutory planning mechanisms; and

(ii) providing information about development designs to mitigate impacts to ecological features and processes, such as:
  (A) protecting ecological connectivity;
  (B) enhancing habitat extent and condition; and
  (C) rehabilitating degraded areas.

SC6.2.6 Renewable Energy Facility Visual Impact Assessment

SC6.2.6.1 Purpose of a Renewable Energy visual impact assessment

(1) A Renewable energy facility visual impact assessment report is required to:

(a) Assess sensitive receptors and roads visual exposure to a proposed Renewable energy facility;

(b) Assess the visual impact of a Renewable energy facility on sensitive receptors, roads and public areas; and

(c) Outline mitigation strategies to reduce the visual impact on public areas and sensitive receptors, such as Accommodation activities;

SC6.2.6.2 Undertaking a Renewable energy facility visual impact assessment

(1) A Renewable energy visual impact assessment involves an assessment of a proposed development to determine its potential impact upon surrounding sensitive receptors and roads, including potential for glint or glare from solar panels and suitability as a land use within the landscape;

(2) In developing a Renewable energy visual impact assessment, due regard should be given to the location of surrounding sensitive receptors, roads, topography, vegetation, solar panel type and development layout; and

(3) The steps to be followed and information provided when preparing a Renewable energy visual impact assessment are outlined below:

Step 1: Describe the project and its visual components

(a) Description of the project, including site layout, landscaping, major electricity infrastructure, lighting, scale and type of solar panel to be utilised (where applicable), such as fixed, dual axis or single axis trackers;

Step 2: Evaluate visual environment, landscape of development site and surrounding area

(b) Provide photos and descriptions of key elements within the surrounding landscape to provide local context, including existing infrastructure, topography, vegetation, aesthetic landforms, buildings, public spaces and land uses, having regard to potential future residential growth;

(c) Assess the surrounding Landscape character type, surrounding high or medium amenity areas and scenic gateways based upon scenic preferences and mapping from the Whitsunday Scenic Amenity Study, refined by applying site-specific analysis of local context;

Note - Landscape character types are defined within Table 4 and high amenity areas are defined within Appendices of the Whitsunday Scenic Amenity Study online at http://www.whitsunday.qld.gov.au/566/Studies-and-Superseded-Planning-Schemes. GIS Tab files of high, medium and low amenity areas can be provided at request.

Step 3: Assess visual receptor sensitivity within the study area and assess impact of development upon viewpoints

(d) Identify surrounding scenic corridors and sensitive receptors, such as Accommodation activities, future residential growth areas and public roads that have visibility of the proposed Renewable energy facility;

Note – Scenic corridors defined by AO1.2 of the Renewable energy facilities code include Gregory Cannon Valley Road, Conway Road, Crystal Brook Road, or Bowen-Developmental Road between Bogie River and Strathmore Road

(e) If necessary, undertake a field of view analysis to provide a detailed assessment of the impact of development intruding upon a scenic corridor or sensitive receptor's views of high amenity landscapes or key landscape features;

(f) Assess receptor sensitivity based upon Table SC6.2.6.1;

Step 4: Identify potential impacts upon sensitive receptors, scenic corridors and roads,

(g) Operational aspects of the Renewable energy facility, including construction and operation, with regard to lighting, vegetation clearing and movement of heavy machinery;

(h) Glare or glint from solar panels on sensitive receptors and public roads at all times of the day and year based upon the angle of the fixed or moving panels, including:
i. frequency; and
ii. intensity;

(i) Assess magnitude of change of the proposed development upon view corridors of high amenity landscapes or landscape features viewed by identified sensitive receptors or scenic corridors in accordance with Table SC6.2.6.2;

(j) Summarise visual impact upon sensitive receptors in terms of intrusion upon high or medium amenity landscapes, landscape features and potential for glint and glare from solar panels upon sensitive uses and public roads utilising Table SC 6.2.6.3;

Step 5: Renewable energy facility visual impact mitigation strategies

(k) Specify mitigation strategies to limit the potential visual impact as a result of glare or glint from solar panels upon sensitive receptors or public roads;

(l) Specify mitigation strategies to limit intrusion upon views of high amenity landscapes from sensitive receptors or scenic corridors identified by the Whitsunday Scenic Amenity Study; and

(m) Summarise the potential visual impact following the implementation of mitigation measures.

Table SC6.2.6.4: Determination of receptor sensitivity and magnitude of change.

Relative sensitivity	Receptor which may be exposed to the development	Magnitude of change	Explanation
High	• Elevated Accommodation activities that maintain a predominately open view of high amenity areas or key landscape characteristics that are intruded upon by the development; and • Motorists and passengers on Scenic corridors.	High	• Loss or major alteration of key landscape features identified as high amenity landscape when viewed from sensitive uses; and • Glint and glare from solar panels affecting open views of sensitive uses or users of arterial roads.

Medium	• Accommodation activities that have views from windows or partially obscured views of high amenity areas or key landscape characteristics that are intruded upon by the development; or • Motorists and passengers on arterial roads.	Medium	• Loss or major alteration of key landscape features or medium amenity landscapes when viewed from sensitive uses; and • Glint and glare from solar panels affecting partially obscured views or windows of sensitive uses or users of rural roads.
Low	• All other receptors	Low	• Minor loss of or alteration to one or more key features of the landscape character or medium amenity area; and • No glint or glare from solar panels affecting sensitive uses or any road users.

Note – Scenic corridors defined by AO1.2 of the Renewable energy facilities code include Gregory Cannon Valley Road, Conway Road, Crystal Brook Road, or Bowen-Developmental Road between Bogie River and Strathmore Road. Key landscape features may include aspects, such as valleys or gorges, mountains, waterfalls, waterways or significant trees. High amenity and medium amenity areas are defined within Appendices of the Whitsunday Scenic Amenity Study online at http://www.whitsunday.qld.gov.au/566/Studies-and-Superseded-Planning-Schemes

Table SC 6.2.6.5: Assessment of visual impact.

Assessment of Visual Impact		**Sensitivity to visual change**		
		High	Medium	Low
Magnitude of change to views	High	Major	Major	Moderate
	Medium	Major	Moderate	Minor
	Low	Moderate	Minor	Minor

SC6.2.7 Stormwater management plan

SC6.2.7.1 Purpose

(1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:
   (a) a stormwater quality management plan (SQMP).

SC6.2.7.2 Requirements of stormwater quality documentation

(1) Stormwater documentation is to be prepared in a clear and concise manner, consistent with the elements identified in Table SC6.2.7.1 (Requirements of Stormwater documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

Table SC6.2.7.1 Requirements of Stormwater Quality Documentation

Documentation	Preparation	Report requirements
Stormwater Quality Management Plan & associated drawings	• Prepared by a suitably qualified professional with appropriate technical expertise in stormwater assessments. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. business owners).	• Stormwater Quality Management Plan may be requested to provide additional information to Council. • A site specific stormwater quality management plan is to be prepared in accordance with the Whitsunday Regional Council Stormwater Quality Guidelines, or any later guideline as agreed by Council

SC6.2.7.3 Preparation of a Stormwater Quality Management Plan (SQMP)

1) A stormwater quality management plan is required to:

   (a) provide guidance on the policy and standards required in relation to the provision of stormwater infrastructure for new development; and
   (b) ensure stormwater infrastructure design and construction satisfies Council's requirements and environmental and safety expectations.

2) A stormwater quality management plan comprises of the following for MCU/ROL applications:

Section	Contents
Cover page	Development name and reference
Document information page	Table outlining information relevant to the development of the SQMP, including document title (reference number, date and version), document authors and reviewers, suitably qualified persons details (qualifications and experience), names of the project team and signature and name of the client.
Table of contents	Structure of the SQMP.
Introduction	Description of the proposed development (works, address and RP) and purpose of the SQMP.
Previous reports	Summary of other reports which deal with stormwater management that are superseded by this report
Related reports	Summary of reports (such as waterway assessments and soil investigations) that should be read in conjunction with the SQMP.

Previous approvals or requests for information (if relevant)	Details of any previous approvals or requests for information for the development site.
Site description	Description of the development site including details of topography, geology, relevant hydrological/ drainage features, existing natural features, imperviousness etc. Site survey details including spot levels, contours, boundaries, waterways, vegetation (including regional ecosystem mapping), easements and other relevant site features. Description of site constraints.
Development description	Description of the proposed development including land use, scale, densities, site coverage (percent impervious), lawful point of discharge and general urban design.
Stormwater management objectives	List of all the stormwater management objectives (see Section 2) which apply to the development. Justification for any objectives not adopted.
Stormwater management strategy	Description of the selected stormwater management initiatives required to comply with each objective applicable to the development. This should include figures providing conceptual catchments, location and scale of the stormwater management initiatives. It must demonstrate that sufficient space is available for the stormwater management initiatives. This includes both horizontal and vertical space. The proposed system must be able to drain. If the proponent is proposing a bioretention system for the site to comply with the stormwater quality design objectives, they may, if they wish, adopt a filter media sized at 1.5% of the catchment, and allow a total of 3 times this area for the total footprint of the system. If the proponent is proposing a vegetated stormwater asset other than a bioretention system (typically a wetland or swale) they may, if they wish, adopt a size of that system's treatment area using MUSIC and allow a total of 3 times this area for the total footprint of the system. Note that the above does not negate the need to demonstrate that sufficient vertical space has been allowed and that the system can freely drain.
Assessment, modelling and calculations	Detailed description, calculations and models used to determine the stormwater management strategy and compliance with the relevant objectives.
Lifecycle costs (if relevant)	Where the stormwater management strategy involved proprietary devices, lifecycle costs shall be provided.
Conclusion	Relevant concluding information.
References	List of reference documents.
Appendix 2	Where MUSIC modelling has been completed, completed versions of the relevant reporting forms contained in Appendix A of the MUSIC Modelling Guidelines (Water by Design, 2016) shall be provided.
Other appendices (if relevant)	Other appendices as relevant.

a) all stormwater models and calculations used in the creation of the SQMP and development application

3) A stormwater quality management plan comprises of the following for OPW applications:

Section	Contents
Cover page	Development name and reference
Document information page	Table outlining information relevant to the development of the SQMP, including document title (reference number, date and version), document authors and reviewers, suitably qualified persons details (qualifications and experience), names of the project team and signature and name of the client.
Table of contents	Structure of the SQMP.
Introduction	Description of the proposed development (works, address and RP) and purpose of the SQMP.
Previous reports	Summary of other reports which deal with stormwater management that are superseded by this report
Related reports	Summary of reports (such as waterway assessments and soil investigations) that should be read in conjunction with the SQMP.
Previous approvals or requests for information (if relevant)	Details of any previous approvals or requests for information for the development site.
Site description	Description of the development site including details of topography, geology, relevant hydrological/ drainage features, existing natural features, imperviousness etc. Site survey details including spot levels, contours, boundaries, waterways, vegetation (including regional ecosystem mapping), easements and other relevant site features. Description of site constraints.
Development description	Description of the proposed development including land use, scale, densities, site coverage (percent impervious), lawful point of discharge and general urban design.
Stormwater management objectives	List of all the stormwater management objectives (see Section 2) which apply to the development. Justification for any objectives not adopted.
Stormwater management strategy	Description of the selected stormwater management initiatives required to comply with each objective applicable to the development. This should include a scale figures providing conceptual catchments, location and scale of the stormwater management initiatives.
Assessment, modelling and calculations	Detailed description, calculations and models used to determine the stormwater management strategy and compliance with the relevant objectives.
Lifecycle costs (if relevant)	Where the stormwater management strategy involved proprietary devices, lifecycle costs shall be provided.
Construction, establishment, bonding and handover	Detailed description of the construction, establishment, bonding and handover processes to be used (see Section 7)
Conclusion	Relevant concluding information.
References	List of reference documents.
Appendix 1	Detailed engineering and landscape design drawings shall be shown.
Appendix 2	Where MUSIC modelling has been completed, completed versions of the relevant reporting forms contained in Appendix A of the MUSIC Modelling Guidelines (Water by Design, 2016) shall be provided.
Other appendices (if relevant)	Other appendices as relevant.

a) detailed engineering and landscape drawings ; and

b) working copies of all stormwater models and calculations used in the creation of the SQMP and development application; and
c) suitably qualified person certification.

SC6.2.7.4 Preparation of a Stormwater Quality Management Plan Additional Guidelines

For the purposes of the performance outcomes and acceptable outcomes in the Healthy Waters code, the following are relevant guidelines for preparation of a stormwater quality management plan: -

a) Whitsunday Regional Council Stormwater Quality Guideline.

SC6.2.8 Vegetation management plan

SC6.2.8.1 Purpose of a Vegetation management plan

(1) A Vegetation management plan is required to ensure appropriate methods are implemented to appropriately protect against, manage or restore the disturbance of vegetation before, during and after construction works on a site.

(2) A Vegetation management plan may be required prior to or as a condition of a development approval; in which case it is required to be lodged before the commencement of site works or any interference with vegetation.

SC6.2.8.2 Preparation of a Vegetation management plan

(1) A Vegetation management plan is to comprise a plan of layout and supporting text.

(2) The plan of layout is to include the following standard features as a minimum:

(a) cadastral and property boundaries and dimensions adequate to interpret the plan;

(b) layout of development, including existing and proposed alignments of services and infrastructure;

(c) location and description of vegetation to be retained, cleared and restored, including drainage lines, waterway corridors, wetlands and other ecological features;

(d) location of protective fences or other vegetation protection measures such as designated vehicle access, signage, tree guards and retaining clumps of trees for wind and storm protection;

(e) contours (including areas for proposed filling and excavation);

(f) location and type of erosion measures;

(g) location of dedicated work areas including stockpile and disposal sites; and

(h) location of machinery access ways.

(3) The supporting text is a critical component of a Vegetation management plan and reports on the four main steps of vegetation management processes, namely:

(a) project management;

(b) vegetation protection;

(c) clearing and disposal; and

(d) rehabilitation and maintenance.

(4) Each step is presented in Table SC 6.2.6.2.1 (Vegetation management plan preparation) with suggested approaches as to how to achieve the key aims and outcomes.

Table 6.2.8.2.1 Vegetation management plan preparation

Key aims or outcomes	Suggested approach
A. Project Management	

• To formulate and implement vegetation management actions. • To clearly identify objectives, methods and reporting lines. • To inform all relevant people, companies and workers of their responsibilities.	• Vegetation management plan to be prepared in conjunction with engineering requirements. • Vegetation management to be an integral part of the construction and operational phases. • Nominate a person with responsibility for overseeing development works (such as the site supervisor), a person responsible for implementing vegetation management plan actions on site, and a person for point-of-contact for the Council. • Instruct all workers and contractors as to their role in vegetation management. • Provide the method of assessing compliance with the vegetation management plan.
B. Vegetation protection	
• To effectively protect vegetation during construction and operational phases.	• Identify vegetation for removal and protection on a vegetation retention plan. • Refer to appropriate Australian Standards e.g. AS 4970-2009 (Protection of trees on development sites), and AS 4373-2007 (Pruning of amenity trees). • Implement vegetation protection measures during construction. These commonly include designated vehicle access ways, signage, protective barrier fences, silt fences, tree guards and dedicated work areas. Establish these measures prior to works commencing and maintain the measures throughout the construction phase. • Protect the root zones of individual trees or clumps of trees from compaction, filling, stockpiling or excavation. Refer to AS 4373-2007 (Pruning of amenity trees). • Identify a replacement formula for trees which are damaged.
C. Clearing and disposal	
• To minimise the adverse impacts of vegetation clearance. • To maximise recycling or re-use of cleared vegetation. • To minimise the impacts on existing fauna.	• Clearly identify and indicate on a plan the area of vegetation proposed to be cleared in relation to tree protection zones and structural root protection zones. • Use clearing methods that will not damage adjacent protected vegetation and that will minimise soil profile disturbance. Match the type of equipment to be used with the specific clearing task. There are many options available, including excavator-mounted hydraulic grabs etc. • Recycle cleared vegetation for re-use on or off site. Recycling techniques include mulching, tub-grinding, wood chipping

	and salvage. Do not recycle weed materials as this has potential to spread weed propagules. • Obtain advice from a qualified arborist when work is proposed within the tree protection zone. • Clear vegetation sequentially to allow for natural retreat of fauna. • Employ a suitably qualified fauna spotter and a fauna catcher during the vegetation clearing and disposal phase of the project.
D. Rehabilitation and maintenance	
• To restore and enhance areas in the post- construction phase. • To maximise survival opportunities for areas of retained vegetation and newly rehabilitated areas.	• Use species native to the site, including species known to provide food and habitat for native fauna or those species identified in SC6.4.5 (Planting species list). • Use a mix of species which replicate all strata in the nominated Regional Ecosystem that was originally on site pre-clearing. • Use species to augment the functioning of ecological corridors and nodes through the site. • Do not use plants that will compete with or displace existing local native species, or that have the potential to become new and emerging weed species. • Specify a maintenance program in the Vegetation management plan to ensure the long-term health and vigour of retained vegetation and healthy growth of new plantings, including specified growth targets. Give details on mulching, watering and fertiliser regimes, regular inspection schedules for damage or disease, replacement planting criteria and weed control measures.

SC6.3 Heritage planning scheme policy

SC6.3.1 Introduction

SC6.3.1.1 Relationship to the Planning Scheme

(1) This planning scheme policy provides:

(a) information the Council may request for a development application; and

(b) guidance or advice about satisfying an assessment benchmarks which identifies this planning scheme policy as providing that guidance or advice.

Note – This planning scheme policy does not remove obligations under the *Queensland Heritage Act 1992* for places identified on the Queensland Heritage Register.

SC6.3.1.2 Purpose

(1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:

(a) Heritage impact assessment report;

(b) Heritage management plan; and

(c) Archaeological management plan.

SC6.3.1.3 Heritage overlay mapping

(1) Heritage overlay mapping has been prepared for the local government area, showing the areas of local and state heritage significance. This mapping has been prepared in accordance with the requirements of the SPP. The specific overlay to which this PSP applies is:

(i) Heritage overlay code. Mapping identifies the Commonwealth, State heritage place and Local heritage place features.

SC6.3.2 Requirements of heritage documentation

(1) Heritage documentation to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.3.2.1 (Requirements of heritage documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

Table SC 6.3.2.1 Requirements of heritage documentation

Documentation	Preparation	Report requirements
Heritage impact assessment report	• Prepared by a suitably qualified professional with tertiary qualification in an area related to heritage conservation and appropriate technical expertise in the field of cultural heritage identification and mitigation. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Heritage impact assessment report may be requested to provide additional information to Council. • A site specific Heritage impact assessment report is to be prepared in accordance with: a) SC6.3.3 (Heritage impact assessment report); b) the Burra Charter: The Australian ICOMOS Charter for places of cultural heritage significance (1999); and c) the *Aboriginal Cultural Heritage Act 2003*. • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.
Heritage management plan	• Prepared by a suitably qualified professional with tertiary qualification in an area related to heritage conservation and appropriate technical expertise in the field of cultural heritage identification and mitigation. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Heritage management plan may be requested to provide additional information to Council. • A site specific Heritage management plan is to be prepared in accordance with: a) SC6.3.4 (Heritage management plan); b) the Burra Charter: The Australian ICOMOS Charter for places of cultural heritage significance (1999); and c) the *Aboriginal Cultural Heritage Act 2003*. • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.
Archaeological management plan	• Prepared by a suitably qualified professional with tertiary qualification in archaeology and appropriate technical expertise in the surveying, identification, recording, assessment and	• A site specific Archaeological management plan may be requested to provide additional information to Council. • A site specific Archaeological management plan is to be prepared in accordance with:

	evaluation archaeological sites. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	c) SC6.3.5 (Archaeological management plan); d) Guideline: Archaeological investigations, DEHP, 2013. e) the Burra Charter: The Australian ICOMOS Charter for places of cultural heritage significance (1999); and f) the *Aboriginal Cultural Heritage Act 2003*. • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.

SC6.3.3 Heritage impact assessment report

SC6.3.3.1 Purpose of a Heritage impact assessment report

(1) A Heritage impact assessment report is required to:

(a) quantify the extent and severity of potential damage to or impacts on a Heritage place; and

(b) provide information and guidance to support the outcomes required by the Heritage overlay code.

SC6.3.3.2 Preparation of a Heritage impact assessment report

(1) A Heritage impact assessment report is to include at a minimum:

(a) a description of the history of the place and a description of the place (including any relevant components, contents, spaces and views that contribute to the significance of the place noted in the Place Card);

(b) a review of the Statement of Significance of the place;

(c) reference to an existing Conservation management plan or Archaeological management plan and the management policies included in either plan (if available);

(d) plans or some form of documentation that illustrate the development plan and site layout;

(e) a heritage impact statement (based on the principles of the Burra Charter: The Australian ICOMOS Charter for places of cultural heritage significance), including:
  (i) photographs of the Heritage place;
  (ii) the identification of the aesthetic, architectural, historical, scientific and social or technological significance; and
  (iii) the demonstration that proposed development conserves, or minimises the impact on, the significance of the place and, if relevant, reflects the management policies contained in the Conservation management plan or Archaeological management plan;

(f) if it is determined that the proposed development will impact the significance of the place, information must be provided to demonstrate why the change is required, what options were considered and what measures are provided to reduce the detrimental impact that may result from the change; and

(g) list any references used in the production of the statement and any relevant technical information or correspondence from government departments.

SC6.3.4 Heritage management plan

SC6.3.4.1 Purpose of a Heritage management plan

(1) A Heritage management plan is required to:

(a) identify the strategies and management techniques a development is to implement to mitigate or reduce adverse impacts on a Heritage place as a result of development; and

(b) provide information and guidance to support the outcomes required by the Heritage overlay code.

SC6.3.4.2 Preparation of a Heritage management plan

(1) A Heritage management plan is to include at a minimum:

(a) an outline of the significance of the place, the conditions of approval for development to a Heritage place and particular requirements to manage the significance of the place during development, including where necessary an archival recording of the place where demolition or removal is required;

(b) a description of the extent of the heritage boundary and the specific heritage features within the boundary;

(c) an outline of the requirements for the management of any approved works within sensitive areas, including:
  (i) council conditions of approval for the work;
  (ii) work method statements for work requiring particular care and attention to appropriate conservation methods; and
  (iii) training of contractors, including 'tool box talks';

(d) an assessment of the risk inherent in particular activities to the significance of the place and appropriate mitigation and/or monitoring responses; and

(e) a procedure for the incidental discovery of items of potential cultural heritage significance, including archaeological artefacts.

SC6.3.5 Archaeological management plan

SC6.3.5.1 Purpose of an Archaeological management plan

(1) An Archaeological management plan is required to:

(a) provide additional information regarding the extent and severity of ground-breaking activities on a site;

(b) identify the management activities which will be undertaken to reduce adverse impacts as a result of development that has been identified as an archaeological place; and

(c) provide information and guidance to support the outcomes required by the Heritage overlay code.

SC6.3.5.2 Preparation of an Archaeological management plan

(1) An Archaeological management plan is to be prepared in accordance with Table SC6.3.2 (Requirements of heritage documentation) and include at a minimum:

(a) descriptions of the significant archaeological features and artefacts of a place, or the potential for archaeological features and artefacts to be present, and the proposed methodology to manage impacts on the features and artefacts during approved ground-breaking activity, including the procedure to manage unexpected discoveries;

(b) outline of the methodology for evaluating the extent, nature and integrity of the site and its significance should ground breaking activities be unavoidable;

(c) definitions of the appropriate management measures for the site, having regard to its potential significance, inclusive of the establishment of any ground disturbance exclusion zones and/or monitoring areas;

(d) specification of the process for dealing with new/unexpected finds of an archaeological nature resulting from ground-breaking activities, including advising Council of any such discovery; and

(e) an outline of the process for the curation and long-term ownership and management of any archaeological material collected as a result of development activities within the curtilage of a Heritage place that has been identified as an archaeological place.

SC6.4 Landscaping planning scheme policy

SC6.4.1 Introduction

SC6.4.1.3 Relationship to the Planning Scheme

(1) This planning scheme policy provides:

(a) information the Council may request for a development application; and

(b) guidance or advice about satisfying an assessment benchmarks which identifies this planning scheme policy as providing that guidance or advice.

SC6.4.1.4 Purpose

(1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:

(a) Landscaping plan;

(b) Landscaped separation buffer plan; and

(c) Planting species list.

SC6.4.2 Requirements of landscaping documentation

(1) Landscaping documentation to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.4.2.1 (Requirements of landscaping documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

Table SC 6.4.2.1 Requirements of landscaping documentation

Documentation	Preparation	Report requirements
Landscaping plan	• Prepared by a suitably qualified professional with appropriate technical expertise in landscape architecture, horticulture or similar • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Landscaping plan may be requested to provide additional information to Council. • A site specific Landscaping plan is to be prepared in accordance with a) SC6.4.3 (Landscaping plan); b) SC6.4.5 (Planting species list); and c) SC6.8 (WRC development manual).
Landscaped separation buffer plan	• Prepared by a suitably qualified professional with appropriate technical expertise in the identification and mitigation of agricultural or industrial impacts or the design of landscaped buffers. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific landscaped separation buffer plan may be requested to provide additional information to Council. • A site specific Landscaped separation buffer plan is to be prepared in accordance with a) SC6.4.4 (Landscaped separation buffer plan); b) SC6.4.5 (Planting species list); and c) SC6.8 (WRC development manual).
Planting species list	-	-

SC6.4.3 Landscaping plan

SC6.4.3.1 Purpose of a Landscaping plan

(1) A landscaping plan is required to:

(a) identify the suitable purposes and specifies plants recommended to be established on the site; and

(b) ensure appropriate methods and management activities are implemented to ensure survival of vegetation; and

(c) provide information and guidance to support the outcomes required by the Landscaping code.

SC6.4.3.2 Preparation of a Landscaping plan

(1) A Landscaping plan is to include a plan of layout and supporting text.

(2) A description and dimensioned site plan (drawn to an appropriate metric scale) is to include at a minimum:

(a) the project description and location;

(b) landscape architect / designer's name and contact details;

(c) the date on which the plan was prepared together with a plan number which clearly identifies the plan and any amendments thereof;

(d) the location of property boundaries, road alignments and street names;

(e) the location of underground and overhead services, including drainage, sewerage, power lines, electricity, telephone and gas;

(f) the location, botanical name and size of existing trees and shrubs and intended retention or removal of these plants to be clearly nominated;

(g) contours and spot levels, both existing and proposed to all surfaces, including levels at the base of all existing vegetation to be retained, and surface levels of paved areas and access covers;

(h) location and design of proposed stormwater drainage works including direction of overland flow, location of field inlets (as required) and methods to ensure erosion control;

(i) details of the location of any earth cuts, fills or mounds within landscaped areas and details of proposed measures to ensure stability, including location, height and materials of retaining walls;

(j) location of all existing and proposed buildings, landscape structures, storage areas, pathways, driveways and parking areas, outdoor furniture (where relevant e.g. centres) and fencing;

(k) details including design, materials used and colours of proposed edging, surface treatments, fencing, pergolas and raised gardens;

(l) location and nature of all proposed vegetation including:
  (i) a graphic code/key (as nominated on the plan);
  (ii) scientific or botanical names of plants;
  (iii) common names of plants (not essential);

(iv) spread at maturity;
(v) height at time of planting (measured from pot soil level to top of growing tip) (not essential);
(vi) crown width at time of planting (not essential); and
(vii) quantity of each species used;

(m) evidence of measures taken for conservation, protection and maintenance of sites which have environmental, ecological, cultural, architectural, historic, scenic, visual, streetscape or scientific significance; and

(n) a maintenance plan, detailing the intended arrangements for maintenance of the landscaping, and the conservation, protection and maintenance of significant sites, including at a minimum, the schedule for:
(i) weed control;
(ii) irrigation and watering;
(iii) plant maintenance and pruning; and
(iv) fertilizer management.

SC6.4.4 Landscaped separation buffer plan

SC6.4.4.1 Purpose of a Landscaped separation buffer plan

(1) A landscaped buffer plan is required to:

(a) achieve appropriate separation between:
(i) sensitive land uses and Rural, Special industry or High impact industry zones; or
(ii) major infrastructure elements (such as State-controlled roads) and sensitive uses; or
(iii) environmentally significant areas or edges of existing Native vegetation from development;

(b) ensure appropriate mitigation methods and management activities are implemented to reduce the potential conflict between incompatible uses; and

(c) provide information and guidance to support the outcomes required by the Landscaping code, Reconfiguring a lot code and the Agricultural land overlay code.

SC6.4.4.2 Preparation of a Landscaped separation buffer plan

(1) A Landscaped separation buffer plan is to include a plan of the layout and supporting text.

(2) A description and dimensioned site plan (drawn to an appropriate metric scale) is to include at a minimum:

(a) the project description and location;

(b) landscape architect / designer's name and contact details;

(c) the date on which the plan was prepared together with a plan number which clearly identifies the plan and any amendments thereof;

(d) the location of property boundaries, road alignments and street names;

(e) consideration and descriptions of the existence and location of surrounding land uses. The development should be in a position which will not result in the potential for land use conflict between neighbouring land uses;

(f) consideration of the nature of the buffer. Buffer areas may be temporary and can be reserved for public open spaces or further residential development once conflicting land use has ceased. Residential subdivision applications may contain mandatory identified buffer areas for development unless the development occurs after neighbouring agricultural activities have ceased;

(g) the extent of the buffer area, the location and spacing of the trees and shrubs with the provision of a list of tree and shrub species, having regard to the type of buffer required.

(10) Separation buffers are to be provided between sensitive uses or any part of a lot included in a Residential zone, Emerging community zone or Rural residential zone and Rural or Industry zones. This buffer may be provided in the form of a landscaped separation buffer (distances set out in Table SC 6.4.4.2.1) or as an open space separation buffer (distances set out in Table SC 6.4.4.2.2).

(a) To be effective, a landscaped separation buffer is to meet the following criteria:
  (i) be located as close as practicable to the point of release of the spray;
  (ii) not be located on land used for a Rural activity;
  (iii) provide a minimum landscaped separation distance in accordance with the dimensions of Table SC 6.4.4.2.1 (Landscaped separation buffer distances).

Table SC 6.4.4.2.1 Landscaped separation buffer distances

Zone/Existing Use	Total landscaped separation buffer distance (including fire break)
Rural zone	40m
Low impact industry zone	
Medium impact industry zone	
Waterfront and marine industry zone	
Low impact industry use	
Marine industry use	
Medium impact industry use	
Research and technology industry use	
Service industry use	
Warehouse use	
High impact industry zone	50m
High impact industry use	
Special impact zone	60m
Special industry use	

  (iv) provide a 10m cleared fire break area on either side of a vegetated strip (this fire break area is included within the total width of the landscaped separation buffer. Where the total width of landscaped separation buffer is 40m, 10m cleared area is located either side of a 20m wide vegetated area).
  (v) the vegetated area is to be comprised of a minimum of three rows ensuring there is foliage from base to crown with no gaps in the lower canopy:
    (A) rows 1 and 3 are composed of short to medium sized tree species; and
    (B) row 2 is composed of taller tree species.
  (vi) contain random plantings of a variety (at least 3) of tree and shrub species of differing growth habits, at a spacing of 2.5m and listed in Table SC 6.4.5.2.3 (Large screening shrubs and windbreaks) of PSP SC6.4.5 (Planting species list);
  (vii) provide a permeable barrier which allows air to pass through the buffer. A porosity of 0.5 is acceptable (that is, approximately 50% of the screen should be air space);
  (viii) have a mature tree height of 1.5 times the spray release height or target vegetation height, whichever is the highest;
  (ix) have mature height and width dimensions which do not detrimentally impact upon adjacent cropped land;
  (x) be planted in accordance with PSP SC6.8 (WRC development manual);
  (xi) be contained within a legal covenant which outlines maintenance requirements; and
  (xii) will not be considered operational until the trees reach the minimum effective height to control spray drift (1.5 times the spray release height or target vegetation height, whichever is the highest). Until then the landscaped separation buffer is to be maintained in line with a scheduled maintenance plan. The maintenance plan is to include at a minimum a schedule for:

(A) weed control;
(B) irrigation and watering;
(C) plant maintenance and pruning; and
(D) fertilizer management.

(xiii) Residential areas should not be developed within 300metres of the incompatible land uses until the buffer is considered as operational;

Note –

(1) The precise design of the buffer will depend on many different factors including the chemicals used, method of application, the site, the proposed land-uses and the adjacent or nearby land uses and characteristics including road reserves and existing vegetation; and

(2) Natural geographical features (watercourses and ridge lines), public open spaces, road reserves etc. can be incorporated into meeting the required distances.

(b) To be effective, an open space buffer is to meet the following criteria:
(i) be located as close as practicable to the point of release of the spray;
(ii) not be located on land used for a Rural activity; and
(iii) provide a minimum open space separation distance in accordance with Table SC 6.4.4.2.2 (Open space separation distances).

Table SC 6.4.4.2.2 Open space buffer distances

Industry	Open Space
Sugarcane	300m
Small Crops	300m
Orchards	300m
Grazing	60m

(11) Landscaped separation buffers between major infrastructure elements (such as State-controlled roads) and sensitive uses or between environmentally significant areas or edges of existing native vegetation and development are to meet the following criteria:

(a) earth mounding is provided where necessary to achieve satisfactory attenuation, visual screening or land use separation;

(b) selected plant species are appropriate to the location, drainage and soil type; meet the buffer's functional requirements and require minimal ongoing maintenance;

(c) plant selection includes a range of species in accordance with the SC6.4.5 (Planting species list) to provide variation in form, colour and texture to contribute to the natural appearance of the buffer;

(d) planting density results in the creation of upper, mid and understorey strata with:
(i) large trees planted at 6m centres;
(ii) small trees planted at 2m centres;
(iii) shrubs planted at 1m centres;
(iv) one plant per 1m along each row;
(v) each row being 3m apart;
(vi) a minimum of six species used in the buffer with a maximum species of 2 species of shrubs; and
(vii) tufting plants, vines and groundcovers are planted at 0.5m to 1m centres;

(e) where adjoining the edge of native vegetation or waterway understorey, shrubs and vines are used to bind appropriately the buffer edges against degradation and weed infestation; and

(f) is maintained in line with a scheduled maintenance plan until reaching its growth maturity. The maintenance plan is to include at a minimum a schedule for:
  (i) weed control;
  (ii) irrigation and watering;
  (iii) plant maintenance and pruning; and
  (iv) fertilizer management.

SC6.4.5 Planting species list

SC6.4.5.1 Purpose of the planting species list

(1) The purpose of this planting species list is to:

(a) identify suitable species of plants for establishing within the region; and

(b) identify suitable purposes for the species of plants recommended.

SC6.4.5.2 Planting species list

(1) It should be noted that plants have been categorised according to their most likely purpose, but some will be multipurpose, for example most street trees can also be used in parks, and some of the smaller, compact street or park trees will also be useful screening plants.

(2) The Planting species list contains the following recommended species:

Table SC 6.4.5.2.1 Verge/street trees plant list

Species	Common name	Wet/Dry	Height (m)	Locally Available
Acacia leptostachya	Townsville Wattle	D	2-5	
Acacia oraria	Coastal Wattle	W/D	5-10	Y
Acmena smithii	Lilly pilly	W	5-10	
Alphitonia excelsa	Red Ash	W	8-10	Y
Brachychiton acerifolius	Flame tree	W	10-15	Y
Brachychiton australis	Broad-leaved Bottle Tree	D	6-10	
Callistemon viminalis	Weeping Bottlebrush	W/D	8-18	Y
Cassia brewsteri syn Senna brewsteri	Leichardt Bean	W/D	2-8	
Cassia tomentella	Velvet Bean tree	W/D	6-12	Y
Chionanthus ramiflora	Native Olive	W	3-5	Y
Cupaniopsis anacardioides	Tuckeroo	W/D	15-25	Y
Cupaniopsis wadsworthii	Cut leaf tuckeroo	W	3-5	Y
Diploglottis obovata	Blunt Leaved Tamarind	W	5-10	Y
Evodiella muelleri	Little pink evodia	W	5-10	Y
Gossia bidwillii	Python wood	W	5-10	
Grevillea baileyana	Scrub Beefwood	W/D	10-15	
Harpulia hillii	Tulipwood	W	10-20	Y
Harpulia pendula	Tulip wood	W	10-20	Y
Hymnosporum flavum	Native frangipani	W	5-12	
Larsenaikia jardinei	Shiny Leaved Larsenaikia	W/D	10-15	Y
Lysiphyllum hookeri	White Bauhinia	D	4-8	
Petalostigma pubescens	Quinine Berry	D	5-10	
Pittosporum ferrugineum	Rusty Pittosporum	W	8-10	Y
Planchonia careya	Cocky apple	W/D	8-15	Y
Randia fitzlanni	Native Gardenia	W/D	5-10	Y
Syzigium australe	Lilly pilly	W	5-12	Y
Syzigium luehmanni	Lilly pilly	W	5-12	
Syzigium paniculatum	Magenta Lilly Pilly	W	10-15	
Xanthostemon chrysanthus	Golden penda	W	8-20	Y

Table SC 6.4.5.2.2 Large and/or park trees plant list

Species	Common name	Wet/Dry	Height (m)	Locally Available
Alphitonia petriei	Pink Ash	W	10-25	Y
Auranticarpa rhombifolia	Diamond Leaf Pittosporum	W	20-25	
Arytera divaricata	Gap Axe	W	30-35	
Alstonia scholaris	Milky pine	W	15-30	Y
Agathis robusta	Qld Kauri	W	20+	
Araucaria cunninghammii	Hoop pine	W/D	20-30	
Backhousia citriodora	Lemon Ironwood	W	5-10	Y
Brachychiton acerifolius	Flame tree	W/D	10-15	Y
Brachychiton compactus	Whitsunday bottle tree	W/D	10-20	Y
Cassia brewsteri	Brewsters Cassia	W/D	6-12	
Cassia tomentella	Velvet Bean tree	W	6-12	Y
Casuarina cunninghamiana	River She-oak	W/D	10-30	Y
Cordia subcordata	Orange cordia	W	8-15	
Corymbia tessellaris	Moreton Bay Ash	W/D	10-30	Y
Cupaniopsis anacardioides	Tuckeroo	W/D	15-25	Y
Commersonia bartramia	Brown Kurrajong	W	12-20	
Elaeocarpus grandis	Blue Quandong	W	20-30	Y
Elaeocarpus obovatus	Hard Quandong	W	30-40	
Eucalyptus raveretianna	River Black Butt, Black Ironbox	W/D	18-25	Y
Eucalyptus tereticornis	Blue Gum, Forest Red Gum	W/D	20-30	Y
Euroschinus falcata	Ribbonwood, Pink Poplar	W/D	20-30	Y
Flindersia australis	Crows Ash	W	15-25	Y
Flindersia schottiana	Bumpy Ash	W	25-40	Y
Harpulia hillii	Tulipwood	W	10-20	Y
Harpulia pendula	Tulip wood	W	10-20	Y
Jagera pseudorhus	Pink tamarind, Foambark	W	6-10	Y
Lophostemon confertus	Brush box	W	20-30	Y
Mallotus philippensis	Red Kamala	W	10-20	Y
Melaleuca dealbata	Blue tea tree	W	12-25	Y
Melaleuca leucadendra	Weeping paperbark	W/D	20-30	Y
Melaleuca quinquenervia	Broad-leaved Paperbark	D	15-20	
Millettia pinnata	Pongamia	W/D	8-20	Y
Melicope elleryana	Pink Euodia	W	15-30	Y
Mimusops elengi	Spanish cherry	W/D	15-18	Y
Nauclea orientalis	Leichardt tree	W	20-30	Y
Paraserianthes toona	Mackay Cedar	W/D	20-30	Y
Pleiogynium timorense	Burdekin plum	W/D	10-20	Y
Syzigium australe	Lilly pilly	W	5-12	Y
Terminalia porphyrocarpa		D	10-15	
Terminalia sericocarpa	Damson	W	20-30	Y
Toona australis	Red Cedar	W	15-25	Y
Waterhousia florabunda	Weeping Lilly Pilly	W/D	20-30	Y
Xanthostemon chrysanthus	Golden penda	W	8-20	Y

Table SC 6.4.5.2.3 Large screening shrubs and windbreaks plant list

Species	Common name	Wet/Dry	Height (m)	Locally Available
Acacia decora		W/D	2-5	
Acacia flavescens	Yellow wattle	W/D	4-10	Y
Acacia holosericea	Soapbush Wattle	D	4-5	Y
Acacia leptocarpa		D	6-10	Y
Acacia leptostachya	Townsville wattle	D	2-5	Y
Callistemon spp.	Bottlebrush	W/D	5-12	Y
Cassia brewsteri	Brewsters Cassia	W/D	6-12	
Cassia brewsteri syn Senna brewsteri	Leichardt Bean	W/D	1-8	
Cassia tomentella	Velvet Bean tree	W	6-12	
Clerodendrum floribundum	Lolly Bush	W/D	3-5	
Cordia subcordata	Orange cordia	W	8-15	
Cupaniopsis wadsworthii	Cut leaf tuckeroo	W/D	3-5	
Dodonaea triquetra	Large-leaved Hop Bush	W/D	3-5	
Dodonaea viscosa	Sticky Hop Bush	W/D	1.5-4	Y
Eugenia reinwardtiana	Beach Cherry	W/D	2-6	
Glochidion lobocarpum	Cheese Tree	W/D	1-6	Y
Glochidion summatranum	Umbrella Cheese Tree	W	3-8	Y
Hibiscus tiliaceus	Native hibiscus	W	4-10	Y
Macaranga involucrata	Brown Macaranga	W/D	4-10	
Macaranga tanarius	Macaranga	W/D	4-10	
Pipturis argenteus	Native mulberry	W	4-10	
Syzigium australe	Lilly pilly	W/D	5-12	Y

Table SC 6.4.5.2.4 Small to medium shrubs plant list

Species	Common name	Locally Available
Abelia grandiflora 'Dwarf'	Glossy Abelia	
Acalypha Inferno		Y
Acalypha Firestorm		Y
Ardisia crenulata		
Baeckia 'La Petite'		
Baeckia virgata	Twiggy Health Myrtle	
Banksia robur	Swamp Banksia	
Banksia spinulosa	Hairpin Banksia	
Bauhinia galpinii	Orange Bachinia	
Bouganvillea-Smarty Pants	Dwarf Bonganvillea	
Breynia disticha	Snow Bush	
Bromeliad Spp.		
Calathea zebrina	Zebra Plant - Ground cover	
Calliandra tweedi		
Callistemon 'Little John'		
Callistemon 'Wildfire'		
Callistemon pachyphylus - green		
Canna Lily - all varieties		
Cassia odorata		
Codiaem - all varieties	Croton	
Codiaeum 'Golddust'		
Codiaeum 'Norma'		
Codiaeum 'Petra'		
Cordyline - all varieties		
Cordyline 'Rubra'		
Cordyline stricta		
Cordyline terminalis		
Cuphea ignea	Cigar Flower	
Dracaena - all varieties		Y
Drejerella guttata	Shrimp Plant	
Duranta 'Aussie 2000'		Y
Duranta 'Sheena's Gold'		Y
Duranta repens 'Alba'		Y
Euphorbia pulcherrima	Poinsetta	
Gordonia exillaris		
Graptophyllum excelsum	Scarlet Fuchsia	
Graptophyllum pictum	Caricature Plant	
Graptophyllum tricolor		
Grevillia 'Superb'	Gordonia	
Hakea plurinervia		
Hakea purpurea		
Heliotropium arborescens	Cherry Pie	
Hemerocallis littoralis	Spider Lilly	
Hibiscus - all varieties		
Hibiscus spp.	Chinese Rose	
Ixora - 'Red Sunkist, Little Willy'		Y
Ixora - dwarf varieties		Y
Ixora 'Prince of Orange'		Y
Ixora 'Pygmy Pink' Twilight Glow		Y
Ixora 'Sunshine'		Y
Justica carnea	Flamingo Plant	
Leea indica	Hawaiian Holly	Y
Leptospermum flavescens		
Melaleuca 'Claret Tops'		Y
Melaleuca thymifolia	Thyme honey myrtle	
Melaleuca trichoscatachya 'Compacta'		

Metrosideros Springfire		
Metrosideros Tahiti		
Murraya Min a Min	Mini Mock Orange	Y
Mussaenda sp	Bankock Rose	
Odontonema strictum	Firespike	
Pachystachys lutea	Lollipop Plant or Super Goldie	
Pedilanthes - 'Exotica & Tricolour'		
Pentas lanceolata	Star – cluser	
Persoonia falcata	Geebung	Y
Philodendron 'Xanadu'		
Philodendron roystonii		
Philodendron selloum	Lacy Tree Philodendron	
Phyllanthus multiflorus	Waterfall Plant	Y
Phyllanthus cuscutiflorus		Y
Plumbago capensis 'Blue'		
Poinsettia - all varieties		
Polyscias sp.	Aralia	Y
Russellia equisetiformis	Coral Plant	
Scaevola taccada	Sea Lettuce	Y
Schefflera arboricola	Dwarf Umbrella Tree	
Steptosolen jamesohnii	Marmalade Bush	
Syzygium paniculatum - 'Dwarf'		
Syzygium var 'Aussie Copper'		
Syzygium var 'Bush Christmas'		
Syzygium zeherii		
Szyzigium wilsonnii	Powder Puff Lilly Pilly	
Thuja orientalis		
Tibouchina 'Jules'		
Westringia fruticosa Zena		Y

Table SC 6.4.5.2.5 Groundcover, boarders and tufted or clumping plants plant list

Species	Common name	Locally Available
Abelia grandiflora 'Nana'		
Adenium obesum		Y
Agapanthus orientalis 'White' & 'Blue'		
Aglaonema sp	Chinese Evergreen	
Ajuga reptans 'Burgundy'	Wild Mint	
Alpinia caerulia	Native Ginger	Y
Alpinia zerumpet	Green Ginger	Y
Ardisia crenata	Spice berry	
Aspidistra elatior	Cast Iron Plant	
Babingtonia tozerensis		
Babingtonia bidwillii	Howies Sweet Midget	
Baeckia virgata 'Mt Tozer'		
Baeckia virgata 'Sweet Midget'		
Baeckia virgata dwarf		
Beaucarnia recurvata	Ponytail palm	Y
Brachycome spp	Rock Daisy	
Chlorophytum spp.	Spider Plant	Y
Clivia miniata 'Belgian Hybrid'	Kaffir Lilly	
Cordyline australis		
Crinum pedunculatum	Native Spider Lilly	Y
Cuphea 'Madhatter'	False heather	Y
Cuphea 'Mexican Heath'		Y
Dampiera diversifolia		
Dianella Border Silver		Y
Dianella caerulea	Paroo Lilly	Y
Dieffenbachia maculata	Dumb Cane	
Dietes bicolor	Flax Lilly	Y
Dietes grandiflora	Fortnight Lilly	
Erigeron karvinskianus	Seaside Daisy	
Eustrephus latifolius	Wombat Berry	Y
Evolvulus 'Blue Saphire'	Wild Ins	Y
Ferns - all varieties		
Furcraea foetida varigata	Hemp Plant	Y
Gardenia 'Radicans'	Minature Gardenia	Y
Gazania - perennial varieties		
Gazania 'Sunshine'		
Gloriosa superba	Glowy Lily	
Grevillea 'Bronze Rambler'		
Grevillea 'Fanfare'		
Grevillea biternata		
Heliconia psittacorum'	'Parrot Flower'	
Heliconia spp		
Hemerocallis	Day Lilies	
Hemigraphis alternata	Purple Wattle Plant	Y
Heterocentron elegans	Lascondra 'Peal Flower'	
Hibertia scandens		Y
Hippeastrum sp		
Hymenocallis	Thai Spider lilly	Y
Liriope evergreen giant		Y
Liriope Stripey White		Y
Lomandra hystrix	Mat-rush	Y
Lomandra longifolia	Mat Rush	
Lonicera nitida	Box Honeysuckle	
Medinilla magnifica		Y
Medinilla Pixie Pink		Y
Ophiopogon japonicus	Mondo Grass	Y

Philodendron xanadu		Y
Scaevola 'Purple Fanfare'		
Sedum spp.		Y
Spathiphyllum	Madonna Lily	Y
Spathiphyllum 'La Petite'	Peace Lilly	Y
Strelitzia reginae	Bird of Paradise	Y
Strelitzia nicholai		Y
Tropaeolum sp	Nasturtium	
Verberba xhlybrida	Gloria Lily	
Viola hedracea	Native Violet	
Xanthorrhoea australis	Grasstree	
Xanthorrhoea fulva	Grasstree	
Xerochrysum bracteatum	Everlasting Paper Daisy	Y
Zamioculcas zammifolia	Zanzibar Gem	Y
Zoyzia	No Mow Grass	Y

Table SC 6.4.5.2.6 Palms, ferns and cycads plant list

Species	Common name	Locally Available
Archontophoenix alexandrae	Alexander Palm	Y
Archontophoenix cunninghamiana	Bangalow Palm	
Asplenium Nidus	Bird Nest Fern - Shade	
Bismarckia nobilis	Bismarch Palm	
Carpentaria acuminata	Carpentaria Palm	
Chamaedorea atrovirens	Cascade Palm	
Chamaedorea metalica		
Chamaedorea safritzii	Bamboo Palm	
Chrysalidocarpus cabadae		
Chrysalidocarpus lucubensis	Madagascar Palm	
Chrysalidocarpus lutescens	Golden Cane Palm	
Cyathea cooperii	Tree Fern	
Cycas revoluta	Sago Palm	
Cyrtostachys renda	Sealing Wax	
Dictyosperma album	Princess Palm Red Hurricane Palm	
Elaeis guineensis	African Oil	
Howea forsteriana	Kenna Palm	
Hyophorbe lagenicaulis	Bottle Palm	
Hyophorbe verschaffeltii	Spindle Palm	
Laccospadix australasica	Atherton Palm	
Licuala grandis	Fan	
Licuala ramsayi		
Livistona australis	Cabbage Palm	
Livistona chinensis	Chinese Fan palm	
Livistona decora	Weeping Cabbage Palm	Y
Macrozamia miquellii		
Macrozamia moorei	Cycad	
Neodypsis decaryi	Triangle Palm	
Normanbya normanbyi	Black Palm	
Pandanus pedunculatus	Screw Pine	
Phoenix canariensis	Canary Island Date	
Pritchardia pacifica	Fijian Fan Palm	
Ptychosperma elegans	Solitaire Palm	
Ptychosperma macarthurii	Macarthur Palm	
Ravenea rivularis	Majestic Palm	
Rhapis excelsa	Lady Palm	
Rhapis hunillis	Dwarf Lady cluster	
Roystonea oleracea	Carribean Royal	
Roystonea regia	Cuban Royal	
Sabal palmetto	Palme Ho Palm	
Veitchia joannis	Handsome solitany feather palm	
Veitchia mernillin	Christmas Palm	
Washingtonia robusta	Cotton Palm	
Wodyetia bifurcata	Foxtail Palm	
Zamia furfuracea	Jamaica sagotree cardboard cycad	
Zamia furfuracea	*Cardboard Cycad*	

Table SC 6.4.5.2.7 Climbers and creepers plant list

Species	Common name	Locally Available
Aristolochia acuminata	Native Dutchman's Pipe	Y
Clamatis Vitalba	Old Man's Beard	
Cougea tomenhosa	Shower orchid	

Species	Common name	Locally Available
Ficus pumila	Climbing Fig	
Hardenbergia violacea	Sarsparilla vine	
Hibbertia scandens	Twining guinea flower	
Hoya carnosa	Wax Plant	
Jasminum aemulum		
Jasminum didymum	Coastal Jasmine	Y
Jasminum sambac	Grand Duke of Tuscany	
Lonicera – multiflora	Honeysuckle	
Lonicera heckrottii	Honeysuckle	
Lonicera japonica	Japanese Honeysuckle	
Mandevilla x amabilis	Dipladenia	
Milletia megasperma	Native Wisteria	
Mucuma Bennettii	New Guinea Creeper	
Pandorea jasminoides	Bower of Beauty	
Pandorea pandorama	Wonga-Wonga Vine	Y
Passiflora coccinea	Red Passion Flower	
Passiflora edulis	Passionfruit	
Quisqualis indica	Rangoon Creeper	
Solanum jasminoides	Jasmine Nightshade	
Stephanotis floribunda	Clustered Wax Flower	
Strongylodon macrobotrys	Jade Vine	
Trachelospernum jasminoides	Star Jasmine	
Vitex rotundifolia	Creeping vitex	Y

SC6.5 Natural hazards planning scheme policy

SC6.5.1 Introduction

SC6.5.1.1 Relationship to the Planning Scheme

(1) This planning scheme policy provides:

(a) information the Council may request for a development application; and

(b) guidance or advice about satisfying an assessment benchmarks.

SC6.5.1.2 Purpose

(1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:

(a) Bushfire hazard assessment report;

(b) Bushfire management plan;

(c) Coastal hazard assessment report;

(d) Flood hazard assessment report;

(e) Landslide hazard (geotechnical) assessment report.

SC6.5.1.3 Hazard overlay mapping

(1) Natural hazard mapping has been prepared for the local government area, showing the areas natural hazard susceptibility. This mapping has been prepared in accordance with the requirements of the SPP. The specific hazard overlays to which this PSP applies are:

(a) Bushfire hazard overlay code. Mapping:
  (i) identifies the Very high risk, High risk and Medium risk sub-categories; and
  (ii) has been prepared at a scale at which a site specific investigation of bushfire hazard will be necessary to determine the exact nature of the hazard on a site (Bushfire hazard assessment report) and the necessity for a Bushfire management plan;

(b) Coastal environment overlay code. Mapping:
  (i) identifies Maritime development areas, High hazard and Medium hazard sub-categories for storm tide inundation, Coastal erosion and Permanent inundation due to sea level rise at 2100 sub-category;
  (ii) is not a substitute for a site based assessment. A site specific Coastal hazard assessment should be undertaken to verify, specific to the site, the coastal hazard risk (unless provided by council) and appropriate mitigation responses to this;

(c) Flood hazard overlay code. Mapping:
  (i) identifies predicted 1% AEP flood extent at 2100 and Flood hazard area;
  (ii) is not a substitute for a site based assessment. A site specific flood hazard assessment should be undertaken to verify, specific to the

site, the flood hazard risk (unless provided by council) and appropriate mitigation responses to this;

(d) Landslide hazard overlay code. Mapping:
  (i) identifies slope of 15% or greater; and
  (ii) is not a substitute for a site based assessment. A site specific geotechnical assessment report should be undertake to verify, specific to the site, the landslide risk and appropriate mitigation responses to this.

SC6.5.2 Requirements of natural hazard documentation

(1) Natural hazard documentation is to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.5.2.1 (Requirements of natural hazard documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

Table SC 6.5.2.1 Requirements of natural hazard documentation

Documentation	Preparation	Report requirements
Bushfire hazard assessment report	• Prepared by a suitably qualified professional with appropriate technical expertise in the identification of bushfire hazard. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. Rural fire brigade).	• A site specific Bushfire hazard assessment report may be requested to provide additional information to Council. • A site specific Bushfire hazard assessment report is to be prepared in accordance with SC6.5.3 (Bushfire hazard assessment report). • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.
Bushfire hazard management plan	• Prepared by a suitably qualified professional with appropriate technical expertise in the identification and mitigation and have: a) knowledge and experience in applying relevant legislation, plans, policies, standards and guidelines relating to bushfire hazard and fire ecology relating to Queensland requirements; or b) have knowledge and experience in developing bushfire management plans in accordance with the methodology set out in SC6.5.4 (Bushfire hazard management plan) of this planning scheme policy; or c) be accredited practitioner (BPAD Level 2/3) under the Bushfire Planning and Design Accreditation Scheme from the Fire Protection Association of Australia; or d) have qualifications and experience in the field of ecology, environmental management or similar to assess and protect site-	• A site specific Bushfire hazard management plan may be requested to provide additional information to Council. • A site specific Bushfire hazard management plan is to be prepared in accordance with SC6.5.4 (Bushfire hazard management plan) • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.

	based and strategic biodiversity values. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. Rural fire brigade).	
Coastal hazard assessment report	• Prepared by a Registered Professional Engineer Queensland or equivalent with experience in coastal or flood management. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. Utility providers).	• A site specific Coastal hazard assessment report may be requested to provide additional information to Council. • A site specific Coastal hazard assessment is to be carried out in accordance with: a) SC6.5.5 (Coastal hazard assessment report); b) Guideline: A risk assessment approach to development assessment in coastal hazard areas, DEHP, 2013; c) AS/NZS ISO 31000: 2009 Risk management– Principles and guidelines; d) Draft SPP Guideline, state interest—natural hazards, Guidance on coastal hazards; and e) current engineering best practice. • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.
Flood hazard assessment report	• Prepared by a Registered Professional Engineer Queensland or equivalent with experience in flood hazard assessment and flood management. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. Utility providers).	• A site specific Flood hazard assessment report may be requested to provide additional information to Council. • A site specific Flood hazard assessment is to be conducted in accordance with: a) SC6.5.6 (Flood hazard assessment report); and b) AS/NZS ISO 31000: 2009 Risk management – Principles and guidelines; • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.
Landslide hazard (geotechnical) assessment report	• Prepared by a Registered Professional Engineer Queensland or equivalent: a) who holds a degree in civil engineering or engineering geology with current membership of a	• The site-specific Landslide hazard (geotechnical) assessment report may be requested to provide additional information to Council.

	recognised professional institution and whose primary business (with a minimum of 10 years of experience) is in the field of geotechnical engineering or engineering geology; or b) who has local experience with landslides or demonstrable general experience with landslides and their mitigation and rehabilitation. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A site specific Landslide hazard (geotechnical) assessment report is to be prepared in accordance with SC6.5.7 • A Landslide risk assessment is to be prepared in accordance with the Landslide Risk Management Guidelines (Australian Geomechanics Society 2007, c and d) in Australian Geomechanics, Volume 42, No. 1 March 2007, or any later guideline of the Australian Geomechanics Society as agreed by Council and is to be provided as part of the site specific Landslide hazard (Geotechnical) assessment report. • All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.

SC6.5.3 Bushfire hazard assessment report

SC6.5.3.1 Purpose of a Bushfire hazard assessment report

(1) A Bushfire hazard assessment report is required to:

(a) quantify the bushfire hazard for a particular site;

(b) ensure appropriate methods are implemented to appropriately mitigate or avoid the risk of bushfire hazard; and

(c) provide information which supports the outcomes required by the Bushfire hazard overlay code.

SC6.5.3.2 Undertaking a Bushfire hazard assessment report

(1) The method for assessing bushfire hazard involves quantitative and qualitative assessments. The quantitative element requires an assessment of three key characteristics of land that have been found to be the main determinants of the severity of bushfire hazard. These factors are vegetation communities, slope and aspect. The qualitative review should consider the known bushfire behaviour.

(2) For most types of development, bushfire risk is assessed based on the vegetation existing on and in proximity to the site. However if reconfiguring a lot, the level of bushfire hazard should be assessed as if the vegetation in that area, including any areas designated for revegetation, has reached its mature state.

(3) The steps to be followed and information provided when preparing a Bushfire hazard assessment report are outlined below.

Step 1: Assessment of vegetation communities
The type of vegetation community can determine the rate at which dry fuel accumulates and its susceptibility to bushfire. Some vegetation communities protect fuel from drying out in all but extreme bushfire seasons and can then be susceptible to very destructive bushfires.

Alternatively, vegetation communities may expose fuels to drying and therefore be frequently available for burning. Frequent bushfires can result in the development of bushfire-tolerant grassy woodlands or grasslands and less destructive bushfire behaviour.

Table SC 6.5.3.2.1 (Hazard scores and associated fire behaviours for vegetation communities) lists hazard scores for a range of vegetation community types for the purpose of assessing bushfire hazard.

Table SC 6.5.3.2.1 Hazard scores and associated fire behaviours for vegetation communities

Vegetation Communities	Fire behaviour	Hazard score
Wet sclerophyll forest, tall eucalypts (>30 m), with grass and mixed shrub understorey.	Infrequent fires under severe conditions, flame lengths may exceed 40 m, floating embers attack structures for 1 hour, radiant heat and direct flame are destructive for 30 minutes.	10
Paperbark heath and swamps, eucalypt forest with dry-shrub ladder fuels.	Fire intensity depends on fuel accumulation, but can be severe, with flame lengths to 20 m, spot fires frequent across firebreaks, radiant heat and direct flame for 15 minutes.	8
Grassy eucalypt and acacia forest, exotic pine plantations,	Fire intensity may be severe with flame lengths to 20 m, but less attack from embers.	6

cypress pine forests, wallum heath.		
Native grasslands (ungrazed), open woodlands, canefields.	Fast moving fires, available to fire annually to 4 years. Usually no ember attack, radiant heat for >10 m, duration <2 minutes.	5
Intact acacia forests, with light grass to leaf litter, disturbed rainforest.	Fires infrequent, usually burn only under severe conditions, relatively slow fires, usually little ember attack.	4
Orchards, farmlands, kikuyu pastures.	Fires very infrequent, slow moving, may be difficult to extinguish, frequent fire breaks.	2
Grazed grasslands, slashed grass.	Grazing reduces intensity and rate of spread of fire, duration <2 minutes.	2
Desert lands (sparse fuels), mowed grass.	Gaps in fuel, usually slow fire spread.	1
Intact rainforest, mangrove forest, intact riverine rainforest.	Virtually fireproof.	0

Note – Vegetation assessment should be based upon examination of the vegetation on and surrounding the subject site. Narrow strips of vegetation may be flammable; however, bushfires will not generally reach their full intensity where bushfire fronts are less than 100 metres wide. For this reason the following examples may be viewed as having the next lower hazard score (i.e. paperbark heath would have a score of 6 not 8, cypress pine forest 5 not 6):

a) areas with a linear shape (e.g. roadside vegetation beside a cleared paddock); and
b) units of vegetation less than 50 hectares in area and more than one kilometre from the nearest extensive vegetation.

Where the vegetation community is assessed as having a vegetation community hazard score of zero, no other factors need to be taken into account. No further action is required.

Step 2: Assessment of slope

Studies have shown that fires burn more quickly and with greater intensity up slopes, generally doubling every 10 degrees of slope. Also, the steeper the slope, the more difficult it is to construct ring roads, firebreaks and provide access for emergency crews. Trees situated downhill from structures will have their crowns close to the structures. This presents bushfire hazards particularly for exposed structures such as timber decks.

Table SC 6.5.3.2.2 (Hazard scores for slope) presents the hazard scores for different categories of slope.

Table SC 6.5.3.2.2 Hazard scores for slope

Slope	Hazard score
Gorges and mountains (>30%)	5
Steep hills (>20% to 30%)	4
Rolling hills (>10% to 20%)	3
Undulating (>5% to 10%)	2
Plain (0% to 5%)	1

Note – For site-specific assessment of bushfire hazard, if the site is downhill from the hazard, the slope effect may be taken as zero as the fire intensity will be less. However, burning heavy fuels may roll downhill and trees may fall down, so recommended setbacks from the hazard still need to be observed.

Step 3: Assessment of aspect

Aspect affects bushfire hazard due to the effects that exposure to direct sunlight has on different vegetation communities, including the drying rates of fuels. Aspect also correlates closely with exposure to low humidity winds that increase bushfire intensity. In extremely broken country where there is a range of aspects, the predominant aspect should be used.

As aspect has only a minor influence on flatter land, aspect is not considered to be significant on land with a slope less than 5%. Table SC 6.5.3.2.3 (Hazard score for aspect) lists the hazard score for different aspects.

Table SC 6.5.3.2.3 Hazard score for aspect

Aspect	Hazard score

North to north-west	3.5
North-west to west	3
West to south	2
North to east	1
East to south and all land under 5% slope	0

Step 4: Combining scores to identify the severity of bushfire hazard
The scores for the individual factors determined for vegetation communities, slope and aspect are added to give a total for each sub-unit as follows:

Total hazard score = vegetation community hazard score + slope hazard score + aspect hazard score.

The total hazard score determines the severity of bushfire hazard for each sub-unit as set out in Table SC 6.5.3.2.4 (Hazard score ranges to identify the severity of bushfire hazard).

Table SC 6.5.3.2.4 Hazard score ranges to identify the severity of bushfire hazard

Total hazard score	Severity of bushfire hazard
13 or greater	High
6 to 12.5	Medium
1 to 5.5	Low

Note – Buildings in High severity bushfire hazard areas should be constructed in accordance with the Level 1 requirements of AS 3959:1999 (Construction of Buildings in Bushfire-Prone Areas).

Step 5: Field verification
Preliminary bushfire hazard maps should be prepared based on the results of Step 4 above by aggregating all sub-units with similar levels of bushfire hazard severity into 'high' and 'medium' severity classifications. Field verification or ‘ground truthing’ of these preliminary results should then be undertaken. A number of sample areas should be evaluated to test the accuracy of the preliminary bushfire hazard findings.

Step 6: Qualitative assessment
Known bushfire behaviour complements the quantitative assessment and should be considered as part of the qualitative review.

Known bushfire behaviour is extremely difficult to use as a quantitative planning tool. This is because the absence of bushfire, even for an extended period of time, does not mean that an area will not burn and may lead to massive fuel accumulation with dangerous bushfire behaviour if it does ignite. Known bushfire behaviour may identify sites where combinations of slope and wind have led to severe bushfire behaviour in the past, and where extra precautions to protect assets might be required. The reliability of known bushfire behaviour may be difficult to assess and Queensland Fire and Rescue Service should be consulted if problems are indicated.

Step 7: Safety buffer
The final step in identifying bushfire hazard areas is to add a safety buffer, as land adjacent to a bushfire hazard area is vulnerable to bushfire attack from these areas.

Any land within 100m of an area identified as having a high bushfire severity classification should be included in the High bushfire hazard area and any land within 50m of an area identified as having a Medium bushfire severity classification should be included in the Medium bushfire hazard area. The safety buffers should be integrated into the preparation of maps that identify bushfire hazard areas.

Table SC 6.5.3.2.5 (Total hazard score and severity of bushfire hazard with safety buffers) shows the width of the safety buffers that apply to the various bushfire hazard severity classifications.

Table SC 6.5.3.2.5 Total hazard score and severity of bushfire hazard with safety buffers

Total hazard score	Severity of bushfire hazard	Extent of safety buffer
13 or greater	High	100m
6 to 12.5	Medium	50m
1 to 5.5	Low	Not applicable

SC6.5.4 Bushfire hazard management plan

SC6.5.4.1 Purpose of a Bushfire management plan

(1) A Bushfire management plan is required to:

(a) identify the strategies a development is to implement for mitigating the impacts of bushfire on life, property and the environment, where a site has been identified as having a medium or high bushfire; and

(b) provide information and guidance to support the outcomes required by the Bushfire hazard overlay code.

SC6.5.4.2 Preparing a Bushfire hazard management plan

(1) A Bushfire management plan identifies specific risk factors associated with the development, planning for the separation of at-risk elements and potential hazards, and providing access and treatments to facilitate an effective response to bushfire.

(2) A Bushfire management plan is to be prepared having regard to the principles outlined in SC6.5.4.3 (Managing bushfire hazard risks) and is to include the following information:

(a) a site specific Bushfire hazard assessment report using the methodology set out in SC6.5.3 (Bushfire hazard assessment report) of this planning scheme policy;

(b) an assessment of other site-specific factors that are important in devising suitable bushfire mitigation strategies, such as likely direction of bushfire attack, environmental values that may limit mitigation options, location of evacuation routes and safety zones and identification of the risks on site and from nearby sites;

(c) an assessment of the specific risk factors associated with the development including:
  (i) the intended future population size and characteristics;
  (ii) the likely usage patterns on the site;
  (iii) the estimated traffic generation;
  (iv) the nature of activities to be conducted on the site;
  (v) the storage or handling of hazardous chemicals;
  (vi) the use of the site for emergency services or disaster response purposes;
  (vii) particular warning or evacuation requirements; and
  (viii) the total extent of clearing, revegetation and landscaping proposed for the site which is to be indicated on a site plan;

(d) mitigation measures identified for the development that address major factors in bushfire attack, including embers and burning debris, radiant heat, direct flame contact and wind. Smoke should also be addressed where it is relevant to mitigation measures for vulnerable uses, such as hospitals, aged-care facilities and facilities in which aged or disabled persons reside, or where resident populations are susceptible to respiratory disorders;

(e) a plan for mitigating the bushfire risk identified in the Bushfire hazard assessment report. The plan is to recommend specific mitigation actions for the development including:
  (i) appropriate land uses;

(ii) access, including road layout, accessways, driveways, evacuation routes, including an easement on site and on adjoining lands, access routes for two-wheel drive vehicles and fire-fighting appliances and evacuation requirements;
(iii) lot layout and orientation;
(iv) site layout including identification of proposed locations of buildings or building protection zones;
(v) the need and construction standards for fire maintenance trails;
(vi) access requirements and access routes for two-wheel drive vehicles and fire- fighting appliances;
(vii) warning and evacuation procedures, plans and routes including capacity of public roads especially perimeter roads and traffic management treatments, and responsibility for their maintenance;
(viii) fire-fighting requirements including infrastructure and water supply;
(ix) landscaping, including details of new vegetation or landscape treatments to be used on site, particularly in the building protection zone;
(x) operational, design, construction or management measures for responding to particular requirements of some land uses, such as air quality management and design standards of tanks and fittings;
(xi) any other specific measures such as external sprinkler systems which are only as an adjunct to other passive controls, and alarms;
(xii) ongoing purchaser or resident education and awareness programs; and
(xiii) ongoing maintenance, management and response awareness programs, including tenure and community title arrangements. This should also include identification of specific responsibilities for actions required in the bushfire management plan for owners or occupiers of the development, the developer and Council.

SC6.5.4.3 Principles for managing bushfire hazard risks

Separation distances from sources of bushfire hazard

(1) Topographical features of the site and design elements are used to maximise separation between sources of bushfire hazard and dwellings or buildings, and manage risk. These features include the following:

(a) roads, particularly perimeter roads and roads separating building locations on lots from vegetation with a hazard score higher than 4;

(b) fire maintenance trails where used;

(c) parkland and other areas maintained with reduced fuel loads such as mown grass, sports ovals, golf courses and car parks;

(d) water bodies and waterways;

(e) landscaped areas; and

(f) easements and other reserves such as future road reserves and maintained overland flow paths.

Design and construction of building protection zones

(2) Building protection zones are to be established for the protection of buildings from bushfire:

(a) the inner 10m of the building protection zone is to be maintained in a very low fuel state. This area is designed to prevent continuity of fuel, such as shrubs or build-up of leaf litter extending to the building through:
  (i) paving, lawn or non-combustible mulch such as gravel;
  (ii) tree retention only if there is a vertical and horizontal separation of 2m between plants to ensure the canopy is not continued.

(3) The outer 10m of the building protection zone is to be maintained in a reduced fuel state. This area is designed to reduce bushfire intensity and shield buildings from radiant heat, and prevent flames transferring from ground fuels to the canopy. In the outer zone, trees may be retained or planted in small clumps, retaining vertical and horizontal separation between any other plants to ensure that canopy is not continuous.

(4) In all areas of the building protection zone, trees should be a distance 1.5 times the mature canopy height away from buildings, and should not overhang buildings.

Design of roads and public access

(5) When reconfiguring a lot involves the opening of a new road, a perimeter road is the preferred option to separate bushland from urban areas. The public road system in a bushfire-prone area is to provide alternative access or egress for firefighters and residents during a bushfire emergency if part of the road system is cut by fire. Roads should provide sufficient width to allow fire-fighting vehicle crews to work with fire-fighting equipment about the vehicle.

(6) New lots do not back directly onto hazardous vegetation. The perimeter road allows for fire-fighting access. If a perimeter road is not used to isolate a cul-de-sac from the hazardous vegetation, alternative formal access and egress are provided (E.g. a fire maintenance trail). Using public roads is preferable to using easements.

Fire maintenance trails

(7) Fire maintenance trails are only effective in the context of a strategic advantage and access for hazard-reduction operations. Fire maintenance trails present difficulties and costs associated with maintaining fire maintenance trails on private land. Proposals for fire maintenance trails will need to demonstrate clear benefits over the use of a perimeter road. A perimeter fire trail cannot be imposed on the adjoining lands.

(8) Fire maintenance trails are primarily used as access for firefighters. They are also used for fire control lines and maintenance of buffers protecting development. In non-urban areas, they may surround isolated dwellings or groups of dwellings. In suburban subdivisions, they may function as a strategic control line around the hazard side of the development, if they are connected to the public road system at frequent intervals.

(9) Fire maintenance trails are to be designed and located in accordance with a Bushfire hazard management plan prepared in accordance with this planning scheme policy. The bushfire management plan is to demonstrate that the fire maintenance trails:
  (a) are located, designed and constructed to buffer development from bushfire hazard and allow access for fire-fighting vehicles to strategic areas of the site for firefighting;

  (b) adjacent to Council parkland are to be on private land where no public road interface can be achieved;

  (c) are unfenced and accessible at all times by fire-fighting vehicles;

(d) connect through to a road network or network of other fire maintenance trails;

(e) respond to site topography and bushfire characteristics of the site and surrounding area;

(f) are located, designed and constructed to protect firefighter safety and provide for movement, manoeuvring and access to water supplies for firefighting.

(g) are designed so that dead ends are avoided; however if a dead end exists, a turnaround of sufficient radius for a full lock by a Category 1 fire tanker should be constructed (radius[3] 12m) and if there is insufficient space for such a turnaround due to the topography, provision should be made to allow a maximum three-point turn (radius[3] 10m);

(h) are designed and constructed to avoid adverse environmental impacts, including soil erosion, impacts on natural hydrological flows, or other land degradation;

(i) link to existing fire maintenance trails or roads at each end and at maximum intervals of 200m, having regard to site topography, firefighter safety and the need to regularly access water supplies;

(j) do not alter natural hydrological flows or expose acid sulfate soils; and

(k) primary trails are maintained to provide safe four-wheel drive access by fire-fighting vehicles.

Landscaping

(10) The preparation of a landscaping plan is to be guided by best practice ensuring the design and species selection in the landscape plan:

(a) prevents flame impingement on the dwelling;

(b) provides space and access for property protection;

(c) reduce fire spread;

(d) deflects and filter embers;

(e) provides shelter from radiant heat;

(f) reduces wind speed;

(g) meets the spacing requirements in the bushfire protection zone;

(h) uses site features including topography and driveways to manage hazards;

(i) maximises separation distances between structures and sources of bushfire hazard; and

(j) identifies the use of appropriate materials and species in landscaping to manage fuel loads.

(11) All vegetative material can burn under the influence of bushfire. Careful attention must be paid to species selection, their location relative to their flammability, avoidance of continuity of vegetation horizontally and vertically, and ongoing maintenance to readily remove flammable fuels such as leaf litter, twigs and debris.

Selection of plant species is not to be relied upon as a primary measure to reduce bushfire risk.

SC6.5.5 Coastal hazard assessment report

SC6.5.5.1 Purpose of a Coastal hazard assessment report

(1) A Coastal hazard assessment report is required to:

(a) demonstrate that a development will not increase risk to people and property from coastal hazards impact or create an adverse coastal hazard impact including an impact on the ongoing operation of development in coastal hazard areas; and

(b) provide information and guidance to support the outcomes required by the Coastal environment overlay code.

SC6.5.5.2 Desired outcomes for a Coastal hazard assessment report

(1) The following minimum outcomes have been identified to guide the consideration of risk to development from a costal hazard. These outcomes in Table SC 6.5.5.2.1 (Outcomes for a coastal hazard assessment report) are not necessarily exhaustive having regard to a site or development.

Table SC 6.5.5.2.1 Outcomes for a coastal hazard assessment report

Outcome 1	Development in an area subject to a coastal hazard protects safety and amenity.
Outcome 2	Buildings and structures are designed to withstand coastal hazards and minimise cost and disruption to the community associated with responding to coastal hazard impacts.
Outcome 3	An acceptable standard of amenity for future users of the premises is achieved.
Outcome 4	Difficult to evacuate uses and vulnerable uses are to be located outside of Medium storm-tide sub-category areas and the High storm-tide sub-category coastal hazard areas.
Outcome 5	Development relying on an evacuation route or supporting infrastructure located elsewhere demonstrates that those elements in themselves are not susceptible to a coastal hazard.
Outcome 6	Any action taken to mitigate the impacts of coastal hazards does not impact adversely on an adjacent premise or the ability of others to implement their future adapt, defend or retreat actions.
Outcome 7	Development in an area subject to coastal hazards protects biodiversity, the integrity of environmental networks and coastal resources.

SC6.5.5.3 Undertaking a Coastal hazard assessment report

(1) The nature and severity of flood actions is to be established for the site and is to inform the appropriate site and use mitigation measures that are development specific.

(2) The coastal hazard assessment is to address the sources of coastal hazards, specifically including both the impacts of storm tide and longer term salt-water inundation due to tidal flooding.

(3) The flood actions to be considered in the coastal hazard assessment include the following:

(a) the extent of inundation;

(b) flow velocities and depths of inundation through the assessment area;

(c) hydrostatic and hydrodynamic forces on a structure and a building;

(d) debris impacts;

(e) proximity to coastal waters and associated wave actions;

(f) erosion and associated scour;

(g) distance to land unaffected by flooding; and

(h) duration of flooding.

SC6.5.5.4 Preparation of a Coastal hazard assessment report

(1) The Coastal hazard assessment report is to:

(a) include a Coastal risk assessment, as detailed in Table SC 6.5.2.1 (Requirements of natural hazard documentation) of this planning scheme policy;

(b) describe the impacts of coastal hazards on the site;

(c) describe all proposed mitigation measures for the site. These mitigation measures are to:
  (i) address the full extent of exposure to flood action;
  (ii) address the location, design, siting, construction, and operational procedures for the development;
  (iii) determine the risk of scour or erosion for the particular coastal hazard area and mitigation methods;
  (iv) be specific to the full extent, nature and characteristics of the intended use, including affected populations;
  (v) be contained wholly on the site; and
  (vi) include existing or committed defence measures in developing a site-specific response.

(d) address the outcomes for a Coastal hazard assessment report as detailed in Table SC 6.5.5.2 (Desired outcomes for a Coastal hazard assessment report) detailed in this planning scheme policy;

(e) describe any residual risks likely to be experienced on site or created by the development external to the site.

SC6.5.6 Flood hazard assessment report

SC6.5.6.1 Purpose of a Flood hazard assessment report

(1) A Flood hazard assessment report is required to:

(a) quantify the flood hazard for a particular site at the year 2100;

(b) ensure appropriate methods are implemented to appropriately mitigate or avoid the risk of flood hazard; and

(c) provide information and guidance to support the outcomes required by the Flood hazard overlay code and the Coastal hazard overlay code.

SC6.5.6.2 Preparing a Flood hazard assessment report

(1) The Flood hazard assessment report is to include the following key elements:

(a) assessment of the flood risk and implications up to and in excess of the defined flood event at the year 2100; the flood risk does not stop at the defined flood event so the suitability of a land use must consider the implications of larger floods, particularly in regard to the risk to people. The following should be identified:
  (i) the potential impacts of flood hazard on the development;
  (ii) the potential impacts of the development on flood hazard;
  (iii) the location and height of buildings, particularly habitable floor areas;
  (iv) the location and design of plant and equipment, including electrical fittings; and
  (v) impact of increases in rainfall intensity at 2100 in regard to safety and property damage;
  (vi) in the case of overland flow flooding a severe storm impact assessment being provided in accordance with Queensland Urban Drainage Manual;
  (vii) as relevant, include accurate hydrological and hydraulic modelling for the waterway network and assessment of existing flooding and flood levels of major water systems, including modelling of the 50%, 10%, 1%, 0.5% and 0.2% AEP flood events and the Probable Maximum Flood (PMF);
  (viii) address the potential impacts of climate change, including the projected sea level rise of 0.8m; and
  (ix) the 1% AEP flood event at the year 2100 to inform the DFE;

(b) identification of the stakeholders exposed to or affected by the risk of flooding and their compatibility to the risk and how flood risk to people is managed. specifically identifying:
  (i) number of people likely to be at risk and who may need to be evacuated;
  (ii) special care uses (the publication Evacuation Planning by Emergency Management Australia (Commonwealth Government 2005) provides a list of special needs groups);

(c) identification of public and private premises, social systems and environmental elements at risk of flooding, including consideration of extreme flood events;

(d) identification of all critical electrical services, hazardous storages and other high risk elements;

(e) evacuation routes – identify applicable routes, if relied upon, and flood immunity of those routes, and an assessment of the safety of people moving to those routes;

(f) isolation – potential to have evacuation route cut off early in the flood;

(g) burden placed on emergency services – while important to allow safe access for emergency services, they cannot be relied on as a solution to egress difficulties and evacuation;

(h) special care requirements at evacuation destination – uses focused on vulnerable people such as children or elderly and their special requirements for care and the ability of evacuation centres to provide that care;

(i) length of flood recovery and social and economic impacts; that is, the likelihood and consequences of flooding. This evaluation requires a quantitative analysis that uses numerical values, rather than the descriptive scales used in qualitative and semi-quantitative analysis for both consequences and likelihood. The quality of the analysis depends on the accuracy and completeness of the numerical values used

(j) flood-resilient design – this may include both using flood-compatible materials and building design aspects such as locating the least flood-tolerant uses at the highest development levels; and

(k) definition of flood hazard management strategies is to include:
  (i) a description and evaluation as to the impact of the proposed mitigation strategies on the existing and likely future use of land and buildings in proximity to the proposed development;
  (ii) the proposed method of perpetuating the restricted use and required mitigation measures through appropriate forms of legal documentation, notation on titles and methods for conveying the risk management data to future owners and leaseholders; and
  (iii) the procedure to conduct emergency flood management, evacuation and rescue operations including flood emergency management plans.

(2) Development which proposes a lowering of flood immunity standards through a risk assessment (usually an industrial use) is to ensure the building materials are constructed of flood-compatible materials.

(3) A flood hazard assessment report must identify the Flood hazard category in accordance with Table SC6.5.6.2.1 Flood risk, which will be applied in the assessment of the development.

Table SC 6.5.6.2.1 Flood risk

Flood Hazard Category	Description	Depth/Velocity Limit	Depth Limit	Velocity Limit
Low	Unsafe for small vehicles.	≤ 0.6 m²/s	≤ 0.5 m	≤ 2.0m/s
Medium	Unsafe for vehicles and people	> 0.6 m²/s to ≤ 1.0 m²/s	≤ 1.2 m to ≤ 2.0 m	≤ 2.0m/s
High	Unsafe for vehicles and people. All building types considered vulnerable to failure.	> 1.1 m²/s	> 2.1m	> 2.0m/s

SC6.5.7 Landslide hazard (geotechnical) assessment report

SC6.5.7.1 Purpose of a Landslide hazard (geotechnical) assessment report

(1) The Landslide hazard (geotechnical) assessment report is required to:

(a) quantify the landslide hazard for a particular site;

(b) ensure appropriate methods are implemented to appropriately mitigate or avoid the risk of landslide hazard; and

(c) provide information and guidance to support the outcomes required by the Landslide hazard overlay code.

SC6.5.7.2 Risk assessment criteria

(1) For the purposes of completing the risk assessment, tolerable risk criteria apply and are specified by the Australian Geomechanics Society in Table 1 (AGS Suggested Tolerable loss of life individual risk) in the Practice Note Guidelines for Landslide Risk Management 2007, except where societal risk applies as noted below.

(2) 'Acceptable risk' criteria as described in *Australian Geomechanics Society 2007 Practice note guidelines for landslide risk management 2007* are one order of magnitude lower than 'tolerable risk' as specified in Table 1 (AGS Suggested Tolerable loss of life individual risk) and are to apply to:

(a) essential community infrastructure;

(b) sensitive uses;

(c) assembly uses;

(d) difficult to evacuate uses; and

(e) hazardous materials.

SC6.5.7.3 Preparing a Landslide hazard (geotechnical) assessment report

(1) The site-specific Landside hazard (geotechnical) assessment report is to include a landslide risk assessment, as detailed in Table SC 6.5.2.1 (Requirements of Natural hazard documentation) of this planning scheme policy and demonstrate that development on land susceptible to landslide has had appropriate regard to the geological elements including landslide risk on the site.

(2) The site specific Landslide hazard (geotechnical) assessment report is to:

(a) include recommendations and a conclusion that are supported by the data and all stated assumptions contained in the assessment;

(b) be capable of being verified by a peer review;

(c) state whether the site is suitable for the development in compliance with the risk assessment criteria in SC6.5.7.2 (Risk assessment criteria) for the loss of life and for property loss; and

(d) identify the risk mitigation measures for the site.

(3) As a guide the following report format and contents description indicates the depth of detail required:

(a) an introduction including details of the development, such as site location and description including the real property description and the proposed development, reconfiguring a lot or construction details;

(b) a description of existing conditions, including existing research material:
  (i) aerial photographs;
  (ii) geological maps;
  (iii) geological reports;
  (iv) site classification;
  (v) geology (local and regional), including:
    (A) surface and sub-surface materials; and
    (B) geomorphology (slopes, ground contours, natural features, terrain analysis, landslide features);
  (vi) site history, including the location size and type of previous landslips on or affecting the site and hazards outside the site but likely to affect it, such as landslides or rockfalls upslope of the site;
  (vii) groundwater, including:
    (A) watertable; and
    (B) springs and seepage areas in the local area of interest;
  (viii) surface drainage patterns;
  (ix) vegetation cover on and around the site; and
  (x) buildings, other structures, earthworks;

(c) an assessment of land stability/suitability, including:
  (i) proposed development components;
  (ii) a landslide risk assessment for the site indicating the likelihood and consequences of landslides on, above or near the site affecting the development and the calculated risk to life and property having regard to SC6.5.7.2 (Risk assessment criteria) in accordance with *Australian Geomechanics Society 2007 Practice note guidelines for landslide risk management 2007*; and
  (iii) potential geotechnical effects of the development on land stability;

(d) an assessment of development impacts, including:
  (i) site layout;
  (ii) roadworks, driveways and other pavements;
  (iii) earthworks (excavation, materials usage);
  (iv) foundations;
  (v) surface drainage;
  (vi) wastewater (treatment and disposal);
  (vii) detailed existing stability of the site and of geotechnical constraints on buildings or other development work on the site as well as on land above and below the site;
  (viii) overall effect of development on the stability of the site as well as on land above and below the site; and
  (ix) overall effect of any site sewage disposal system or rainwater run-off system on slope stability;

(e) recommendations on appropriate measures required to avoid or minimise risks of instability or other adverse environmental effects, on the site as well as land above or below the site, including:
  (i) preferred locations for buildings, other structures and driveways;
  (ii) foundation requirements;
  (iii) pavement types and design;
  (iv) construction methods to avoid problem areas;
  (v) preferred excavation, retention and stabilisation techniques and the suitability of excavated materials for use in on-site earthworks;
  (vi) surface and sub-surface drainage requirements;
  (vii) preferred methods of wastewater disposal;

(viii) storage of hazardous materials;
(ix) safety of key evacuation routes;
(x) vegetation protection and revegetation requirements; and
(xi) design life adopted;

(f) a Management plan for engineering solutions anticipated to become Council assets, detailing design life, maintenance requirements, maintenance costs and possible alternatives analysis considering long-term stability, risk and life cycle cost;

(g) a summary and conclusions on the overall suitability of the land for the proposed development; and

(h) appendices for field and laboratory test results, including the location and level of field investigations such as boreholes and trench pits.

Note – Overall or Global Slope Stability Certification may be assigned where the development has been assessed as Very low risk in accordance with *Australian Geomechanics Journal Vol 42., No.1. March 2007,* and the following has been met*:*

(a) Slope has been reduced by cut and fill, with fill being laid under Level 1 supervision in accordance with AS3798;
(b) All fill is retained by means of appropriately designed retaining walls, certified by an RPEQ engineer competent in geotechnical design;
(c) Cuts and cut angles to promote long-term stability are determined by a detailed geotechnical investigation and are assessed for stability; and
(d) Prior to signing of the Plan of subdivision, applicant provides geotechnical certification written by an experienced and qualified geotechnical professional, certifying that the subdivision has been constructed in accordance with the approved plans and the landslide risk level is very low in accordance with *Australian Geomechanics Society 2007 Practice note guidelines for landslide risk management 2007.*

Development within an area assigned an Overall or Global Slope Stability Certification will still require certification by a suitably qualified geotechnical professional to ensure works maintain landslide risk as Low in accordance with *Australian Geomechanics Society 2007 Practice note guidelines for landslide risk management 2007*. Works shall be carried out in accordance with the Overall or Global Slope Stability Certification.

SC6.6 Third party advice or comment planning scheme policy

SC6.6.1 Introduction

SC6.6.1.1 Relationship to the Planning Scheme

(1) This planning scheme policy applies to any development application which has been 'properly made' with Council for assessment against the Planning Scheme. Council may require further expert advice or want to seek comments from a special interest person or group on the development application.

SC6.6.1.2 Purpose

(1) This planning scheme policy:

(a) allows Local government to seek advice or comment, where appropriate, about an application in any circumstances the Local government determines, including, in the Local government's opinion if:

(i) the development may conflict with an overlay;

(ii) specialised technical advice is required to assess the development; or

(iii) the development may affect premises being of special interest to a person.

(b) describes the methods which may be used by Council to obtain third party advice or comment on a particular development application prior to the commencement of the Decision Stage.

SC6.6.2 Third party consultation

(1) The purpose of Consultation is to seek third party advice or comment on any development application prior to the commencement of the Decision Stage. The advice may be sought from any individual, stakeholder or interest group.

(2) The advice or comment may be sought in any appropriate way, including:

(a) public notification in the newspaper; or

(b) placing a notice on the premises; or

(c) placing a notice on public land; or

(d) personal notification or contact; or

(e) public meetings; or

(f) meeting with a person having a special interest.

(3) When seeking third party advice or comment, Council will provide appropriate information on the proposal including:

(a) a description of the proposal;

(b) details of where the development application can be inspected;

(c) provide a copy of relevant information;

(d) details of where comments may be lodged; and

(e) the last day upon which Council will accept advice or comment.

(4) The providing of third party advice or comment for a development application under this planning scheme policy does not provide the consulted party with any Appeal Rights as described by The Act.

SC6.7 Growth management planning scheme policy

SC6.7.1 Introduction

SC6.7.1.1 Relationship to the Planning Scheme

(1) This planning scheme policy provides:

(a) information the Council may request for a development application; and

(b) guidance or advice about satisfying an assessment benchmarks which identifies this planning scheme policy as providing that guidance or advice.

SC6.7.1.2 Purpose

(1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:

(a) Development needs assessment report;

(b) Economic impact assessment report;

(c) Structure plan; and

(d) Traffic impact assessment report.

SC6.7.2 Requirements of growth management documentation

(1) Growth management documentation is to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.7.2.1 (Requirements of growth management documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

Table SC 6.7.2.1 Requirements of growth management documentation

Documentation	Preparation	Report requirements
Development needs assessment report	• Prepared by a suitably qualified professional with appropriate technical expertise in economics and economic assessments. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. business owners).	• A Development needs assessment report may be requested to provide additional information to Council. • A Development needs assessment report is to be prepared in accordance with SC6.7.3 (Development needs assessment report)
Economic impact assessment report	• Prepared by a suitably qualified professional with appropriate technical expertise in economics and economic assessments. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. business owners).	• An Economic impact assessment report may be requested to provide additional information to Council. • An Economic impact assessment report is to be prepared in accordance with SC6.7.4 (Economic impact assessment report)
Structure plan	• Prepared by a suitably qualified professional with appropriate technical expertise in planning and design and the preparation of Structure plans. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A Structure plan may be requested to provide additional information to Council. • A Structure plan is to be prepared in accordance with SC6.7.5 (Structure plan)
Traffic impact assessment report	• Prepared by a traffic engineer who is a Registered professional Engineer Queensland. • Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.	• A Traffic impact assessment report may be requested to provide additional information to Council. • A Traffic impact assessment report is to be prepared in accordance with: a) SC6.7.6 (Traffic impact assessment report); b) Guidelines for Assessment of Road Impacts of Development, Queensland Government, Department of Main Roads; and c) SC6.8 (WRC development manual). • All investigations, testing and design should be undertaken in

		accordance with industry practice and the provisions of relevant Australian Standards.

SC6.7.3 Development needs assessment report

SC6.7.3.1 Purpose of a Development needs assessment report

(1) A Development needs assessment report is required to:

(a) justify the need for the development given the current demand and supply of existing land and uses; and

(b) ensure the development is economically feasible, with appropriate methods implemented to mitigate or avoid any negative impacts that may result from the development.

SC6.7.3.2 Preparation of a Development needs assessment report

(1) A Development needs assessment report is to include at a minimum:

(a) a supply analysis of land zoned for the same or similar purpose as that proposed by the development within the broader locality, having regard for:
- (i) existing supply of developed and undeveloped land zoned for the same or similar purpose as that proposed;
- (ii) current competition for undeveloped land zoned for the same or similar purpose as that proposed;
- (iii) the consistency of the location with regard to the function and accessibility of the development, including infrastructure provision; and
- (iv) whether, if not satisfactorily located, it would jeopardise the provision of facilities in a location better placed to provide a higher level of choice or degree of convenience and accessibility;

(b) a demand analysis of land zoned for the same or similar purpose as that proposed by the development within the broader locality, having regard for:
- (v) the existing population currently serviced by existing development and the socio-economic characteristic of this population;
- (vi) the population anticipated to be serviced by the proposal over a short, medium and long term planning horizon and the socio-economic characteristic of this population;
- (vii) the existing and anticipated demand for floor space/dwellings over a short, medium and long term planning horizon; and
- (viii) establishment as to whether the proposed development would result in an excess of developed land (for that purpose) locally and within the broader context of the area; and whether the proposed development may be premature or inappropriate in this regard;

(c) the economic feasibility of the proposed development, having regard for:
- (ix) the identified existing supply and demand (and future anticipated demand);
- (x) the capacity/capability/maturity of the market to achieve what is required at a feasible rate and scale;
- (xi) the development size;
- (xii) nature of the services proposed to be included within it;
- (xiii) configuration of the general road network which is likely to provide access to the development;
- (xiv) location of any physical or psychological barriers to movement;
- (xv) location of complimentary, competing/similar development;
- (xvi) expected direct and indirect development employment during construction and operations;
- (xvii) changing trends in lifestyle choices and social behaviour relating to community needs which may affect the proposal; and

(xviii) any other benefits or detriments to the local area or the community in general; and

(d) outline and detail the measures that will be implemented to avoid or mitigate significant impacts identified in the assessment.

SC6.7.4 Economic impact assessment report

SC6.7.4.1 Purpose of an Economic impact assessment report

(1) An Economic impact assessment report is required to:

(a) quantify the economic effects a development may have on surrounding uses; and

(b) ensure appropriate methods are implemented to appropriately mitigate or avoid any negative impacts that may be result from the development.

SC6.7.4.2 Preparation of an Economic impact assessment report

(1) An Economic impact assessment report is to include at a minimum:

(a) the extent of existing floor space and approved new floor space in the area likely to be serviced by the proposed facility and in surrounding areas which could be affected by it;

(b) the likely trade area of the proposed facility having regard to the developments:
- (i) size;
- (ii) nature of the services proposed to be included within it;
- (iii) configuration of the general road network which is likely to provide access to the facility;
- (iv) location of any physical or psychological barriers to movement; and
- (v) location of competing facilities;

(c) the nature and adequacy of existing facilities and approved new facilities in the trade area referred to above and the level of convenience provided by such facilities;

(d) the population, existing and projected, for the likely future trade area and the socio-economic characteristics of that population;

(e) the demand, or likely future demand, for commercial floor space in the area referred to above;

(f) whether the establishment of the proposed facilities would result in:
- (i) an excess of commercial floor space of the type proposed in the area; or
- (ii) would result in an excess of commercial floor space generally; and
- (iii) whether the proposal may be premature or inappropriate in this regard;

(g) the likely impact of the proposed development together with the additional cumulative effect of any approved new commercial developments within the same area on existing businesses, with such impacts clearly articulated together with the means by which they can be ameliorated;

(h) whether the proposed location:
- (i) is consistent with the function of the facility;
- (ii) maximises accessibility within its potential trade area; and
- (iii) maximises the use of public transport and pedestrian and cycle accessibility;

(i) whether, if not satisfactorily located, it would jeopardise the provision of facilities in a location better placed to provide a higher level of choice or degree of convenience and accessibility;

(j) the expected direct and indirect development employment during construction and operations;

(k) changing trends in shopping and other behaviour relating to community needs which may affect the proposal;

(l) the environment effects and urban design implications of the proposal;

(m) any other benefits or detriments to the local area or the community in general, including the expected direct and indirect development employment during construction and operations; and

(n) outline and detail the measures that will be implemented to avoid or mitigate significant impacts identified in the assessment.

SC6.7.5 Structure plan

SC6.7.5.1 Purpose of a Structure plan

(1) A Structure plan is required to:

(a) identify and align with any structure planning undertaken by Council on the premises or surrounding locality;

(b) identify the major elements of the locality surrounding a development that may impact on the planning and design of the site, ensuring the integration of the development and the continuation of corridors, networks and linkages with and beyond the development site;

(c) identify how constraints (within the various overlays) or completing interests have been addressed and reconciled; and

(d) reconcile how the site will fit into the future development of the surrounding area without compromising the effective and efficient development of those lands.

SC6.7.5.2 Preparation of a Structure plan

(1) The extent of the information contained in a Structure plan will depend upon the issues and their resolution, the context of the development in the surrounding area, integration with any Structure plan, and the number of overlays that impact on the area and the site. The more constrained the site, the greater the level of detail required to justify the development.

(2) The major components of the development are to be designed with consideration of this broader context. The Structure plan is to be clear about how the proposed development will integrate with the surrounding community, Structure plans and with the existing parks, service and infrastructure networks and the movement system (road network, public transport facilities and pedestrian and cyclist paths) in the area, including as required by the Transport and parking code.

(3) The scope of a Structure plan is tailored to match the scale and likely impact of the proposed development and depends on the nature and extent of the:

(a) issues associated with the site and the immediate locality surrounding the site, such as land uses, availability of infrastructure, topographical features, significant vegetation, movement systems, natural features, historical features and existing character; and

(b) proposal, its uses, the sequence of development and external impacts such as stormwater quality and quantity management, traffic generation, public transport availability, infrastructure capacity, wildlife corridor linkages and social impacts.

(4) In addition to the general requirements of a Structure plan, an industrial structure plan is to also identify:

(a) the most appropriate location for different types of industries to minimise land use incompatibilities and conflicts;

(b) the integration of the site with any Structure plan surrounding development including any necessary buffering; and

(c) that any reconfiguring a lot is appropriate for the intended industry for the locality.

(5) The steps to be followed and information provided when preparing a Structure plan are outlined below.

Step 1: Site and context assessment
Prior to preparing a Structure plan, an assessment of the site and its context is undertaken and a site description of land prepared, supported by a map containing the following features as a minimum the:

a) relation to any relevant Structure plan;

b) development layout;

c) topography – contours and levels;

d) existing street network and intersections and future connections (identifying minor road connections required to facilitate efficient movement and connectivity of the local road network), and their treatments and public transport routes and their stops;

e) existing residences and structures (such as pool, tennis court or shed), land uses and approvals on surrounding sites;

f) location of nearby schools, shopping centres, employment generators and other community facilities;

g) location of surrounding existing and proposed park network and pedestrian and cyclist paths; and

h) existing infrastructure.

Step 2: Identification of constraints
Some land has values or constraints that will influence the location, form and density of development. As a minimum, values and constraints as identified in any overlays are mapped and considered in the design of the overall development.

Step 3: Analysis of the site characteristics and constraints and allocation of land uses
Once the site characteristics and constraints have been identified, they are addressed by the Structure plan as recommended by the relevant codes and local plans where applicable. In some cases it may be possible to develop all or part of constrained sites carefully and sensitively. Alternative approaches may be required to accommodate development, for example lower development yields or sensitive residential design to ensure the retention of land with environmental or scenic constraint or other values. For other sites, development will not be possible. In many cases, a Structure plan, a local plan or provisions within codes will articulate whether development is possible, and if so, how it should occur.

The application must demonstrate integration, namely:

a) compatibility with any Structure plan and surrounding uses (existing and proposed) with the proposed use/s;

b) that consideration has been given to the potential for the development and coordinated and integrated development of adjoining land uses; and

c) that the development does not prejudice the development of an adjoining premises by shifting unreasonable costs of infrastructure onto adjoining premises, such as parks, stormwater management facilities, roads and bridges.

On a smaller site, where it is not possible to include the full range of land uses that support a sustainable community, it is particularly important to demonstrate that the parks are well planned (either on the site, or already approved on adjoining land) and an integrated road network can be achieved.

If a site is in the Residential or Emerging community zone, a Structure plan is to demonstrate that the allocation of land uses ensures the following:

a) land is used primarily for residential purposes and where relevant aligns with any Structure plan;

b) residential communities are well serviced and enjoy high amenity by providing for a range of complementary business and employment opportunities and community uses and facilities as early as possible. These may include centres, education facilities, parks, health care facilities, youth clubs and emergency services;

c) residential development has good access to public transport, local parks, education facilities, shops and community facilities. As such, these uses must be accommodated in locations that maximise the service they provide to the community and minimise any associated impacts. These uses must be centrally located or highly accessible to their respective catchments and wherever possible to be co-located in or near centres. Uses that are likely to draw significant levels of non-local traffic into residential streets will not be approved unless there is a significant offsetting of community benefit and traffic impacts can be minimised;

d) residential development provides appropriate housing choices for all people and allows residents the opportunity to remain within their neighbourhoods during all stages of their life, with a range of housing choices provided throughout the area. However, houses at low density should predominate; and

e) development does not impinge on the legitimate operation of existing uses and is suitably buffered from incompatible existing uses on the site or on adjacent land.

Industrial development may occur in the Industry investigation zone subject to the identification of environmental performance of the development and the mechanism for the provision of infrastructure in the development.

When allocating industry investigation zoned land for future industrial development, the nature of the industry and the intended industry zone is to align with the separation distances to sensitive zones as detailed in the Reconfiguring a lot code and the assessment benchmarks of the applicable codes.

If a site in the Centre zone or Mixed use zone, a Structure plan is to detail the following:

a) integration with any Structure plan, the mixture and proportion of uses and how these will contribute to economic vitality and the physical environment;

b) key site planning and design elements of the development and how these contribute to the overall centre or corridor structure, movement and circulation network and built form character;

c) building, open space and landscape siting and how these promote and support:
   i) economic activity and community service delivery;
   ii) public transport interchange;
   iii) accessibility and connectivity;
   iv) safety and security;
   v) community use and meeting;
   vi) higher density residential living;
   vii) the character and identity of the centre or mixed use area; and
   viii) design for climatic comfort, energy efficiency and subtropical outdoor living;

d) the streetscape and public space interface including public and publicly accessible spaces and linkages, active frontages or significant corner treatments;

e) development interfaces to the surrounding neighbourhood, adjoining sites and to other buildings or uses within the site to mitigate and manage amenity impacts;

f) air or noise impacts on the site and how these will be addressed through use, site planning or building design; and

g) the existing reduced levels and proposed finished levels for all elements.

Step 4: Document the Structure plan
The structure plan design, including land use allocation, movement network design, and open space and park network provision, is to actively promote achievement of the applicable zone and the intent of any relevant local plan or Structure plan.

The structure plan design is to also enable the development to comply with the requirements of all other relevant codes unless specified otherwise by a local plan or Structure plan.

The structure plan is to contain the degree of detail appropriate to the particular development and its circumstance and at a minimum map and report on the following:

a) the approximate lot or dwelling yield for each part of the site (density);

b) the location of each proposed land use, including where applicable, the extent of facilities proposed such as community facilities, centres, employment and education facilities;

c) how and where broad physical infrastructure is to be provided such as water, sewerage and stormwater;

d) the general location and size of parks including corridor linkages and networks and identify the park zone precinct and type that aligns with the intended future function of the site;

e) the existing and proposed pedestrian and cyclist paths;

f) the existing and proposed road network, including level in the hierarchy;

g) the existing and proposed public transport routes and stops; and

h) the proposed staging of development.

When in map form, the information is to be provided at a maximum scale of 1:2,000 and includes a bar scale and north point.

Step 5: Level of consultation required for a structure plan
The preparation of a structure plan will entail the level of consultation required by the *Planning Act 2016* for impact assessable development. On smaller sites, the consultation required by the *Planning Act 2016* would generally suffice.

However, where the site or the proposal entails complex issues, or involves a large site with multiple precincts and land uses, and/or the structure plan is inadequately detailed to facilitate informed public submissions, Council may require additional material and community consultation as part of a formal Information Request.

SC6.7.6 Traffic impact assessment report

SC6.7.6.1 Purpose of a Structure plan

(1) A Traffic impact assessment report is required to:

(a) quantify the effects a development may have on traffic movement and safety on the site and adjacent transport network (streets and intersections) within the sphere of impact of the development; and

(b) ensure appropriate methods are implemented to appropriately mitigate or avoid any negative impacts that may be result from the development.

SC6.7.6.2 Preparation of a Traffic impact assessment report

(1) A Traffic impact assessment report includes at a minimum the following information for the site and the adjacent transport network (streets and intersections) within the sphere of impact of the development:

(a) an assessment of present traffic operations and safety without the development;

(b) an assessment of traffic operations and safety for the following scenarios:
- (i) at completion of the development, and if the development is staged, also at each significant stage prior, including a comparison between current traffic arrangements and proposed traffic arrangements and an outline of the works proposed to offset anticipated traffic impacts;
- (ii) without the development on a 10 year planning horizon from completion of the development; and
- (iii) with the proposed and any additional upgrading works proposed in conjunction with the development on a 10 year planning horizon from completion of the project;

Note—Council should be consulted regarding the expected traffic growth rates for assessing the future scenarios.

(c) a statement describing how the development will provide for safe and convenient movement to, from and within the site;

(d) a statement describing how the development will facilitate walking, cycling and greater use of public transport in preference to using private motor vehicles for trips to and from the development;

(e) a statement describing how public transport services and infrastructure will be improved as a result of the development, particularly where relating to indented bus bays and bus shelters;

(f) a statement describing the measures used to ensure maximum accessibility from the site to public transport, including where future public transport services are envisaged;

(g) a statement describing the measures used to ensure that through traffic is not introduced into local street systems;

(h) an assessment of existing parking supply and demand in the vicinity of the development for both on- and off-street parking, and an assessment of the impact of the development on this parking supply and demand;

(i) a statement describing the appropriate provision for parking in the development based on land use and the potential for trip-making by public transport, or by walking and cycling;

(j) a statement describing the appropriate provision for on-site bicycle parking facilities;

(k) a statement describing whether the proposed means of ingress to or egress from the development are adequate and located appropriately according to the road hierarchy;

(l) an assessment of the provisions made for the loading, unloading, manoeuvring and parking of service vehicles within the development and on the subject site;

(m) an assessment of refuse storage area/s and demonstration of safe vehicle access for the removal of refuse;

(n) an assessment of the proposed routes within the development used by service vehicles associated with the development, and the impacts of heavy vehicle movements on these routes;

(o) an assessment of the potential for integration of access with adjacent development through sharing of common ingress and egress arrangements;

(p) an assessment of the impacts on public transport, traffic operations and parking as a result of any temporary works required during construction;

(q) a record of any comments made by the Department of Transport and Main Roads or any other State planning authority that comply with the rights and powers of these agencies;

(r) an assessment of the existing and likely future amenity of the surrounding area, and of the potential impacts of the development on that amenity;

(s) a statement describing all of the assumptions made in the preparation of the report and the design parameters adopted in the technical analysis;

(t) a statement describing how traffic generation and parking proposed rates (based on gross floor area) are supported by reference to publicly available documents or attaching actual traffic survey data for a similar activity;

(u) where development incorporates a mix of residential and non-residential uses the assessment may consider the potential cross-utilisation of car parking. A relaxation of up to 30% of the number of non-residential vehicle parking spaces may be appropriate where the assessment demonstrates a genuine cross utilisation exists between proposed uses on a site;

(v) a statement describing how the layout of the development provides for the safe movement of pedestrians and cyclists within the development and to/from the core of the development and the frontage streets, taking into account the location of public transport and pedestrian facilities;

(w) an assessment of the operation of any security boom gate or card reader and its impact on vehicle queuing on the frontage roads; and

(x) an assessment of traffic signals operation based on existing signal phasing, including impact on adjacent intersections.

SC6.8 WRC Development manual planning scheme policy

SC6.8.1 Introduction

SC6.8.1.1 Relationship to the Planning Scheme

(1) The planning scheme policy applies to development requiring submission of approval applications, including design details and construction procedures.

(2) It is the intention of the WRC Development manual to set out procedures and requirements that are consistent with the *Planning Act* 2016 and its supporting legislation, and represent 'best practice' in accordance with accepted current state and national standards for design and construction.

(3) The WRC Development manual sets out procedures involved in applying for an Operational Works Permit for Works that will ultimately be in the ownership and maintenance responsibility of Council or other services authorities or works which are subject to approval by Council.

SC6.8.1.2 Purpose

(1) This planning scheme policy provides:

(a) a comprehensive, practical and authoritative guide through the development approval process from inception to completion for Developer's, Consultants, Contractors and Council Officers; and

(b) a consistent set of Engineering standards for implementation across the Whitsunday Region.

SC6.8.2 Whitsunday Regional Council (WRC) development manual

(1) For further detail regarding procedure or specifications, refer to the WRC development manual document.

SC6.9 Waste management policy

SC6.9.1 Introduction

SC6.9.1.3 Relationship to the Planning Scheme

(1) This Planning Scheme policy provides:

(a) information the Council may request for a development application; and

(b) guidance or advice about satisfying assessment benchmarks which identifies this Planning Scheme policy as providing that guidance or advice.

SC6.9.1.4 Purpose

(1) The purpose of this Planning Scheme policy is to provide information guidance and advice for satisfying the assessment benchmarks for the preparation of a site-specific Waste management plan for residential and mixed-use developments.

(2) This guideline provides guidance to Developers, Architects, Waste Consultants and Town Planners when designing subdivisions, multi-unit and mixed-use developments.

SC6.9.1.5 Preparation of a Waste management plan

(1) Waste management must be considered at the design stage of a development. This will ensure sufficient waste capacity to store waste and recycling prior to collections. Sufficient clearance and access for waste collection has been considered and potential health, safety and environment risks are minimised.

(2) A Waste management plan includes at a minimum the following design principles:

Residential subdivisions

It is essential that residential subdivisions be designed to be serviced by Council's standard waste service upon occupancy. Providing functional subdivision layouts is essential for safe and adequate service of these developments. The following will be considered in the assessment of development applications for residential subdivisions:

(a) site planning, lot layout and road design responsive to Council's servicing requirements and provision of safe and adequate bin presentation areas; and

(b) site planning of the development ensures residential and other user's amenity and safety at all stages of the waste management process.

The standard waste service for residential dwelling unit is a weekly service for waste and fortnightly for recycling, collected from the verge. The design of subdivisions with over four (4) lots may need to incorporate on-site collection where adequate verge space is not available to accommodate bin presentation or where bulk bin services are provided as an alternative to 240L mobile garbage bins.

Multi-unit developments

It is essential that the design of all residential multi-unit developments provides a waste management system that is responsive to the development's needs and is able to be integrated with Council's standard waste management service.

To ensure that multi-unit development can access the Council's waste service in an efficient and effective manner, the following will be considered in the assessment of Development Applications:

(a) Site planning of the development accommodates on-site waste collection and allows the waste collection vehicle to enter and exit in a forward direction, manoeuvre within the site and access the nominated collection point;

(b) Waste management system selection ensures safe and convenient use for residents; and

(c) Adequate waste storage area(s) are provided within the development site to store the required number of waste, recycling, or bulk bin services.

The standard waste service for multi-unit development is an on-site collection service where a nominated bin collection point and loading area is provided. The design of the proposed multi-unit development will need to consider how the waste management systems will be integrated with Council's existing waste collection service.

Mixed use developments

It is essential that the design of all mixed-use development provides a waste management system for the residential component of the development that can be integrated with Council's standard waste management service. Separation of commercial and residential waste storage areas must be maintained.

SC6.9.1.6 Waste management plan

(1) A Waste management plan which meets the requirements of these guidelines is to be submitted for the following types of developments:

(a) residential subdivisions with 4 or more lots;

(b) multi-unit (including multiple dwellings, short term accommodation, rooming accommodation, relocatable home park) residential properties; and

(c) developments with multiple uses onsite.

(2) The Waste management plan requires details on the following items:

(a) Summary of development

The summary of the development must contain the following information:

i. location of the development;

ii. number of storeys;

iii. number of dwellings units by size (one, two or three bedrooms);

iv. size of each commercial unit; and

v. details of the intended use of the development.

(b) Anticipated waste generation

Details of the anticipated waste generation for refuse, recycling and other wastes must be calculated using the figures in **Section (r) – Waste generation rates**.

(c) Receptacle size and quantity

Details of the size and quantity of the receptacles to be used must be provided. **Section (q)** – **Receptacle dimensions** contains details of the common size receptacles. Other size receptacles may be used, subject to approval by Council's Waste Services Department. Details of these receptacles must be provided with the Waste management plan.

(d) Bin storage area

Design details of the bin storage area must be included in the Waste management plan covering the requirements outlined in **Section (p) – Bin store size**. This includes:

i. how waste is transported from the source to the bin storage area;

ii. bin storage area size;

iii. bin storage area layout;

iv. wash-down area;

v. ventilation;

vi. vermin prevention;

vii. noise reduction; and

viii. stormwater ingress prevention.

(e) Waste system

Details of any waste systems must be provided including chutes, compactors, and any other waste management equipment or devices to be used.

(f) Collection method

The Waste management plan must provide details on proposed collection method to be used in servicing the development. This will include information about the following subjects:

i. movement of collection vehicle;

ii. collection location; and

iii. transfer of waste to the collection vehicle.

Upon the completion and occupation of the development the Waste management plan will provide the framework for the management and collection of waste and recycling.

(g) Waste collection - Council services

Council provides the following services to all rateable (residential) properties.

i. Mobile Garbage Bin (MGB) services consisting of:

(A) 1x 240L MGB for waste and 1x 240L MGB for recycling (kerbside); and

(B) 1100L and 660L MGBs for waste and recycling (for on-site collection in multi-unit dwellings by arrangement).

ii. Council's collection services operate Monday to Friday for residential properties; and

iii. Council's collection contractor operates the following collection vehicles:

(A) Side loaders (29m^3 compactor) – waste collections;

(B) Side loaders (29m^3 compactor) – recycling collections; and

(C) Rear loaders (28m^3 compactor) – waste and recycling collections.

Note - Council does not provide commercial waste collection services.

(h) Collection frequency

Council's standard residential service comprises a weekly collection of waste and fortnightly collection of recycling. Multiple weekly services may be provided for multi-unit residential developments by negotiation with Council's Waste Services Department.

Note – Multiple weekly services are subject to agreement with Council and may not always be possible. Where not possible, Council may encourage premises to enter into a commercial agreement with a local service provider. A minimum service charge will still apply in accordance with Council's revenue statement.

(i) Collection at the verge

For collection of MGBs at the verge the following conditions shall be met:

i. a flat area is required of sufficient size to accommodate all the MGBs to be serviced on that day;

ii. the MGBs are to be placed in single file with no less than 100mm between each MGB. The flat area can either be paved or grass;

iii. the MGBs placed at the verge shall not obstruct pedestrian traffic or vehicles using the adjacent street and be clear of street signs, trees, seats, litter bins or other permanent fixtures on the verge;

iv. consideration shall be given to ensure there is no impediment to sight distances to nearby cross-overs and intersections;

v. the bin collection area shall not be adjacent to street parking bays;

vi. the MGB shall be placed on the verge no more than 1.5m from the kerb with the lid opening to the road. All bins for collection shall be placed on the verge prior to 6:00 am on the collection day; and

vii. the movement of MGBs from the complex to the collection point shall not occur on the vehicular access ways.

Note - Overfull bins with lids not closed, 240L MGBs that weigh in excess of 70kg and waste placed outside the MGBs will not be collected.

(j) Collection within the premises

MGBs at multi-unit and mixed-use developments may be serviced by Council's contractor from within the bin store or from a location within the premises. If within the premises, a signed indemnity will need to be provided to permit Council's contractor to enter private property.

Where receptacles are presented for service outside of the bin store:

Bin manoeuvrability

i. the surfaces which are traversed must be designed to allow easy transportation of the MGBs and be finished in a way which reduces the noise caused by the MGBs as they are manoeuvred;

ii. the distance between the bin store and the presentation area is no greater than 10m;

iii. gradients on the path used to transfer the MGBs from the bin store to the collection point must not exceed 1 in 14 for two wheeled MGBs and 1 in 20 for four wheeled MGBs; and

iv. the area between the bin store and the collection point shall be a flat smooth surface with no kerbs or steps.

Bin access

i. the minimum pavement width for access to bin stores shall be 4m and the gradient of the access ramp shall be no more than 1 in 8; and

ii. where bin rooms are secured, a compatible key system is necessary to enable access by collection truck drivers. Details of the proposed locking system are to be included in the Waste management plan for approval by Council's Waste Services Department. All costs associated with the locking system are the responsibility of the developer, property owner/s and/or the strata managers.

Bin collection

i. where on-site collections occur, roadways and infrastructure traversed by the collection vehicle must be constructed to accommodate a heavy truck of 25 tonne gross vehicle mass;

ii. sufficient overhead clearance is required for access to bin stores that are located in basements or under crofts. This includes clearance to

all structural beams, suspended pipe work, suspended services and the like;

iii. the basement area shall be free of columns, kerbs and other permanent structures that would inhibit the manoeuvrability of the collection truck;

iv. sweep paths for the proposed collection vehicles shall be clearly shown on the plans of the proposed development and included in the Waste management plan; and

v. where private collections are employed the collections must comply with all local, state and federal laws and regulations.

The waste collection vehicle must be able to enter and exit the development in a forward direction, with limited reversing (maximum 3-point turn), parking in a designated location within the property boundaries. This could be facilitated by the inclusion of a turntable.

Please see vehicle dimensions for required adequate vehicle clearance. Where alternative access is proposed, the design is to take into consideration the safety of pedestrian traffic, other vehicles using the area and traffic density on the servicing street.

(k) Waste chutes

In high rise developments waste chutes are often proposed to convey waste and recycling from the lobby areas to the bin store. With regard to the lobby area the designer shall consider space restraints, chute design, mechanisms for the separation of waste from recycling and the management of bulky items such as cardboard in the lobby area.

At bin store level consideration shall be given to the safety aspects of the chute operation, rotation of the MGBs beneath the chute, ventilation and mechanical breakdown of the chute system.

Sufficient space shall be provided in the bin store for the manoeuvring of MGBs from beneath the waste and recycling chutes.

(l) Compaction

Compaction of garbage can be used where there are constraints on space. Typically the garbage is compacted directly in the MGB using downward force. Garbage compaction shall be restricted to no more than 50% (2:1) of the original garbage volume. Compaction shall not be used for recycling.

(m) Bin store

All multi-use developments, which include multiple dwellings, are to provide a dedicated area for the storage of MGBs. The bin store must be of sufficient size to house all the requisite MGBs, include room for manoeuvring the MGBs and include a bin washing area.

(n) Design requirements

The bin store will have the following as a minimum:

i. 75mm thick concrete slab floor with fall to a floor waste trap connected to a sewer;

ii. a tap with hose to facilitate bin washout and bin store cleaning;

iii. walls will be constructed of brick, concrete or similar with the inside walls sealed and painted in a light colour to facilitate washout;

iv. fully enclosed with a wall of 1.8m minimum height;

v. doors to be solid in nature and lockable with a minimum clear width of 1,200mm, fitted with an efficient self-closing device and a method of holding the doors open when required;

vi. adequate ventilation to be provided;

vii. artificial internal and external lighting with movement sensor or mechanical switch controlled;

viii. all applicable signage;

ix. MGBs must not be visible from the property boundary except when presented for collection;

x. the bin storage area shall be undercover to prevent stormwater from entering the sewer;

xi. where located within a building, the bin store shall be ventilated in accordance with Australian Standard 1668.2: The Use of Ventilation and Air Conditioning in Buildings (as amended);

xii. where mechanical ventilation is used, the outlet for vented air must be in a location which will not adversely impact residents;

xiii. sufficient space must be provided to allow the easy passage of MGBs in and out of the bin storage area; and

xiv. separate bin storage areas are required for residential and commercial waste storage.

(o) Bin store signage

An information sheet shall be affixed at the entry to the bin store containing the following information to facilitate safe and efficient waste management at the proposed development. The information sheet will include:

i. caretaker contact details for any waste related issues;

ii. bin collection days and times;

iii. waste types appropriate for each bin type;

iv. the information sheet will be regularly updated by the caretaker;

v. any changes or amendments to the waste services shall be passed on to the residents and tenants;

vi. where waste chutes are used the same sign shall be affixed to the wall in each lobby adjacent to the waste chutes; and

vii. a sign stating “NO STANDING” fixed to the door of the bin store.

(p) Bin store size

The size of the bin store shall be determined using the following criteria:

i. double the footprint of each MGB shall be used per MGB for MGB storage; and

ii. three times the footprint of the largest MGB for the wash bay.

The area to be allowed per MGB is shown in **Table SC 6.9.1.1**.

Table SC 6.9.1.1: Allocation of area per MGB

MGB Type	Width	Depth	Area of MGB	Allowance per MGB	Allowance for Wash Bay
240 L	0.585 m	0.73 m	0.43 m^2	1.0 m^2	2.0 m^2
660 L	1.26 m	0.78 m	0.98 m^2	2.0 m^2	3.0 m^2
1100 L	1.24 m	1.07 m	1.33 m^2	3.0 m^2	4.0 m^2

(q) Receptacle dimensions

i. 240L MGB - Typical 240L MGB's used by Council are shown in **Figure 1**.

Figure 1: Details of 240L MGB

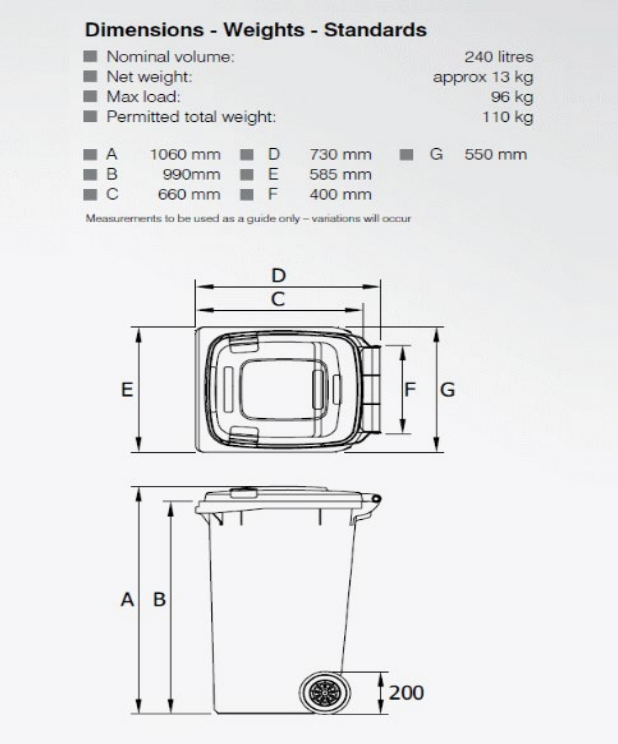


Figure 2: 240L MGB colours

ii. 660L MGB - Typical 660L MGB used by Council are shown in **Figure 3**.

Figure 3: 660L MGB dimensions

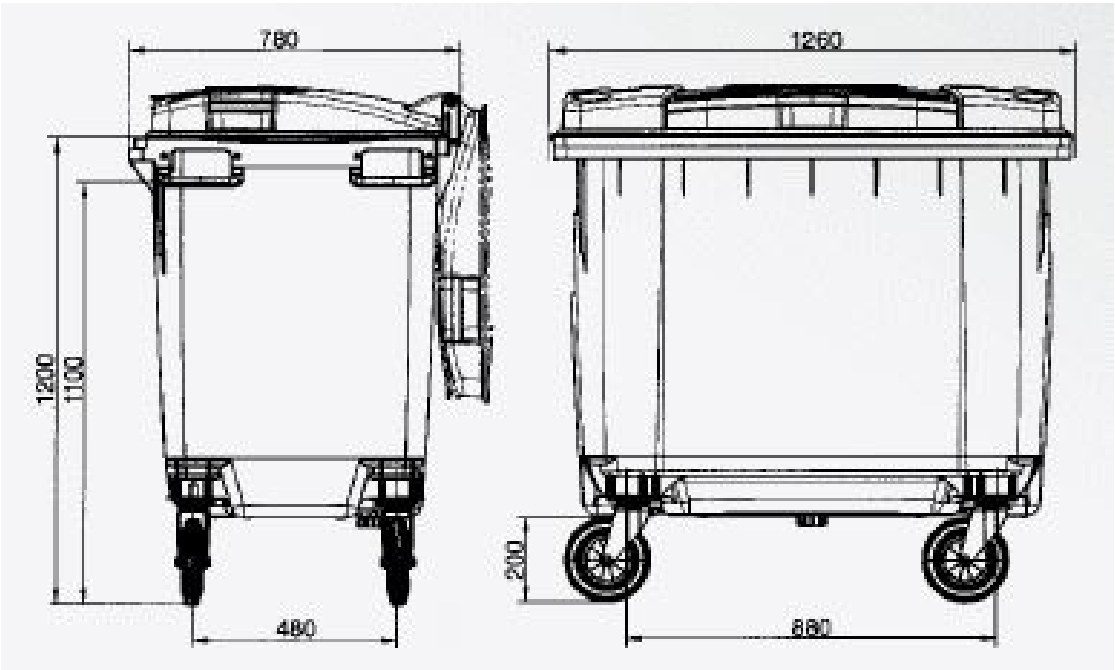
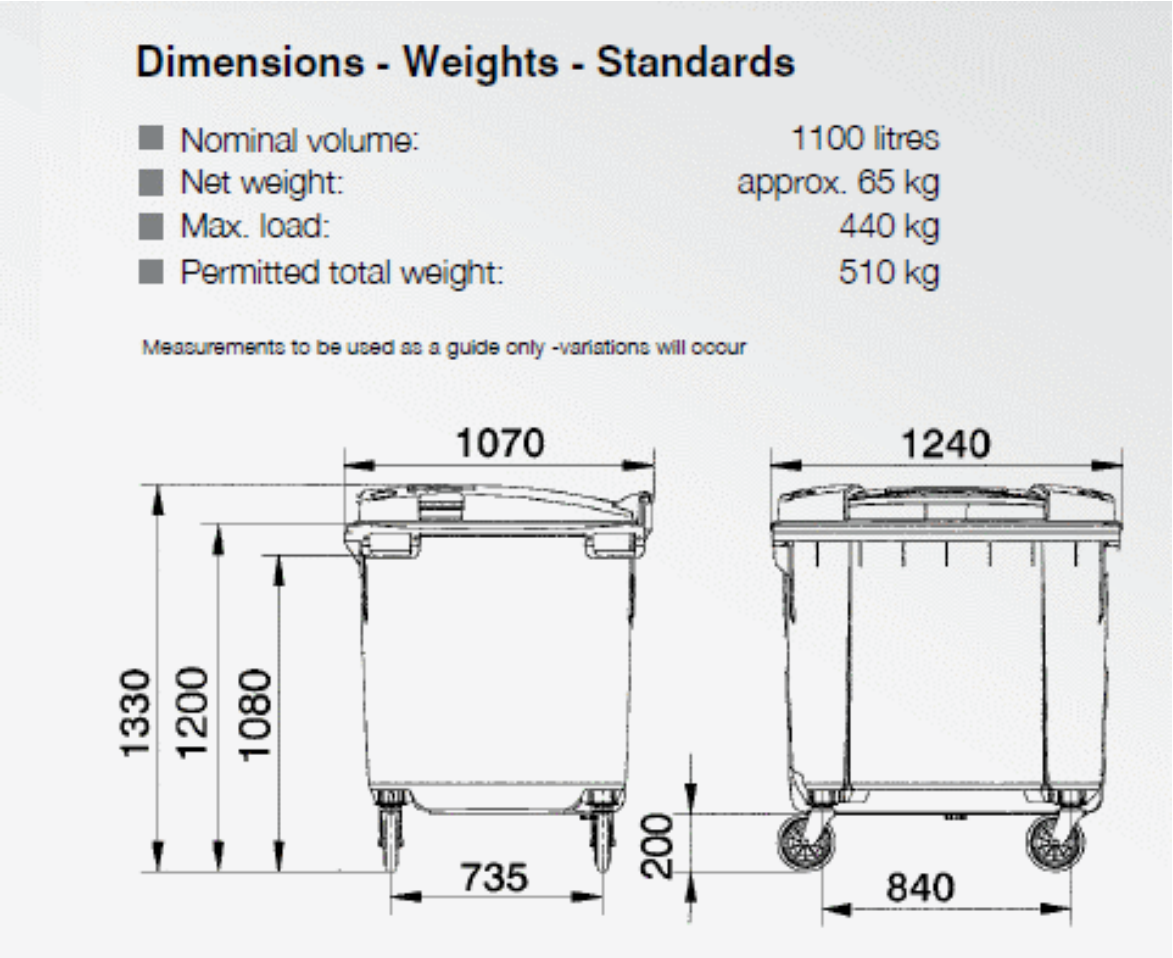


Figure 4: 660L and 1100L MGB Colours

iii. 1100L MGB - Typical 1100L MGB used by Council are shown in **Figure 5**.

Figure 5: 1100L MGB dimensions



(r) Waste generation rates

i. developments are to be designed to incorporate waste and recycling storage in accordance with the waste and recycling predicted weekly generation rates shown in **Table SC 6.9.1.2** and **Table SC6.9.1.3**.

Table SC 6.9.1.2: Residential waste and recycling generation rates

Type of Premises	Waste (Litres per week)	Recycling (Litres per week)
Serviced apartment	35	35
1 bedroom apartment	80	40
2 bedroom apartment	100	60
3 bedroom apartment	120	60
Individual dwelling	240	120

Table SC 6.9.1.3: Commercial waste and recycling generation rates

Type of Premises	Waste	Recycling
	Litres/100m^2 floor area/day	
Take Away Food Outlet / Corner Store / Convenience Store / Lunch Bar	150	150
Café	300	130
Restaurant	660	130
Shops with less than 100 m^2 floor space	50	25
Shops with more than 100 m^2 floor space	50	50
Showrooms	40	10
Taverns and Bars	50	50
Hotel and motel restaurants (dining area)	660	130
Offices	10	10
Hotel and motel accommodation	5 L/bed/day	1 L/bed/day

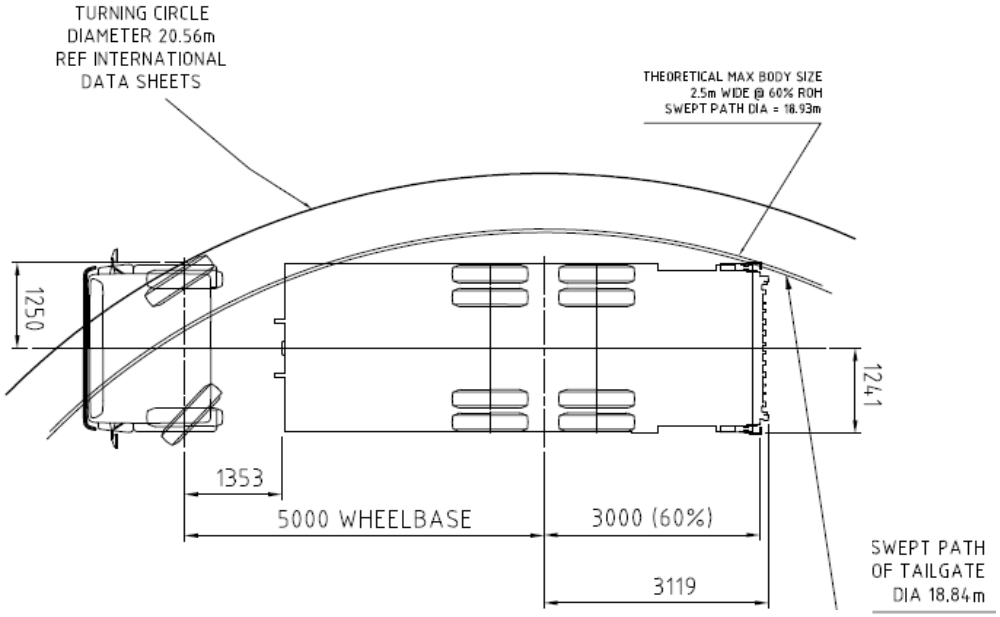
ii. where the waste or recycling requirements outlined in **Table SC6.9.1.2** or **Table SC6.9.1.3** above result in a partial bin requirement, this is to be rounded up to the next bin number; and

iii. where waste chutes are used an additional MGB per chute shall be provided to ensure that there will be MGBs under the chutes in the bin store during times of waste and recycling collection.

(s) Sweep Paths

i. Figure 6 shows the sweep radius of a typical 25 tonne rear load waste collection truck.

Figure 6: Sweep radius of a 25 tonne rear load truck



(t) Assignment of Duties

The Waste management plan shall clearly convey the responsibilities and duties of Council, strata manager, caretaker, residents and commercial tenants, being:

i. strata manager:

(A) the strata manager shall be required to ensure that the management of waste and recycling at the facility complies with the requirements of the *Environmental Protection Act 1994* and *Public Health Act 2005,* and an appropriately qualified and experienced caretaker is appointed to manage the waste and recycling activities at the complex. the engagement of a caretaker will form part of the strata management agreement for the property, endorsed by all building owners. provision for the payment of the caretaker will be included in the annual strata fees;

ii. caretaker - the caretaker shall:

(A) inspect the waste chutes on each floor of the complex (if used) on a daily basis to ensure that there is no accumulation of waste in the lobby areas, that signage is visible, lobby areas are clean and that the waste chutes are functioning correctly;

(B) ensure that the doors on the waste chutes (if used) at the bin store are functioning correctly and that there is no blockages in the waste chutes;

(C) change the MGBs at the base of the waste chutes (if used) in the bin store as the MGBs become full;

(D) compact waste in the MGBs (if compaction is used) to increase bin capacity;

(E) clean and maintain the MGBs and bin store;

(F) washing and deodorising MGBs as required; and

(G) keep up to date with waste collection issues, such as public holiday collection schedules, local service disruptions or changes in collection days;

iii. commercial tenants - the commercial tenants will be responsible to undertake the following:

(A) practice correct waste separation of waste and recycling;

(B) deposit recyclables loose in their respective recycling MGB; and

(C) coordinate with the caretaker in regards to waste management practices and report any issues; and

iv. residents - the residents will be responsible to undertake the following:

(A) practice correct waste separation of waste and recycling;

(B) deposit recyclables loose in the recycling chute (not bagged); and

(C) deposit recyclables loose in their respective recycling MGB.

Tables of Appendix 1

Table AP 1.1 Abbreviations and acronyms

Appendix 1 Index and glossary of abbreviations and acronyms

Table AP 1.1 Abbreviations and acronyms

Abbreviation/ acronym	Description
ABH	Average building height
ABLP	Airlie Beach Local Plan
AEP	Annual exceedance probability
AHD	Australian height datum
ARI	Average recurrence interval
ASS	Acid sulfate soils
AS	Australian Standard
AO	Acceptable outcomes
AV	Articulated vehicle
BCA	Building Code of Australia
BLP	Bowen Local Plan
CO	Compliance outcomes
CPTED	Crime prevention through environmental design
DEHP	Department of environment and heritage protection
DFE	Defined flood event
DFL	Defined flood level
DNRM	Department of natural resources and mines
DSDIP	Department of state development, infrastructure and planning
DSTE	Defined storm tide event
DTMR	Department of transport and main roads
EP Act	*Environmental Protection Act* 1994
EPBC Act	*Environmental Protection and Biodiversity Conservation Act* 1999
ESCP	Erosion and sediment control plan
GFA	Gross floor area
GLA	Gross leasable area
GIS	Geographic information systems
GPS	Global positioning system
HAT	Highest astronomical tide
HILP	Hamilton Island Local Plan
HRV	Heavy ridged vehicle
ICOMOS	International council on monuments and sites
km	Kilometre
LGIP	Local government infrastructure plan
LP Gas	Liquid petroleum gas

Abbreviation/ acronym	Description
m	Metre
MCU	Material change of use
MLES	Matters of local environmental significance
MSES	Matters of state environmental significance
MNES	Matters of national environmental significance
MRV	Medium rigid vehicle
MSES	Matters of state environmental significance
MU	Mixed use
PIA	Priority infrastructure area
PMF	Probable maximum flood
PMVA	Property map of assessable vegetation
PO	Performance outcomes
PSP	Planning scheme policy
QDC	Queensland Development Code
ROL	Reconfiguring of a lot
RPEQ	Registered professional engineer Queensland
SC	Schedule
SPA	*Sustainable Planning Act* 2009 (repealed)
SPP	State planning policy
SQMP	Stormwater quality management plan
SRV	Small rigid vehicle
the Act	*Planning Act 2016*
the Regulation	*Planning Regulation 2017*
TUA	Total use area
WQO	Water quality objectives
WRC	Whitsunday Regional Council
WWMP	Wastewater management plan

Tables of Appendix 2

Table AP 2.1 Table of amendments

Appendix 2 Table of amendments

Table AP 2.1 Table of amendments

Commencement date	Planning scheme version	Amendment type	Amendment description
30/06/2017	V3.4	Making a Local Government Planning Instrument	Whitsunday Planning Scheme 2017 was adopted.
03/07/2017	V3.5	Alignment amendment	Alignment with the Planning Act 2016.
29/06/2018	V1.6	Amendment to include a Local Government Infrastructure Plan (LGIP)	• Inclusion of Part 4 of the Planning Scheme; • Inclusion of Schedule 3 of the Planning Scheme; and • Amendment to Schedule 1 definitions to include LGIP terminology.
21/12/2018	V3.6	Administrative amendment and amendment to a Planning Scheme Policy (Schedule 6.8)	• Clarification of various outcomes, formatting and grammatical amendments; and • Amendments to Development Manual.
30/11/2020	V3.7	Interim LGIP Amendment	• Amendment to Part 4 and Schedule 3 to remove Water reservoir (W8) located in Bowen South; • Update Schedule of Works Model to reflect removal of Water reservoir (W8); • Align LGIP Version 1.6 with the Planning Scheme, such that both become Version 3.7.
##	V4.0	Major Amendment to the Whitsunday Planning Scheme	•

Whitsunday Regional Council Development Manual

Version No. 4.0

Issued ##/##/2021

This document is the property of Whitsunday Regional Council and is issued to developers, consultants, contractors and Council officers responsible for the development process from inception to completion.

No unauthorised changes are to be made to this manual. Suggested changes are to be forwarded to the Manager Strategic Planning for consideration.

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Definitions and Acronyms

AASHTO	American Association of State Highway & Transportation Officials
AC	Asphaltic Concrete
ADWF	Average Dry Weather Flows
AHD	Australian Height Datum
AMCORD	Australian Model Code for Residential Development
ARI	Average Recurrence Interval
AEP	Annual Exceedance probability
ASD	Approach Sight Distances
ASS	Acid Sulphate Soils
AV	As Values
BBQ	Barbecue
CBR	California Bearing Ratio
Consulting Engineer	An RPEQ certified engineer
CPESC	Certified Professional in Erosion and Sediment Control
CPTED	Crime Prevention through Environmental Design
Days	Business days
Defects Liability	Means the obligation upon the developer/applicant to repair any defects (latent or patent) in the development.
Defects Liability Period	Means the period commencing on the date stated in Council's Defects Liability Letter and ending on the date stated in that letter. For the avoidance of doubt, Council may impose a different period for defects liability and 'on maintenance' periods.
DICL	Ductile Iron Cement Lined
DTMR	Department of Transport and Main Roads
EP	Equivalent Persons
ESA	Equivalent Standard Axles
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Plan
ESCS	Erosion and Sediment Control Strategy

ESD	Entering Site Distance
FRC	Fibre Reinforced Pipe
HDPE	High Density Polyethylene
IDF	Intensity Frequency Duration
IEAust	Institute of Engineering Australia
IPWEA	Institute of Public Works Engineering Australia
ITP	Inspection and Test Plan
K	Potassium
LATM	Local Area Traffic Management
MUTCD	Manual of Uniform Traffic Control Devices
N	Nitrogen
NATA	National Association of Testing Authorities
Off Maintenance	Means that the ownership and the maintenance obligations have transferred to Council upon completion of the “Off Maintenance” inspection occurring at the end of the “On Maintenance” period.
On Maintenance	Means that ownership of the asset has passed to Council but the maintenance responsibility and obligation remains with the developer/applicant for the On Maintenance Period. Maintenance includes but is not limited to mowing, whippersnipping, watering, cleaning and general upkeep, as well as the rectification of any defects and shall be at the sole cost of the developer (unless caused by Council activities).
On Maintenance Period	Means the period of time commencing on the date of issue of the “On Maintenance “letter from Council and ending on the date stated in that letter.
P	Phosphorus
PASS	Possible Acid Sulphate Soils
PE	Polyethylene
PVC-M	PVC modified
QLD	Queensland
QUDM	Queensland Urban Drainage Manual
RM	Rising Main
RPEQ	Registered Professional Engineer Queensland

RPZD	Reduced Pressure Zone Device
SCADA	Supervisory Control and Data Acquisition
SISD	Safe Intersection Site Distance
SQID	Stormwater Quality Improvement Devices
Surveyor	Registered Surveyor with the Surveyor's Board of Queensland
SV	Scour Valves
U PVC	Unplasticised PVC
Vpd	Vehicles per day
Wet Sediment Basin	A wet sediment basin has the capacity to contain all run-off expected from the y percentile, X – day rainfall depth where, depending on the sensitivity of the receiving waters and/or the duration that the structure is in use: x varies between 2 and 20 days and y varies between 75th and 90th percentile. Refer to IECA best practice erosion and sediment control.

A1 – APPLICATION PROCEDURES

General

AP 1.01 Introduction

1.01.1 This manual sets out procedures involved in applying for an Operational Works permit for works that will ultimately be in the ownership and maintenance responsibility of Council or other service authorities or works which are subject to approval by Council;

1.01.2 It should be read in conjunction with the relevant approvals and/or what development permit conditions;

1.01.3 Conditions of a development permit (including reconfiguration) may require the Applicant to construct, bond and/or submit, various works or documentation before survey plans can be approved and sealed by Local Authority or before a development may be occupied or a land-use commenced;

1.01.4 Preliminary approvals/development permits requiring the construction of operational works generally involve the applicant and/or a designer applying for an operational works permit and request in Council approval of designs and specifications;

1.01.5 Plans for roadworks, drainage works, water supply, sewerage works, bridges, retaining walls, miscellaneous structures, buildings, pumping stations and flood control structures are to be prepared under the direction of and certified by an RPEQ;

1.01.6 plans for landscape works by a person of professional standing and competence in the field of landscape architecture or landscape design, and a standard acceptable to the Council. Where irrigation plans are required for public parks, traffic islands or roundabouts, they are to be prepared by an irrigation designer with a proven track record of successful irrigation design;

1.01.7 designs, calculations, drawings and specifications are to be submitted as supporting information to an application for a Development Permit for Operational Works;

1.01.8 Operational Works permits will not be issued until evidence of payment of the Portable Long Service Leave and Occupational Health & Safety fees is provided.

Design Approval

AP 1.02 Pre-lodgement discussions

1.02.1 Prior to lodgement of an Operational Works application for approval of detailed designs, the designer is encouraged to meet with Council officers to discuss the

following matters in the event that the following issues have not been addressed at reconfiguration of a lot approval:

1.02.1.1 Legal points of stormwater discharge;
1.02.1.2 Identify environmentally significant areas and heritage features;
1.02.1.3 Internal and external stormwater catchment boundaries;
1.02.1.4 Tail water conditions including water quality requirements and determination of tail water level;
1.02.1.5 Connection points for water supply and available pressure and discharge capacities;
1.02.1.6 Discharge points for sewerage;
1.02.1.7 setback distances from watercourses for on-site wastewater treatment and disposal;
1.02.1.8 future planning for the provision of services, e.g., water supply, sewerage, drainage and road networks, stream management and stormwater quality management, structures, power, communications and gas. In special circumstances, the Council may require the installation of large water mains to serve areas beyond the development;
1.02.1.9 Site Conditions;
1.02.1.10 Development Permit Conditions for the for the particular development;
1.02.1.11 layout design, speed restriction; and
1.02.1.12 landscaping works for on street works and public open space.

1.02.2 Approval of designs can be expedited where the above issues have been resolved in advance;

1.02.3 The designer may obtain as constructed information in relation to existing roads, stormwater drainage, water and sewer reticulation if available from Council, on application and payment of a prescribed fee (where applicable);

1.02.4 in addition to the above, it is advisable that the designer discuss and obtain Council's agreement to the following issues (where required) prior to submission of designs:

1.02.4.1 Possible variation to Council's manual and standards;
1.02.4.2 Variations to design due to inability to obtain drainage discharge approvals; and
1.02.4.3 Request for Council to contribute towards some aspects of the work.

1.02.5 Resolution of these issues, particularly those requiring a decision of Council (i.e. amendments to conditions of approval, or request for Council contributions) is essential to avoid protracted approval periods and wasted design effort.

AP 1.03 Design Requirements

1.03.1 The design of operational works must comply with the relevant development permit conditions, Council's local laws, policies, planning scheme and the provisions of

this manual. The developer shall meet all costs associated with the compliance with these minimum requirements.

1.03.2 Design is to demonstrate a non-worsening affect to surrounding infrastructure, where upgrades are required the developer must bear the all costs associated with the required upgrade.

1.03.3 It is Council's requirement that the design of all operational works must be prepared under the direction of, and certified by, an RPEQ. The RPEQ must bear full responsibility for all aspects of the design of the operational works, which they certify.

1.03.4 Road safety audit to be undertaken by a suitably experienced RPEQ as per the requirements and Austroad's Guide to Road Safety to verify designs and signage prior to submission to Council.

AP 1.04 Consent of Adjoining Landowners

1.04.1 Written approval is required from adjoining property owners authorising any operational works on their property (if under an easement authorisation must come from the easement owners).

1.04.2 Approvals to discharge and/or easements over downstream drainage paths from the respective property owners are required from the development site to the approved point of discharge.

AP1.05 Documentation

1.05.1 Associated with the lodgement of the "Application for Operational Works Development Permit", engineering plans and specifications for the works are to be submitted to Council for approval (the specific requirements for the submission).

1.05.2 Submissions with a full complement of supporting documentation will ensure minimal delays in Council's approval timeframes.

1.05.3 Following the issue of an operational works permit, any plans that are required to be amended must be resubmitted with an accompanying letter outlining the amendments and including any necessary calculations or documentation as supporting information.

1.05.4 One complete description must be issued to Council incorporating any required amendments following the issue of an operational works permit.

AP 1.06 Local Authority Approval

1.06.1 The "Statement of Compliance – Operational Works Design" (refer Form 1) has been introduced to expedite the approval process.

1.06.2 Any non-compliant aspects are to be re-designed by the certifying RPEQ and relodged to Council for approval.

1.06.3 If the Council review reveals the Statement of Compliance to be inaccurate or incomplete, the submission may be returned to the applicant for resubmission.

1.06.4 It is the RPEQ's responsibility to ensure the design as submitted considers all site conditions and complies with Council's approval conditions, local laws, policies, the provisions of this Development Manual and other relevant authorities.

1.06.5 Council's review and stamp approval process does not warrant that an approved design complies with the above in every respect, and Council reserves its right to order the rectification of non-complying or unsafe works at the cost of the developer, despite its prior approval.

1.06.6 Within five (5) days of Council's approval, the designer shall submit an electronic copy of the requirements of 1.08 below.

1.06.7 Three (3) street names for each new street (in line with any Council naming policy) must be lodged for consideration and approved by Council before construction is complete.

AP 1.07 Approval of Other Authorities and Referral Agencies

1.07.1 The applicant is responsible for gaining the approvals of any other authorities having jurisdiction over any part of the works.

1.07.2 All works on state-controlled roads will be subject to DTMR approval and is to be carried out in accordance with the Department's policies, standards and guides.

1.07.3 All referral agency conditions are to be included in design documents and must be approved by each agency (if required), prior to submission to Council.

AP 1.08 Supporting Information

General

1.08.1 Supporting information for operational works shall include the following:

- 1.08.1.1 Design Plans (in DWG and PDF Format)
- 1.08.1.2 Job specification (one copy)
- 1.08.1.3 Design report (one copy)
- 1.08.1.4 Design checklist
- 1.08.1.5 DA form 1 and/or relevant application forms from the *Planning Act 2016*
- 1.08.1.6 Evidence that the prescribed application fee as stated in Council's fees and charges schedule, has been paid.
- 1.08.1.7 Evidence of payment of the Portable Long Service Leave Levy and Occupational Health & Safety fee.
- 1.08.1.8 'Permit to Enter & Construct' letters and easement documents relevant to the application.

Design Plans

1.08.2 Design plans shall be definitive and clearly set out to present the design concepts in such a way that the project can be understood, specified for construction and satisfactorily built, generally in accordance with AS1100.101.

1.08.3 All design plans should be clearly numbered with separate sheets numbered as part of a set.

1.08.4 Sheets of drawings should not be overcrowded with information and should not rely on colour printing or colour wash to impart information. Drawing should be true to scale A1 size sheets and be suitable for black and white copying and photo reduction.

1.08.5 Design plans must be certified by an RPEQ (refer 1.03.2).

Job Specification

1.08.6 A job specification must be prepared by the designer specifying site-specific requirements not covered in standard specifications.

1.08.7 All work shall be in accordance with Council standard specifications where available. Where Council standard specifications exist for a particular type of work, the designer may use the Department of Transport and Main Road specification or their own standard specification. Both options will be subject to approval by Council.

Design Report

1.08.8 The engineering design and materials used must be selected to minimise the whole of life Cost to Council. The designer must demonstrate how the design complies with this requirement.

1.08.9 The design report is to contain the following:

- 1.08.9.1 a completed 'Statement of Compliance – Operational Works Design' endorsed by the designers.
- 1.08.9.2 A copy of the development approval conditions on which the design is based including a summary of the design submission referencing each of the development approval conditions.
- 1.08.9.3 Records of pre-submission discussions with Council including confirming correspondence.
- 1.08.9.4 Copies of letters of approval from adjoining property owners for any works or discharge on the properties.
- 1.08.9.5 Evidence that negotiations have been entered into regarding provision of supply with service authorities (including approved reticulation/service plans, if available).
- 1.08.9.6 Stormwater drainage calculations in spreadsheet format in accordance with QUDM requirements including detail of pit types and capture charts used and tell water levels adopted.
- 1.08.9.7 Design details of alternatives proposed which depart from the development manual/development conditions with supporting arguments for how the alternative meets Council's objectives.
- 1.08.9.8 Design calculations for detention basins, dissipated as, open channel, catch strain, adopted tail water levels etc.

1.08.9.9 design criteria and parameters operating regimes and calculations for permanent water quality works such as stormwater quality improvement devices (SQIDs), sediment basins, trash racks, etc and demonstrated consistency with catchment Stormwater Quality Management Plan and water quality report which accompanies the development application.

1.08.9.10 An Erosion and Sediment Control Strategy (ESCS) addressing erosion and sediment management during construction.

1.08.9.11 Traffic Management Plan in accordance with the MUTCD.

1.08.9.12 Water and sewerage reticulation networks in a format compatible with Council's network system.

1.08.9.13 If the water supply is from a newly developed source, provide information on quality, quantity, disinfection and infrastructure proposed.

1.08.9.14 Pavement design including records of geotechnical tests indicating subgrade CBR's, adopted traffic load, requirements for subsoil drainage and subsoil drainage design by geotechnical engineer.

1.08.9.15 Geotechnical reports, where relevant, relating to slope and batter stability, in situ materials etc.

1.08.9.16 Structural and geotechnical certification of design of miscellaneous structures including retaining walls, non-standard headwalls, drainage structures, reservoirs etc.

1.08.9.17 design parameters and operating regimes for water supply and sewerage pump stations.

1.08.9.18 Full design drawings and pre-commissioning plan for water and sewerage pump stations.

1.08.9.19 Landscaping design drawings for subdivision works showing details of Park/reserve planting, Street treeplanting, buffer zone planting, and any hill slope development works if applicable.

1.08.9.20 Four stage development, master plans showing the overall design concept for:

1.08.9.20.1 Water including pump stations.
1.08.9.20.2 Sewer including pump stations.
1.08.9.20.3 Stormwater.
1.08.9.20.4 Road works.
1.08.9.20.5 Earthworks.
1.08.9.20.6 Road hierarchy.
1.08.9.20.7 Pathways.
1.08.9.20.8 Public transport.
1.08.9.20.9 Lighting and other services.
1.08.9.20.10 Easements, freehold lots and land to be deeded to Council for accommodating the works.
1.08.9.20.11 Open space areas.
1.08.9.20.12 Erosion and sediment control strategy and location of permanent survey marks.

1.08.9.21 With stage I development and with updated copies to be provided with each subsequent stage. Subsequent development plans will show the “as constructed” information of all the earlier stages.

1.08.9.22 Selection of materials and components to be transferred to Council ownership must comply with service standards specified by Council (e.g. minimised whole of life Costa, reliability etc).

1.08.9.23 A fully priced estimate of construction costs in the form of a priced schedule of quantities.

AP 1.09 General Requirements

Plan Presentation

1.09.1 These presentation minimum standards will apply to engineering and landscape plans submitted for approval for operational works associated with approved developments.

1.09.2 Standardisation of the presentation of operational Works plans submitted for approval is necessary for consistency in Council’s records and desirable for expedient review and approval.

1.09.3 Scaled engineering drawings in accordance with this manual are required for plan review.

AP 1.10 Title Block

1.10.1 Each sheet of the design drawings shall have a title block containing the following information:

- 1.10.1.1 Development/estate name (if any)
- 1.10.1.2 Locality/approved street name.
- 1.10.1.3 Developers name.
- 1.10.1.4 Bar scales as a minimum (alternatively numerical scale with original sheets I stated).
- 1.10.1.5 Plan number and sheet number.
- 1.10.1.6 Schedule and date of amendments.
- 1.10.1.7 Certification by RPEQ (for engineering drawings).

AP 1.11 Sheet Sizes

1.11.1 Preferred sheet sizes (overall dimensions) are A1 (841mm x 593mm) and A3 (420mm x 297mm).

AP 1.12 Scales

1.12.1 scales used for plan should preferably be those recommended by the standards Association. Generally, the following scale should be used 1:1, 1:2, 1:5 in multiples of 10 of these. All scales should be bar scales.

1.12.2 The following scales are also acceptable:

Description	Urban	Rural
Plans	1:500*	1:1000
Longitudinal Section:		
Horizontal	1:500	1:1000
Vertical	1:50	1:100
Intersection Details	1:100, 1:200	1:500
Cross Sections	1:100	1:100
Engineering Details	1:1, 1:2, 1:5 and multiples of 10 of these scales.	

*Sewerage Reticulation should be 1:500.

AP 1.13 Dimensions

Dimensioning on Plans

1.12.1 Linear dimensions on all roadworks plans will be in metres, with the exception of some detailed plans of small structures (e.g. manholes) and some standard plans (e.g. kerb and channel) which may be in millimetres.

1.12.2 Details of methods of dimensioning shall be in accordance with AS1155 – Metric Units in Construction.

Standard Cross-Section Intervals

1.12.3 Urban and rural cross sections should be provided to roads at 20 m intervals and tangent points, with further reduction to 10 m or 5 m intervals when necessary due to horizontal or vertical curvature.

Chainage and Offset Dimensions

1.12.4 Chainage and offset dimensions on plans shall be expressed to 0.01 m (0.005 may be used as the order of accuracy requires).

AP 1.14 Levels

1.14.1 All levels must be reduced to Australian Height Datum, unless otherwise approved by Council.

1.14.2 Reduced levels of benchmarks and reference pegs including Permanent Survey Marks shall be expressed to 3 decimal places i.e. 0.001m. the location of the origin of the survey must be on the plan.

1.14.3 Reduced levels of roadworks and stormwater drainage must be expressed to 3 decimal places i.e. 0.001m.

1.14.4 Reduced levels of sewerage reticulation shall be expressed to 3 decimal places i.e. 0.001m.

AP 1.15 Grades

1.15.1 Road grade must be shown as a percentage to 2 decimal places.
1.15.2 Pipe grade must be shown either as a percentage to 2 decimal places or as a gradient to one decimal place

AP 1.16 Drawings Required

Design Drawings

1.16.1 Operational Works drawings will generally consist of the following:
- 1.16.1.1 locality plan.
- 1.16.1.2 Subdivision layout/staging plan (if applicable).
- 1.16.1.3 Earthworks plan.
- 1.16.1.4 Roadworks and drainage plan.
- 1.16.1.5 Longitudinal section of each road.
- 1.16.1.6 Type cross sections for each Road.
- 1.16.1.7 Cross sections of each Road.
- 1.16.1.8 Detailed plan of each intersection and cul-de-sac.
- 1.16.1.9 Longitudinal section of each stormwater drainage line.
- 1.16.1.10 Sewerage reticulation plan, long section and pump station details.
- 1.16.1.11 Water reticulation plan and pump station plans and details.
- 1.16.1.12 Landscape plan.
- 1.16.1.13 Erosion and sediment control strategy.
- 1.16.1.14 Service provider's conduit plan, including street lighting.
- 1.16.1.15 Stormwater catchment plans/drainage calculation table.
- 1.16.1.16 Miscellaneous details.

1.16.2 The minimum requirements for each drawing a detailed in the following sections.

AP 1.17 Locality Plan

1.17.1 Locate the subdivision/development in relation to adjacent towns, major roads, major streets, etc.
1.17.2 Northpoint.
1.17.3 May be included on layout/staging plan for large jobs or roadworks and drainage plan for smaller jobs.

AP 1.18 Subdivision Layout/Staging Plan

1.18.1 For stage subdivisions, the layout plan should show the relationship of all new roads and infrastructure to each other, and to existing roads and infrastructure

adjoining the subdivision. All adjacent structures and services are to be shown also.

1.18.2 Where development is to be carried out by stages, the boundaries of proposed stages should be shown on this plan, and the stages identified by numbering.

AP 1.19 Earthworks Plan

1.19.1 The earthworks plan may be included with the roadworks and drainage plan for smaller subdivisions and shall include:

1.19.1.1 Legend.
1.19.1.2 Existing site contours and finished surface contours (spot levels should be used to complement contours)
1.19.1.3 limits and levels of all major allotment cut and fill – distinguished by hatching.
1.19.1.4 Locations of cut and fill batter relative to allotment boundaries.
1.19.1.5 Location and levels of retaining walls (if required).
1.19.1.6 Batter slopes and treatment.
1.19.1.7 Appropriate flood levels in accordance with Council's policies.
1.19.1.8 Northpoint.
1.19.1.9 Locations and levels of permanent survey Marks, reference stations etc used as datum for the works.
1.19.1.10 Vegetation including trees proposed to be removed in days to be retained.
1.19.1.11 The smaller subdivisions, the earthworks details may be included on the roadworks and drainage plan.

AP 1.20 Roadworks and Drainage Plan

1.20.1 The plan of each Road shall include:

1.20.1.1 Legend.
1.20.1.2 Road reserve boundaries.
1.20.1.3 Allotment numbers and boundaries, both existing and proposed (including existing and proposed easements).
1.20.1.4 Chainages, on centreline or construction line.
1.20.1.5 Bearings of the centreline or construction line.
1.20.1.6 Tangent point chainages of each curve.
1.20.1.7 Radius and arc, tangent length of each curve.
1.20.1.8 Chainage and the intersection point of Road centrelines or construction lines.
1.20.1.9 Kerb lines, kerb radii, and chainage of all tangent points of the kerb line.
1.20.1.10 Footpaths/bikeways and pram ramp locations.
1.20.1.11 Fencing.
1.20.1.12 Access where required to be constructed.
1.20.1.13 Edge of pavement, we know curb is to be constructed.

1.20.1.14 Dimensioned road reserve, footpath and pavement widths, where these differ from the standard cross-section.
1.20.1.15 Existing and finished surface contours, highlighting cut and fill areas.
1.20.1.16 Drain line locations, diameters (including extent of easements where required).
1.20.1.17 Drainage structures and structure number.
1.20.1.18 Subsoil drain locations.
1.20.1.19 Location of existing utilities and other existing works within the site.
1.20.1.20 Location of all service clashes including levels of services and clearance distance.
1.20.1.21 Location and levels of benchmarks and reference pegs.
1.20.1.22 Northpoint.
1.20.1.23 Line marking and signing*.
1.20.1.24 Guideposts, guardrails and other traffic control devices*.
1.20.1.25 Creek protection works and the like.
1.20.1.26 Street name signs*.
1.20.1.27 Overland drainage paths.

*may be shown on separate plan(s).

AP 1.21 Longitudinal Sections of Roads.

1.21.1 The longitudinal section of each road shall include:
1.21.1.1 Chainages.
1.21.1.2 Existing surface levels – design Road centreline levels.
1.21.1.3 Cut and fill depths.
1.21.1.4 Design grades.
1.21.1.5 Chainages and levels of grade intersection points.
1.21.1.6 Chainages and levels of tangent points of vertical curves.
1.21.1.7 Chainages and levels of crest and sag locations.
1.21.1.8 Lengths and radii of vertical curves.
1.21.1.9 Sections on control lines on superelevated curves (i.e. pavement edges, kerb or lane edges), curve widening and superelevation details.
1.21.1.10 Location of services where they cross the centre of the road.

AP 1.22 Type Cross-Sections

1.22.1 A type cross-section shall be shown for each Road, including:
1.22.1.1 Road reserve with.
1.22.1.2 Pavement widths including medians (as applicable).
1.22.1.3 Footpath widths.
1.22.1.4 Cross falls of pavement and footpath.
1.22.1.5 Pavement depth – nominal or design.

1.22.1.6 Type of kerb and channel.
1.22.1.7 Type of pavement surfacing.
1.22.1.8 Sub – soil drainage.
1.22.1.9 Table drain details for rural roads.
1.22.1.10 Batter slopes.

1.22.2 The standard cross-section may be included in the detailed cross-section is provided for each Road.

AP 1.23 Cross-Sections of Roads

1.23.1 A cross-section shall be shown at the intervals defined in this manual for each Road and shall show:
1.23.1.1 Road reserve boundaries.
1.23.1.2 Pavement centreline and/or other construction line.
1.23.1.3 Natural surface profile.
1.23.1.4 Design cross-section.
1.23.1.5 Cross full of pavement and footpath, pavement and footpath widths and pavement depths wherever these differ from the standard cross-section.
1.23.1.6 Chainage of cross-section.
1.23.1.7 Datum reduced level.

AP 1.24 Detail Plans of Intersections and Cul-De-Sacs

1.24.1 Intersection detailed plans shall include all the relevant information required for roadworks and drainage plans, as listed above together with additional details such as kerb levels on kerb returns, pavement contours, channelisation works, line marking, signing and pram ramps.

AP 1.25 Longitudinal Sections of Stormwater Drainage Lines

1.25.1 A longitudinal section of each drain line shall be shown, including:
1.25.1.1 Chainages.
1.25.1.2 Existing surface levels.
1.25.1.3 Design finished surface and invert levels.
1.25.1.4 Drainage structure chainage is and offsets and inlet and outlet invert levels.
1.25.1.5 Distances between drainage structures.
1.25.1.6 Grade of each pipe.
1.25.1.7 Material and diameter of each pipe length.
1.25.1.8 Hydraulic grade line.

1.25.1.9 Drainage structure type and sizes and/or reference to separate detailed drawing.
1.25.1.10 Crossings with any other services (location and invert level of pipe crossing).

AP 1.26 Sewer Concept Plan

1.26.1 Where development incorporates multiple stages, sewer concept plan must be prepared by the consultant.
1.26.2 This concept plan must be submitted prior to proceeding with detailed design and should include the following:
1.26.2.1 location, size, approximate depth, and alignment of gravity sewers.
1.26.2.2 Location, size and alignment of rising mains.
1.26.2.3 Location of pump stations and lift stations including justification for the use.
1.26.2.4 Contour information at 1 m intervals maximum or to suit the topography of the land for both natural surface and finished surface contours.
1.26.2.5 Contributing catchments (internal and external) showing the equivalent persons (EP).
1.26.2.6 Justification for redirecting flows between sewerage districts were proposed.
1.26.2.7 Details of the influence on downstream catchments and systems.
1.26.2.8 The flow contributing to each section of main including the estimated design capacity, e.g.:

EP300

PWWF	14.3 L/s
Pipe Size	225 diameter
Max Pipe Cap	26.2L/s

1.26.3 Access for maintenance of the system should be considered when locating manholes etc (refer section D7.07).
1.26.4 During the preparation of the concept plan consideration must be given to the integration of other infrastructure design, overall site earthworks and the impacts on existing upstream and downstream developments and potential developments.
1.26.5 As part of the preparation of the concept plan, the requirements of section 2 – concept designs in WSA 04 – 2005 Sewerage Pumping Code of Australia should also be included.

AP 1.27 Sewerage Reticulation Plan Longitudinal Section

1.27.1 The sewerage reticulation plan shall include:

1.27.1.1 Legend.
1.27.1.2 All allotments and allotment numbers.
1.27.1.3 Boundary of the subdivision.
1.27.1.4 North Point.
1.27.1.5 Location and size of existing sewers.
1.27.1.6 Invert levels of existing lines.
1.27.1.7 Location of other services which cross sewer lines.
1.27.1.8 Location of manholes with manhole numbers (including dimensions where not shown on alignment).
1.27.1.9 Identification of allotments, which are currently sewered.
1.27.1.10 Finished surface contours sufficient to enable verification of property connection design.
1.27.1.11 Details of permanent survey marks including AHD from which levels are to be transferred.
1.27.1.12 Grading information for new sewer lines including distance between manholes, pipe grades, pipe diameter, pipe material and class of each pipe length.
1.27.1.13 Manhole cover type and class.
1.27.1.14 Manhole inlet types.
1.27.1.15 Locations and level of sewer property connections and type.
1.27.1.16 Details of pumping stations including location, inlet/outlet levels, overflow, cut-off levels, electrical switchboard layout and water supply, size of pumping plant.
1.27.1.17 Diameter, material class and route of pressure main(s); indicating air valve and scour valve locations.
1.27.1.18 Clear identification of any alterations/connections to existing sewers to be completed by Council at developer's cost.
1.27.1.19 Finished surface contours with spot levels to compliment contours.
1.27.1.20 Ultimate sewer design flows including catchment plan for staged development if applicable.
1.27.1.21 Gravity sewer pipe capacities.
1.27.1.22 Structural design of pipes for pipes with more than 3m of cover.
1.27.1.23 Thrust block calculation where required.
1.27.1.24 Diagram showing all allotment controls.
1.27.1.25 Flow velocities under different flow conditions.
1.27.1.26 Rising main hydraulic grade line.
1.27.1.27 System resistance and pump curves showing static and friction head and duty points.
1.27.1.28 Demonstration of pipeline capacity to resist cyclical pressure effects over a 100-year lifespan of the systems.
1.27.1.29 Estimation of pump start, stop, alarm, overflow and other control levels.
1.27.1.30 Calculations supporting the provision of wet well storage.

1.27.1.31 Calculations showing that floatation forces are counteracted for all buried or all partially buried structures.
1.27.1.32 Estimation of electrical loads – Mains Supply proposed; and Radio Frequency interference screening measures.
1.27.1.33 Structural calculations where necessary for the pump well and associated works.
1.27.1.34 Calculations supporting the hydraulic design of emergency relief structures.

1.27.2 The longitudinal section of each sewerage line should include:
1.27.2.1 Existing surface levels.
1.27.2.2 Design finished surface.
1.27.2.3 Manhole number.
1.27.2.4 Distance between manholes.
1.27.2.5 Grade of each pipe length.
1.27.2.6 Diameter, material and class of each pipe length.
1.27.2.7 Manhole diameter and cover type.
1.27.2.8 Manhole inlet types review.
1.27.2.9 Invert levels of existing lines.
1.27.2.10 Crossings with any other services (including location, size, invert levels and clearance of pipe crossing).

AP 1.28 Water Reticulation Concept Plan

1.28.1 Where development incorporates a large number of lots with multiple stages, the consultant shall submit a water reticulation concept plan of the water reticulation showing proposed mains sizes, connections to existing mains and valve positions. The concept plan is to be supported by computer network analysis.

1.28.2 This concept plan shall be submitted prior to detailed design and should include the following:
1.28.2.1 layout of mains, together with the development layout.
1.28.2.2 Key to network analysis i.e. node points, elevation, demand.
1.28.2.3 Size and type of mains, indicated graphically and distinguished by colour and/or line type.
1.28.2.4 Design parameters – number of lots, number of EP's design flows.
1.28.2.5 Legend of land uses (i.e. residential, industrial precincts etc).
1.28.2.6 Supply points and pressure or hydraulic grade lines (HGL) as supplied by Council.
1.28.2.7 Location of pumps, pressure reducing valves and reservoir top water level (TWL) and volume where applicable.
1.28.2.8 Limit of water district serviced by the reticulation mains.
1.28.2.9 Contours for the entire development, at minimum 1 m intervals.
1.28.2.10 Consideration for connection to adjoining and/or future developments as directed.

AP 1.29 Water Reticulation Plan

1.29.1 The water reticulation plan shall include:

- 1.29.1.1 Legend.
- 1.29.1.2 The services for the development.
- 1.29.1.3 All allotments and allotment numbers.
- 1.29.1.4 Boundary of subdivision.
- 1.29.1.5 North point.
- 1.29.1.6 Location and size of existing mains.
- 1.29.1.7 Location, size, material and class of new mains.
- 1.29.1.8 Location of other services which cross the mains.
- 1.29.1.9 Details of connection to existing mains.
- 1.29.1.10 Location of each bend.
- 1.29.1.11 Location of valves, hydrants, scours and caps, T's, reducers etc.
- 1.29.1.12 Road crossing conduit locations, size and class.
- 1.29.1.13 Water service connection details.
- 1.29.1.14 Pump stations and reservoirs (if required).
- 1.29.1.15 Network analysis (if required).
- 1.29.1.16 Type and class of pipes for the pressure and cyclical loading regime.
- 1.29.1.17 Thrust block calculation where required.
- 1.29.1.18 Operating conditions for pressure reducing valves.
- 1.29.1.19 Structural calculations were necessary for valve pits and associated work.

AP 1.30 Landscape Plan

1.30.1 The landscape plan shall contain the following details:

Site and Layout

- 1.30.1.1 Proposed and existing contours at 5 m intervals.
- 1.30.1.2 Extent of existing vegetation including type and location.
- 1.30.1.3 Significant tree showing level at base and proposed levels, indicating which trees/vegetation is to be removed.
- 1.30.1.4 Proposed layout of roadways including:
  - 1.30.1.4.1 kerb and channel.
  - 1.30.1.4.2 Stormwater drainage pits and manholes.
  - 1.30.1.4.3 Street lighting.
  - 1.30.1.4.4 Property boundaries.
  - 1.30.1.4.5 Traffic islands, roundabouts, traffic calming devices etc.
  - 1.30.1.4.6 Existing and proposed water supply, sewerage services and easements.
  - 1.30.1.4.7 Proposed freehold lots covering water supply and sewerage infrastructure.
- 1.30.1.5 Layout and numbering of individual lots, including street names.

1.30.1.6 Existing parks, reserves etc.
1.30.1.7 adjoining land uses, access corridors.
1.30.1.8 Existing watercourses, watersheds, gullies, with a buffer zone to either side of creeks, where required.
1.30.1.9 Revegetation areas including extent, type, technique and erosion prevention proposals.

On-Street Works

1.30.1.10 Alignment and location of proposed concrete foot paths and bike paths.
1.30.1.11 Grass establishment areas.

Traffic Islands and Roundabouts

1.30.1.12 Alignment of kerb and channel and concrete backing to roadside kerb.
1.30.1.13 Soil mixed type and depth.
1.30.1.14 Proposed planting layout and plant schedule, including species, number, size, set out and staking.
1.30.1.15 Mulch types and depth.
1.30.1.16 Irrigation proposals.

Public Open Space

1.30.1.17 Dimensions and landscape treatment to buffer zones.
1.30.1.18 Location and dimension of all off-road bikeways and pedestrian pathways, with trees at 15 m intervals, showing size and species.
1.30.1.19 Location of boundaries to parkland, reserves and easements, including fencing proposals and details of removable vehicle barriers.
1.30.1.20 Location and type of play equipment, if applicable, including type, extent and edge treatment to satisfy surfacing.
1.30.1.21 Proposed lighting.
1.30.1.22 Mounding, showing base, Crown, levels and gradients.
1.30.1.23 Proposed furniture including benches, bins, BBQ's, shade structures, signage.
1.30.1.24 Tabs, drinking fountains, irrigation couplings.
1.30.1.25 Proposed planting and mulched garden beds.
1.30.1.26 Irrigation plan at 1:200 scale.

1.30.2 Detailed specifications will be required to cover all proposed works including the following:
1.30.2.1 play equipment and safety surfacing.
1.30.2.2 The plant schedule.
1.30.2.3 Revegetation requirements.
1.30.2.4 Grass establishment.
1.30.2.5 Mulch.
1.30.2.6 Hard landscaping.
1.30.2.7 Furniture and lighting.
1.30.2.8 Irrigation, if applicable.

AP 1.31 Erosion and Sediment Control Strategy

1.31.1 The Erosion and Sediment Control Strategy shall include:

- 1.31.1.1 A plan of development showing the road and allotment boundaries.
- 1.31.1.2 Existing surface and finished surface contours at an interval close enough to define terrain.
- 1.31.1.3 Contours shall extend beyond the limits of the development site to fully define the limits of external catchments.
- 1.31.1.4 Existing drainage paths and drainage infrastructure.
- 1.31.1.5 Extent of clearing and trees to be removed.
- 1.31.1.6 Line diagram of drain lines and drainage structures.
- 1.31.1.7 The identification and location of all Erosion and Sediment control measures (i.e. catch drains, diversion drains, sediment traps, sediment basins etc.) that are proposed for the period when the site is disturbed.
- 1.31.1.8 Location of sensitive and restricted access areas.
- 1.31.1.9 Existing significant vegetation to be retained.
- 1.31.1.10 Revegetation works.
- 1.31.1.11 Calculations are to be submitted in accordance with QUDM and based on soil type(s) of the site.
- 1.31.1.12 Measures to be employed for each facet of the construction process. As a minimum this is to include stripping/earthworks, trenching/services installation and when stormwater and roadways are completed.
- 1.31.1.13 Consideration for construction during the wet season (typically Nov – Mar) with regard given to increased storm intensity and minimising disturbed areas and for construction during the dry season with regard given to dust suppression.

AP 1.32 Service Providers/Conduit Plan including Street Lighting.

1.32.1 This plan shall include:

- 1.32.1.1 Legend.
- 1.32.1.2 Road Reserve Boundaries.
- 1.32.1.3 Allotment Numbers and Boundaries.
- 1.32.1.4 North Point.
- 1.32.1.5 Kerb and channel or edge of pavement where no kerb is to be constructed;
- 1.32.1.6 Road Crossings Conduits Type and size.
- 1.32.1.7 Location of Pad Mount Transformers.
- 1.32.1.8 Location of Telecommunications Authority's Roadside Cabinets & Shelters and Cables;
- 1.32.1.9 Location of Street Lighting including designation of hierarchy of all roads.
- 1.32.1.10 Location of Electricity Authority's Cables and Facilities paying particular attention to connection to existing power supply.
- 1.32.1.11 Electrical reticulation plans.
- 1.32.1.12 Gas pipes, valve, syphon points and storage facilities.

AP 1.33 Stormwater Catchment Plan/Drainage Calculations Tabulation.

1.33.1 A catchment plan shall be submitted, for Council submission purposes only and shall not form part of construction documentation. The catchment plan shall include the following:

- 1.33.1.1 North point.
- 1.33.1.2 A plan of the development showing the road and allotment boundaries.
- 1.33.1.3 Existing and finished surface contours (in different line types) and an interval close enough to define the terrain And Allow Definition of the Sub- Catchment.
- 1.33.1.4 Contours Shall Extend beyond the Limits of the Development Site to fully define the limits of external catchments.
- 1.33.1.5 Sub- catchment boundaries, labels and areas.
- 1.33.1.6 Line diagram of drain line, manhole, gully and outlet locations.
- 1.33.1.7 Labelling of stormwater structures.
- 1.33.1.8 Adjacent to each stormwater pit tabulation is to be provided illustrating the roadway approach flow, the width of approach flow, and the bypass flow.
- 1.33.1.9 Overland flow paths.
- 1.33.1.10 Proposed easements.
- 1.33.1.11 Stormwater calculation shall be in a spreadsheet format in accordance with the QUDM. This tabulation should include a bypass flow width valve at all kerb return pits.

AP 1.34 Pest Plant Management

1.34.1 In accordance with the *Land Protection (Pest and Stock Route Management) Act* 2002 the applicant must not remove soil or any matter containing reproductive pest plant material and transport such matter to another location. Appropriate measures must be put in place to ensure that soil and other organic materials are not inadvertently (or otherwise) transported to other locations.

1.34.2 Prior to the issue of a development permit for operational works, the applicant must:

- 1.34.2.1 Clearly state if there is an excess amount of soil on the development site.
- 1.34.2.2 Provide appropriate documentation to show where any excess soil is to be used or placed on the site.
- 1.34.2.3 Provide a plan which indicates where a shakedown or wash down area will be placed to ensure that all vehicles entering and exiting the development site are subject to a cleansing procedure to remove soil and any other organic materials.

1.34.2.4 Construct a shakedown or wash down area during the first stage of development. This is not to be in the vicinity of a creek, or a waterway or drain which leads to a creek or other water body.
1.34.2.5 Permanently contain material within the site inclusive of shakedown area.
1.34.2.6 Maintain the site to a point of sale so that declared weeds are eradicated or controlled.

1.34.3 Soil or other matter contaminated with weed seed or organic material should not be used in landscaping e.g. buffer mounds.
1.34.4 Reference should be made to Council pest management unit to obtain advice.
1.34.5 These conditions relate to all class 1, 2 and 3 plants identified in the *Land Protection (Pest and Stock Route Management) Act* 2002.

AP 1.35 Miscellaneous Details

1.35.1 Detailed are required for the following either on separate drawings or appropriate service plan:
1.35.1.1 stormwater inlet and outlet structures, other than standard headwinds.
1.35.1.2 Manhole details where pipe alignments are critical for clearances or flow considerations.
1.35.1.3 Water quality permanent works structures (SQIDs, sediment basins, trash racks etc).
1.35.1.4 Details of erosion control and stormwater management structures.
1.35.1.5 Surcharge structures.
1.35.1.6 Overland drainage paths
1.35.1.7 sewer and water pump stations showing all relevant levels and dimensions for pumps etc (where not provided elsewhere).
1.35.1.8 Footbridges.
1.35.1.9 Reservoirs.
1.35.1.10 Water source treatment/disinfection works.
1.35.1.11 Entry structures.
1.35.1.12 Retaining walls.
1.35.1.13 Buildings.
1.35.1.14 And any details or variations from standard drawings.

AP 1.36 Design Records

1.36.1 The designer shall provide Council with appropriate design records in a format such that design staff with no prior knowledge of the particular design can understand them readily.
1.36.2 A design file shall be maintained by the developer or the developers designer containing records of calculations, approvals and decisions, geotechnical data and

other design data which could be relevant in reviewing aspects of the design or planning future maintenance responsibilities.

1.36.3 The developer is to provide a detailed submission for all structures being built as part of the development, for separate building approval and inspection. Submission is to include detailed design plans and a structural certificate from RPEQ.

CP1 – Construction Procedures

General

CP 1.01 Introduction

1.01.1 This section of this Development Manual details the minimum requirements acceptable to the Council associated with developments involving operational works defined as any works to be constructed that are subject to Council approval. Typically, this involves the construction of water supply, sewerage, stormwater, roadworks and public open space associated with development, reconfiguration or other approvals.

1.01.2 This manual does not apply to works of services under the control of other authorities (i.e. works within state-controlled road corridors). Separate approvals may be required from the other relevant authorities.

1.01.3 This section has been divided into four subsections as follows:

1.01.3.1 Requirements prior to construction.

1.01.3.2 Requirements during construction.

1.01.3.3 Acceptance of works.

1.01.3.4 Final acceptance of works.

Requirements Prior to Construction

CP 1.02 General Requirements

1.02.1 Prior to the construction of any works associated with the development approval which requires operational works approval by Council, the designer responsible for the design of the works must first obtain an approval of the design, construction drawings and specifications from Council. The procedures to be undertaken in order to achieve approvals are outlined in detail in section AP1 of this manual.

CP 1.03 Construction Inspections

1.03.1 Prior to construction of the works the consulting engineer who is an RPEQ is to be engaged to be responsible for the provision of inspection services in accordance with a Council approved Inspection and Test Plan (ITP) and to exercise reasonable skill and diligence in order to ensure that the operational works requiring approval are executed in accordance with:

- 1.03.1.1 Council's development permit conditions;
- 1.03.1.2 Council's relevant policies and local laws;
- 1.03.1.3 This manual, Council approved drawings, specifications and relevant Australian Standards;
- 1.03.1.4 Good engineering practice; and
- 1.03.1.5 Records compatible with Council's asset management information recording system are provided.

1.03.2 Inspections may be carried out by the consulting engineer or a delegate who shall be suitably qualified/experienced person approved by the consulting engineer.

1.03.3 The consulting engineers required to certify that all works have been carried out in accordance with the development approval and to WRC minimum standards prior to works acceptance.

CP 1.04 Inspection and Test Plan

1.04.1 The Contractor is to prepare an ITP (endorsed by the RPEQ) identifying the following items:

- 1.04.1.1 Element of work;
- 1.04.1.2 tests and checks required;
- 1.04.1.3 standard required to meet;
- 1.04.1.4 frequency of testing;
- 1.04.1.5 contractor's responsibility;
- 1.04.1.6 consulting engineer's responsibility;
- 1.04.1.7 Council's responsibility; and
- 1.04.1.8 asset data recording requirements.

Refer to CP 1.16 and Form 2 – Security Lodgement Form

This sheet must be completed prior to the acceptance of any bond by Council.

Development Name:	
Stage:	
File No.:	
Applicant:	

Consultant:	
Purpose of Bond:	

Uncompleted Works Bond Assessment:

Estimated time to complete bond works (not greater than 90 days)	days
Current contract completion date	
Anticipated completion date	
Consulting engineers estimated value of uncompleted works	
Bond value (apply factor 1.50)	

Construction/defects liability bond assessment :

Consulting engineer's estimated value of completed works	
Construction/maintenance bond value (apply factor 0.05) (min $500)	

Council shall retain any interest accrued on cash monies paid to Council and held in trust by Council.

Consulting Engineer:

Signature:

RPEQ No.

Date:

Form 3 – Inspection Certificate for Witness/Hold Point

This certificate registers evidence that the works as noted herein have been inspected by the Council officer noted below and were found to be satisfactory.

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Contractor:	

Works being inspected/Tested/Witnessed:

Defaults/Corrective Action Required:

Defaults Corrected?	Y	N	N/A

Council Inspector Signature:

Name of Inspector:

Date of Inspection:

Form 4 – Works Acceptance Inspection Checklist

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Contractor:	

Item	Verification (Yes/No/N/A)	Comment
ALLOTMENT DRAINAGE The works have been finally inspected and:		
1. Concrete catch drains constructed in approved location and to a satisfactory standard;		
2. Field inlets constructed in approved location and to a satisfactory standard;		
3. Overland flow path constructed to correct profile;		
4. Pipework has been visually inspected and is satisfactory in terms of: a. alignment and grade; b. free of debris and siltation; c. no visual sign of trench subsidence; and d. outlets are satisfactory.		
5. Lots not provided with allotment drainage can be drained to the kerb and channel.		
STORMWATER DRAINAGE SYSTEM The works have been finally inspected and:		
6. Pipe layout is as per plan or approved amendments with respect to pipe size, levels and location.		

7. Pipework has been visually inspected and is satisfactory in terms of: a. alignment and grade; b. free of debris and siltation; c. lifting plug holes sealed; d. no visible sign of trench subsidence; and e. no damaged pipes.		
8. Gully pits and manholes have been constructed to the correct standards i.e.: a. Correct type of grate or cover; b. Lintels; c. side entry slots; d. benching (no water ponding) e. grates are satisfactorily sealed in frames; f. we poles provided to bedding material; g. no damaged structures; h. converter slabs/sections mortar bedded; i. correct drops through gullies/manholes; and j. all lids/grates finished to match surface level.		
9. All density tests to backfill are available and satisfactory.		
10. Material gradings are available for bedding material and are satisfactory;		
11. Outlets/inlet structures are satisfactorily constructed and are free from scour or siltation.		
12. All manhole and gully pit pipe connections are mortared flush with the walls and no pipe reinforcement is exposed.		
13. Open cut channels have been finally inspected and a satisfactory i.e.: a. Cut to design profiles; and b. lining of channel is to the required thickness and		

reinforcement, with appropriate weep holes.		
14. Overland flow, the works have been finally inspected an appropriate flow paths are provided and clear of obstruction.		
15. Outlets and outfalls have been constructed to control discharge flow in accordance with the plans.		
16. Subsoil drainage discharges to gullies or other approved point of discharge.		
17. All grousing requirements to channels, swales, outlets, inlets etc have been completed.		
18. CCTV inspection of stormwater pipes completed.		
WATER QUALITY The Works have been finally inspected and:		
19. Water quality structures have been constructed in accordance with approved engineering drawings;		
20. Structures are free of debris and sediment.		
EROSION AND SEDIMENT CONTROL The works have been finally inspected and:		
21. Control structures required until the site is stabilised in accordance with the contractor's ESCP are in place.		
22. Structures are free of debris and sediment.		
EARTHWORKS The Works have been finally inspected and:		

23. Toe of batters not on Council Road reserve except as approved.		
24. Retaining walls clear of Road reserve except as approved.		
25. Retaining walls constructed in accordance with drawings.		
26. Batter slopes constructed in accordance with drawings.		
27. Batter slopes stabilised against erosion.		
28. Interim drainage constructed in accordance with drawings.		
29. All areas disturbed by the works have been rehabilitated.		
30. Allotment levels are as per the design plans.		
31. Verge levels are as per the design plans.		
SEWER RETICULATION The Works have been finally inspected and:		
32. Pipe layout is as per the plan or approved amendments with respect to pipe size, levels, and location.		
33. Pipework has been visually inspected and is considered satisfactory, i.e.: a. Pipework flush with internal walls of manhole; b. alignment and grade; c. flexible joints; d. line flushed and cleaned; e. no visible sign of trench subsidence; f. a density test of backfill is available and satisfactory; g. CCTV survey results submitted and satisfactory.		
34. Manholes and maintenance shafts have been constructed to the correct standards, i.e.:		

a. Cast in situ; b. Benching; c. curvature satisfactory; d. no ponding; e. profile satisfactory; f. no weeps (free of infiltration); g. concrete work; h. no honey combing; i. covers; j. covers checked to be gas tight; k. correct type; l. imprint in accordance with standards; m. depth of cover surround; n. depth of top slab; o. location; p. relative to allotment boundaries; and q. 50 to 75 mm proud of finished surface level.		
35. Material gradings for bedding material are available and satisfactory.		
36. Pressure test results are available and satisfactory.		
37. Manhole hydrostatic test all satisfactory.		
38. Sewerage connection Private Works fees paid.		
39. On-site sewer report provided (if applicable).		
40. PUMP STATION - refer separate PS checklist.		
WATER RETICULATION The works have been finally inspected and:		
41. Pipe layout and services fixtures (valves and hydrants) are as per the plan or approved amendments with respect to pipe size and location.		
42. Pipework has been pressure tested in accordance with Council's		

requirements and test results are available and satisfactory.		
43. Pipework has been chlorinated in accordance with Council's requirements.		
44. There are no visible signs of trench subsidence for leaks.		
45. Valves and hydrants have been inspected and a satisfactory, i.e.; a. Location; b. setts and surrounds correctly installed to prevent ingress of soil, etc; c. mortar packing to boxes correctly completed; d. depth to top of hydrant or valve stem within limits; e. dust caps to hydrants; f. colour of marker plate correct; g. direction of flow indicated; h. marking plates correctly installed; and i. size of plate correct.		
46. Material gradings for bedding material are available and satisfactory.		
47. Water supply connection Private Works fees paid.		
48. PUMP STATION - refer separate checklist.		
ROAD PAVEMENTS The works have been finally inspected and:		
49. Plan layout and geometry of Road system is in accordance with the drawings.		
50. Finish levels at Crown and channel are at design levels.		
51. Cross falls are to the approved plan.		
52. AC is satisfactory with regards to finish and thickness.		

53. Joints in the seal (especially where various development stages apply) are flush.		
54. The sealed surface is free of blemishes.		
55. All compaction test, material quality (CBR), material grading, AC core tests are satisfactory and available.		
56. Ponding of stormwater does not occur.		
SEGMENTAL PAVERS (Where Constructed) The Works have been finally inspected and:		
57. All pavers have been correctly laid to pattern, within allowable tolerance, compacted, and the joints filled;		
58. Bedding sand for pavers drains to subsoil drainage.		
59. Pavers adjacent to concrete kerb and channel, edge restraints etc have been cut and laid in accordance with all relevant requirements.		

Form 5 – Registered Engineer's Certification of "As Constructed" Works

This certificate registers evidence that the locations, surface and invert levels of all works and infrastructure presented on the drawings noted below and in the digital ADAC data have been surveyed and meet the accuracy standards as defined within the WRC Development Manual.

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Contractor:	
Surveyor Name:	
Surveyor Firm:	

Drawings & Documents pertaining to the above:

Signed:

Date:

Form 6 – Registered Surveyor's Certification of "As Constructed" Works

This certificate registers evidence that the "As Constructed" drawings submitted herewith have been prepare, checked and amended in accordance with the requirements of the WRC Development Manual and that the completed works comply with the requirements therein.

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Consulting Firm:	
Surveyor Name:	
Surveyor Firm:	

Certification by Registered Surveyor (Consulting) attached: Yes / No

(Note: Certification is to be in accordance with the Development Manual).

Compliance with the manual Design Intent and Function not compromised by the "As Constructed" Works	**Compliance Yes/No**	**Non-Compliance refer to attached redesign of works to ensure satisfactory performance**
Earthworks		
Roadworks		
Stormwater Drainage		
• Flow System and Structures		
• Major Flow System and Structures		
Water Reticulation		
Sewerage Reticulation		
"As Constructed" Documentation		

Signed:

RPEQ No.

1.04.2 Date: The consulting engineer in undertaking construction inspections shall:

1.04.2.1 allocate competent and experienced after site inspection and testing;
1.04.2.2 provide sufficient site presence, dependent on the contractor's progress and workmanship, and in accordance with the ITP, to be reasonably satisfied that the works meet the design, specification and performance requirements; and inspect and confirm acceptability of works is complying with the design intent and in accordance with the Council's requirements trying to request a Council inspection.

CP 1.05 Contractor's Erosion & Sediment Control Plan

1.05.1 Prior to construction commencing the contractor shall prepare an Erosion and Sediment Control Plan (ESCP) to manage the site during construction and the defects liability period.
1.05.2 The plan shall be consistent with the approved Erosion and Sediment Control Strategy (ESCS) and shall take into consideration the contractor's proposed construction methodology and program.
1.05.3 The contractor may propose an alternative construction methodology that differs from the approved ESCS. In this instance the contractor shall discuss and obtain approval from the consulting engineer for the alternative strategy prior to submitting to Council.
1.05.4 The contractor's ESCP must be prepared by a suitably qualified person meeting the following criteria:
1.05.4.1 Six years or more field experience in civil engineering construction practices;
1.05.4.2 educated in erosion and sediment control practice through regular industry sponsored seminars, publications, etc;
1.05.4.3 an understanding of rainfall hydrology and an ability to calculate rainfall run-off; and
1.05.4.4 an understanding and ability to calculate open channel flows and velocities.
1.05.5 A copy of the contractor's current approved ESCP is to be retained on site by the contractor's representative.
1.05.6 The contractors ESCP shall be submitted to the consulting engineer for review and approval prior to the pre-start meeting.
1.05.7 The consulting engineer is to review the ESCP for compliance with the approved ESC S. Any amendments required to ensure ESCS compliance are to be incorporated by the contractor prior to approval. The consulting engineer will issue a copy of the approved ESCP to the Council prior to the pre-start meeting.
1.05.8 It is the contractor's responsibility to ensure that the ESCP is updated and amended to reflect any changes in the construction methodology and program.
1.05.9 All amendments to the contractors ESCP shall be approved by the consulting engineer and a copy of the revised approved ESC P issued to Council.
1.05.10 The contractors ESC P shall consist of the following:

1.05.10.1 A layout plan detailing the measures to be employed during construction. On larger sites were works are to be progressively constructed a plan shall be provided for each stage of works;
1.05.10.2 A layout plan detailing the measure(s) to remain in place from the commencement of the defects liability period;
1.05.10.3 a written description of the sequencing of works or construction program;
1.05.10.4 an inspection and test plan for monitoring erosion and sediment control measures during the construction and the defects liability period.
1.05.10.5 Details of all erosion and sediment control measures to be used. The contractor may adopt standard details developed by others e.g. the IECA Best Practice Erosion and Sediment Control manual.
1.05.10.6 The name of the person within the contractor's organisation who has the authority and responsibility for implementing, monitoring, updating or amending the plan.

1.05.11 The contractors ESCP shall address the following issues:

1.05.11.1 Minimising Disturbance:
1.05.11.1.1 limiting the exposure time and size of disturbed areas to a minimum;
1.05.11.1.2 allow for the use of existing vegetation has buffer zones.

1.05.11.2 Control of Runoff:
1.05.11.2.1 sizing of structures, channels, catch strain and diversion drains for appropriate storm events in accordance with the following table:

	Design Life	ARI
Non-erosive design capacity	0-6 months	1 year
	6-12 months	2 year
Structural stability	0-6 months	5 years
	6-12 months	10 years

1.05.11.2.2 Diverting clean water run-off around disturbed areas;
1.05.11.2.3 dividing the site into smaller more manageable drainage areas;
1.05.11.2.4 early installation of temporary drainage works;
1.05.11.2.5 early installation of permanent drainage system and protection works.

1.05.11.3 Erosion Control:
1.05.11.3.1 protecting service changes and hard engineering structures (eg. driveways, curbs, etc) from erosion caused by run-off;
1.05.11.3.2 prompt revegetation of disturbed areas;
1.05.11.3.3 installing structures and drainage channels to flow velocity and encourage settlement of soil particles;

1.05.11.3.4 protection of disturbed areas from wind erosion (dust suppression).

1.05.11.4 Sediment Control:

1.05.11.4.1 locating stockpiles clear of drainage paths and protecting stockpiles from traffic, run-off and wind erosion;

1.05.11.4.2 minimising number of site access points;

1.05.11.4.3 stabilising site access points to prevent vehicles transporting materials off-site;

1.05.11.4.4 intercepting drainage from disturbed areas and installing sediment barriers to slow the velocity of flow and allow fine particles to settle;

1.05.11.4.5 diverting larger contaminated flows to sediment traps to allow soil particles to settle or to be treated prior to release into receiving waters; and

1.05.11.4.6 protecting partially constructed drainage structures from sediment infiltration.

1.05.11.5 Revegetation:

1.05.11.5.1 Progressive stabilisation and rehabilitation of completed works; and

1.05.11.5.2 providing protection to revegetation works on steep batters during establishment period.

1.05.11.6 Inspection, cleanout and maintenance:

1.05.11.6.1 the inspection, cleanout and maintenance regime are to take into account the duration that the site will be disturbed and the timing of construction. If the site is disturbed (i.e. rehabilitation works are not complete) during the period December to May (wet season) a more rigorous inspection, cleanout and maintenance regime will be required then for a site which is disturbed during the period June to November.

1.05.11.6.2 The following references/guidance it may assist in preparing the ESCP:

- Best Practice Erosion and Sediment Control, International Erosion Control Association (Australiasia) 2008;
- Queensland Urban Drainage Manual;
- Guidelines for the Preparation of Erosion and Sediment Control Plans for Building Sites, Cairns City Council, July 2003;
- Erosion and Sediment Control Standard Version 9, Brisbane City Council, 2000

CP 1.06 Construction Security Bond.

1.06.1 Prior to construction of the works commencing the developer is required to lodge a security bond in cash or unconditional bank guarantee to the value of 5% of the

estimated cost of the construction of the works prepared and certified by the consulting engineer.

1.06.2 A bank guarantee should:
- 1.06.2.1 Be a binding contractual relationship between Council and the guaranteeing bank;
- 1.06.2.2 Include specific requirements for renunciation of the guarantee;
- 1.06.2.3 require adequate notice of renunciation;
- 1.06.2.4 not have an expiry date.

1.06.3 The bond is to be accompanied by Council's Security Lodgement Form (Form 2) clearly identifying the purpose of the bond together with the consulting engineer's certification of the value of the works.

1.06.4 The bond is required to provide security to Council in the event that costs are incurred as a result the following:
- 1.06.4.1 protection of on street works from damage by contractors, subcontractors and suppliers;
- 1.06.4.2 repairs to on street works resulting from damage caused by contractors, subcontractors and suppliers;
- 1.06.4.3 protection and repair of existing Council services (i.e. sewerage connections, water connections et cetera);
- 1.06.4.4 non-compliance with the approved Erosion and Sediment Control Plan during construction;
- 1.06.4.5 failure to provide adequately for traffic; and
- 1.06.4.6 urgent action required by Council to resolve unsafe construction or emergency repairs required to protect persons and/or property from consequential damages.

1.06.5 Any costs incurred by Council in responding to the above circumstances will be recovered from the security bond.

1.06.6 At the completion of the works and the commencement of the defects liability period, the construction security bond shall be returned to the developer or may be substituted for the defects liability bond.

CP 1.07 Notice of Commencement of Work

1.07.1 A notice of intention to commence works is to be issued to Council in writing seven days prior to the intended date for commencement of the works. No works will be permitted to commence until the following information is provided:
- 1.07.1.1 name, address and telephone number (including after-hours contact) of the consulting engineer for the works;
- 1.07.1.2 name, address and telephone number (including after-hours contact) of the contractor and major subcontractors for the work;
- 1.07.1.3 name and telephone number of the person to be contacted in regard to any matter arising from the construction of the works;
- 1.07.1.4 intended date of commencement of works, and contract period;
- 1.07.1.5 an invitation to the relevant Council representative to attend the pre-start meeting and confirmed by phone or email and minimum of 24 hours prior;

1.07.1.6 a request to Council to confirm that environmentally significant areas and/or trees which are to be preserved in accordance with any tree preservation declaration, have been identified and adequately protected;
1.07.1.7 location of project sign (if required);
1.07.1.8 and inspection and test plan (refer CP 1.16).

1.07.2 This submission will form notification of the date of the "pre-start" meeting.

CP 1.08 Documentation to Be Provided Prior to Pre-Start Meeting.

1.08.1 The following documents (to a standard acceptable to Council) are required to be submitted and accepted by Council prior to the pre-start meetings:
1.08.1.1 evidence of public liability insurance.
1.08.1.2 Proof of payment of Portable Long Service Leave Levy (PLSL);
1.08.1.3 contractor's erosion and sediment control plan;
1.08.1.4 traffic management plan;
1.08.1.5 construction security bond;
1.08.1.6 safety plan;
1.08.1.7 evidence that all fees and charges have been paid; and
1.08.1.8 cultural heritage management plan (if applicable).

1.08.2 The site safety induction is to be undertaken for each Council representative at initial attendance on site (prior to initial inspection);

1.08.3 evidence of Concurrence Agency, Service Authority or adjoining land owner consents/approvals is to be provided to Council prior to commencing any elements of work affecting/involving those parties;

1.08.4 the project specific Inspection and Test plan endorsed by the RPEQ.

CP 1.09 Pre-Start Meeting

1.09.1 A pre-start meeting is to be held prior to the commencement of works. The meeting is to be attended by consulting engineer, the contractor's representative, any relevant specialist consultants and Council's representative.

1.09.2 Items to be considered at this meeting will include but not be limited to the following:
1.09.2.1 review of relevant conditions of development approval and discussion of any issues including conditions of the development permit and operational works approvals that are considered important and relevant to the attending parties;
1.09.2.2 review of Council's construction requirements;
1.09.2.3 discuss the Contractor's ESCP approved by the consulting engineer;
1.09.2.4 a review of the processes for monitoring, compliance assessment and auditing of the ESCP;
1.09.2.5 inspection and identification of parks and environmentally significant areas and/or trees for preservation;
1.09.2.6 site access conditions;

1.09.2.7 identification of areas to be left undisturbed;
1.09.2.8 evidence of compliance with the Workplace Health and Safety Act, including site safety inductions, site safety plans, notifications;
1.09.2.9 review of ITP including a notice of nominated hold/witness point;
1.09.2.10 relevant provisions of any other Acts;
1.09.2.11 Traffic Management Plan;
1.09.2.12 location of project sign (if required);
1.09.2.13 sewerage and water pump station commissioning plan (if applicable to the project); and issue plans for construction are the latest approved plans.

1.09.3 The pre-start meeting is a Hold Point and works may not proceed until the meeting is held and any further requirements identified during the conduct of the meeting are satisfied.

1.09.4 Council may require that subdivisions in difficult terrain or environmentally sensitive areas to have all road centre lines pegged prior to the pre-start meeting. This is to occur at least two weeks prior to any construction activity taking place so Council can visit the site with Engineers and Contractors representatives to view first had ramifications of such construction activities as stormwater drainage points, proposed earthworks areas, clearing etc. Council reserves the right to amend the design in consultation with engineers should any problems arise as a result of the inspection. This preliminary site visit should be arranged prior to or in conjunction with the pre-start meeting.

Requirements During Construction

CP 1.10 General Requirements

1.10.1 The general requirements during construction of the project are as follows:
1.10.1.1 work may only proceed subsequent Council being issued with all the relevant documentation set out in CP 1.09;
1.10.1.2 no work shall commence on any existing open Road to the public unless specifically approved by Council;
1.10.1.3 no work may be carried out nor machinery driven above or near existing water and sewerage pipes without a work method statement being submitted by the contractor and approved by Council;
1.10.1.4 any damage to existing services under the control of Council or another authority must be notified immediately and made good by the relevant authority at the contractor/developer's expense prior to acceptance of the works;
1.10.1.5 use of Council services (e.g. water from existing mains) is subject to approval by Council and payment of appropriate fees;
1.10.1.6 work involving the use of machinery of any description shall only be carried out on the site 6:30 AM to 6:30 PM Monday to Saturday, with no work to be carried out on Sundays or public holidays. (In certain

circumstances Council may approve works outside these hours. All applications for changes to working hours must be in writing). For emergent or complaint response issues, dust suppression and sedimentation control may occur outside these hours. Council is to be notified as soon as possible in this instance; and

1.10.1.7 pumping stations, electrical switchboards, access covers, compounds and associated equipment installed during construction shall be padlocked when left unattended.

1.10.2 The developer, contractor and consulting engineer shall take all necessary steps, in accordance with the provisions of the workplace health and safety act, to ensure safety of the public in regard to construction activities. In particular, work on roadways shall be signed in accordance with the MUTCD. Council will require submission of plans indicating traffic control proposals and a program of work for sites involving the travelling public.

1.10.3 No public road may be closed, traffic diverted from public roads, or traffic diverted elsewhere without the prior approval of Council, Police and public advertising of the proposed diversion must be carried out. Proposals to divert traffic shall include full details of the alternative route and proposed signage.

1.10.4 Works shall not be undertaken on any adjoining private properties without the prior written consent of the relevant registered proprietor. A written acceptance (by the registered proprietor) of the completed work shall be submitted to Council upon finalisation of the work.

1.10.5 If connections or alterations to Council mains are required, the Council engineer shall be given a minimum of 10 working days' notice of the contractor's requirements (Council's notification requirements are to be noted on the project drawings/specifications).

CP 1.11 Public Notices/Project Signage

1.11.1 Where is a condition of approval, Council requires a project sign(s) to be erected on the sites frontages to constructed roads and any other location as required, the sign shall contain the following information:

1.11.1.1 An overall concept plan of the development showing the stage or works about to commence construction;

1.11.1.2 name of the developer;

1.11.1.3 name of the project;

1.11.1.4 Street address of the site;

1.11.1.5 project manager's name and contact number;

1.11.1.6 consulting engineer's name and contact number;

1.11.1.7 contractor's name and contractors number; and

1.11.1.8 other specialist consultants (geotechnical, landscaping, architects, hydraulics et cetera) names and contact numbers.

1.11.2 Material and size of the sign shall be as follows:

1.11.2.1 Made of weatherproof material; and

1.11.2.2 Not less than 1200mm x 900mm.

1.11.3 Position of the sign on the land:
- 1.11.3.1 the sign must be placed on, or within 1.5 m of, the road frontage of the land;
- 1.11.3.2 the sign must be mounted to at least 300 mm above ground level; and
- 1.11.3.3 the sign must be positioned so that it is visible from the road.

1.11.4 The lettering on the sign:
- 1.11.4.1 each item listed above must start on a new line; and
- 1.11.4.2 the minimum lettering height shall be 50 mm in height.

CP 1.12 Document Control

1.12.1 A copy of the approved project drawings, specification and operational works approval shall be kept on the job site at all times during construction.

1.12.2 Should amendments be required to engineering plans and/or specifications during construction, the consulting engineer shall ensure that Council and any other person or organisation who has previously been issued a set of plans that may be affected by this amendment (e.g. registered surveyor, public service authority) is in receipt of a copy of all amended drawings and/or specifications. When approved, Council shall stamp these plans for approval as Operational Works plans. Any amended drawings and/or specifications shall be submitted with an accompanying letter outlining the amendments together with any supporting information.

1.12.3 Submissions with a full complement of supporting documentation will expedite Council's approval timeframes.

1.12.4 All amendments shall be issued to Council for approval prior to the works being undertaken.

CP 1.13 Erosion & Sediment Control

1.13.1 The consulting engineer shall ensure that the construction contract contains provisions requiring the contractor to implement the approved ESCS and to prepare and implement an ESCP complying with the approved strategy.

1.13.2 The contractor shall ensure that all reasonable measures are taken to protect nearby properties from dust pollution, erosion, siltation or sediment transport.

1.13.3 Council reserves the right to order whatever action deem necessary and appropriate at the time to prevent environmental harm, including ordering temporary cessation of work in extreme cases.

1.13.4 As erosion and sediment control is also an issue of public amenity and safety, the developer shall be responsible for any costs arising from dust or water pollution generated by its development.

CP 1.14 Noise

1.14.1 The requirements of the *Environmental Protection Act* 1994 regarding nuisance noise (if applicable) shall apply to the development works.

CP 1.15 Parks & Environmentally Significant Areas

1.15.1 In cases where the subject land or the adjacent land is an existing or proposed park, bushland reserve or area otherwise declared by Council as environmentally significant, the following general precautions shall be mandatory:

1.15.1.1 the areas should be clearly pegged, flagged, (and fenced if ordered by Council) inspected and approved by Council officers;

1.15.1.2 the approved design, or certificate of approval for tree clearing issued pursuant to tree preservation bylaws (if applicable) shall have identified any unavoidable intrusion into such areas and nominated work practices such as maximum widths of disturbances, nominated access routes, methods and timing of rehabilitation, which shall be strictly adhered to.

1.15.2 Council should be notified immediately when the consulting engineer is aware of any damage or disturbance beyond the approved limits. Rehabilitation of this damage or disturbance shall be to the satisfaction of Council.

CP 1.16 Inspection & Testing

1.16.1 During the construction phase, the consulting engineer shall be responsible for undertaking the minimum number of required inspections and tests in accordance with the approved Inspection and Test Plan (ITP).

1.16.2 There are a number of major inspections that are mandatory hold points (H) for the consulting engineer and Hold Points or Witness Points for Council. These will be included in the ITP and can be found in Appendix A which contains inspection and test plan templates. The contractor's ITP is to be based on these templates and updated with project specific testing requirements.

1.16.3 Any proposed changes to the ITP must be notified to and accepted by Council prior to the affected works commencing.

1.16.4 The submitted ITP is to be implemented by the consulting engineer. The test results and effort certification that the plan has followed are to be submitted with the "as constructed" documentation.

1.16.5 Council will, on a random basis, call upon the consulting engineer to provide evidence of conformance with the approved ITP in the form of diary records, site visit reports etc.

1.16.6 During construction, Council reserves the right to conduct audit inspections of any or all of the works without prior notification. These inspections do not release the consulting engineer from his responsibility to check the contractor's work.

1.16.7 For the RPEQ's test inspections and Hold/Witness Points, a "Certificate of Inspection" will record the inspections. If requested, copy is to be provided to Council for each Hold Point/Witness Point inspection.

1.16.8 For Council Hold/Witness points, the RPEQ's information will include as a minimum the details contained within Form 3.

CP 1.17 Application for Council to Complete Private Works

1.17.1 unless otherwise approved, Council requires any connections and alterations to Council's live sewer and water mains associated with developments to be completed by the developer at the developer's expense subject to Council's approval and supervision.

1.17.2 Sewer and water mains are considered to be live once the defects liability period has commenced. All work on live sewers and water mains must be carried out by the contractor with Council approval and subsequent supervision.

1.17.3 Alterations and connections to existing Council sewer and water mains, resulting from the development (including cutting in of new sewer property connections) are to be completed prior to commencement of the defects liability period. In these cases, separate applications should be made for the alterations and the connections.

1.17.4 Contractors are not permitted to operate Council's infrastructure unless written approval has been obtained from Council. The placement and removal of plugs within live sewers must be done under direct supervision of Council's inspector.

1.17.5 Council reserves the right, on the advice of its inspector, to stop, or take over a connection being undertaken by a contractor, if in the inspector's opinion the contractor is incapable of completing the connection work in a reasonable time without causing damage to Council's infrastructure or undue inconvenience to the public. Any work carried out by Council will be at the contractor's cost.

CP 1.18 Application for Approval to draw water from Council Mains

1.18.1 The drawing of construction water from Council's mains must be approved and the relevant fees paid in advance.

1.18.2 Permission to draw water shall be subject to the following conditions:

- 1.18.2.1 backflow prevention;
- 1.18.2.2 water mainly be taken between the hours of 8 AM and 4:30 PM;
- 1.18.2.3 the approval shall be limited to the days and dates nominated in Council's notice of approval;
- 1.18.2.4 water money be taken from the approved hydrant point;
- 1.18.2.5 a copy of this approval is to be held by the driver of any vehicle taking water covered by this approval;
- 1.18.2.6 Council may withdraw this approval at any time, such notice shall be in writing and will become effective immediately; and
- 1.18.2.7 the applicant is responsible for the cost of reinstatement of damage to Council's property caused by the taking of water covered by this permit.

Acceptance of Works

CP 1.19 Introduction

1.19.1 Full works requiring Council approval a “Defects Liability” period is a period of 12 months minimum (or other period as Council so shall require in its absolute discretion) after the works have been accepted as complete by Council. During the defects liability period, it is the responsibility of the developer to rectify any works found to be defective due to design faults or found to exhibit faults attributed to the performance of the construction activities in terms of quality and conformance with the design and specifications.

1.19.2 The following are required to be completed prior to Council acceptance of works:

- 1.19.2.1 completed “as constructed” submission lodged with Council a minimum five days prior to the “Works Acceptance” inspection or early plan sealing inspection for bonding or uncompleted works and being to Council satisfaction;
- 1.19.2.2 satisfactory “Works Acceptance” inspection;
- 1.19.2.3 all documentation outlined in CP 1.25(2) submitted to and accepted by Council;
- 1.19.2.4 all appropriate documentation to be completed by the consulting engineer and retained for records purposes. This consists of the “Works Acceptance Inspection Checklist” (Form 4), the certified ITP and all test results and records for the works.
- 1.19.2.5 Approval has been given by Council or private certifier for construction of any buildings forming part of the operational works approval; and
- 1.19.2.6 satisfactory commissioning and acceptance of any water pump station, reservoir or sewerage pump station.

1.19.3 Following the satisfactory completion of all of the above matters, the consulting engineer shall make a written request for acceptance of the works and commencement of the “Defects Liability” period and lodgement of any uncompleted Works Bonds.

1.19.4 The date of the works acceptance shall be the date of issue of the Works Acceptance certificate an shall be taken as the date all documentation outlined in CP 1.25 has been approved and conditions of the operational works and development approval have been met. Works acceptance will not be backdated to the date of the works acceptance inspection. The assets will become Council’s at the date on the work acceptance certificate.

1.19.5 Prior to making application for works acceptance the consulting engineer must confirm that all non-compliant work is rectified by the contractor. Any non-compliance is found by Council must be rectified prior to Council’s issue of a Works Acceptance certificate. It is the responsibility of the consultant to monitor the contractor’s work to the extent necessary such that any deviations from the design are approved prior to making application for works acceptance, alternatively the consultant must instruct the contractor to rectify the work.

CP 1.20 Defects Liability Bond

1.20.1 Council requires a bond equivalent to a minimum of 5% of the value of the works (or such other amount as Council deems appropriate in its sole discretion), which is kept for the Defects Liability period, or until the works are finally accepted.

1.20.2 The bond is to be submitted with Council's Security lodgement form (Form 2) clearly identifying the purpose of the bond together with the consulting engineers certification of the value of the works.

1.20.3 The construction security bond lodged prior to construction may be used for the purposes of the defects liability bond subject to Council's approval.

CP 1.21 "As Constructed" Submission

1.21.1 "As Constructed" documentation serves two distinct functions:

1.21.1.1 Evidence that "As Constructed" works have been checked against the approved design, to support certification by the consulting engineer responsible for the design that design philosophies and criteria have been achieved; and

1.21.1.2 to provide an accurate record of the "As Constructed" services.

1.21.2 Information required for the checking function must be presented in ADAC format in accordance with Council's "Guidelines for Creation and Submission of ADAC XML Files".

1.21.3 The submission of digital "As Constructed" files in accordance with Council's ADAC guideline is mandatory in order to achieve acceptance of development works and commencement of the "Defects Liability" period and is required to be forwarded to Council a minimum of five working days prior to the "Works Acceptance" inspection or early plan sealing inspection for bonding of uncompleted works.

1.21.4 The following items must be submitted as part of the "As Constructed" submission:

1.21.4.1 electronic copies of the updated management plans, operational and maintenance manuals, and environmental management plans where these have been amended or not previously provided to Council (where applicable);

1.21.4.2 asset valuation report (detailed bill of quantities) in a format acceptable to Council and certified by an RPEQ;

1.21.4.3 an electronic copy of the Council approved final engineering drawings in both DWG and ADAC format together with electronic PDF copies;

1.21.4.4 where applicable, pump station RTU number and pump station identifier to be obtained from Council;

1.21.4.5 electronic copy of the Council approved landscaping and parks embellishment drawings;

1.21.4.6 electronic copy of Park/landscaping irrigation system drawings;

1.21.4.7 electronic copy of design plans for building/structure and copy of structural certificate;

1.21.4.8 "As Constructed" digital data and drawings of services and infrastructure including works completed by Council for the contractor under a Private Works agreement;
1.21.4.9 digital ground model data to the requirements of Council in an approved format (e.g. DWG or as nominated by Council).
1.21.4.10 Any necessary information required for Council's asset management records;
1.21.4.11 certificate of installed playground equipment to relevant Australian standards; and
1.21.4.12 details of works carried out on mains, whether or not they are part of the original project design or for a future stage.

CP 1.22 Compliance Certifications

1.22.1 All "As Constructed" works including the sewerage property connection branches, must be surveyed by a registered surveyor in order to obtain the detail required by Council's ADAC guideline. The registered surveyor's certification must accompany the "As Constructed" submission to Council. See Form 5 for an example of an acceptable Registered Surveyor's (Consulting) Certification.

1.22.2 All "As Constructed" works must also be certified by the consulting engineer responsible for the works. The certification must note that the design intent and function of the proposed works have not been compromised by the constructed works. To this extent, the consulting engineer will be responsible for determining whether the "As Constructed" details that exceed the tolerances for construction do not compromise the design intent and/or operational effectiveness of the infrastructure.

1.22.3 It is recognised that in some circumstances, the tolerances for construction are exceeded. In these instances, the consulting engineer will be responsible for performing confirmation design calculations to ensure that the original design intent and function are not compromised.

1.22.4 Further, should the "as constructed" details indicate a change to the design intent or function of the works, revised design calculations shall be provided by the consulting engineer to indicate the acceptability of the proposed change relative to Council's requirements. Council's approval of the change is required prior to the formal acceptance of the works.

1.22.5 The consulting engineer shall be responsible for the completion of Form 6 "Statement of Compliance - As Constructed Works".

CP 1.23 Management Plans, Operation and Maintenance Manuals

1.23.1 Where works comprise pump stations, reservoirs, treatment plants etc, operation and maintenance manuals for all components shall be provided. Operating and maintenance manuals shall include spare parts lists, electrical documentation and any other relevant information. Maintenance manuals and procedures are also required for drainage structures which incorporate Gross pollutant traps, interceptor devices etc. The maintenance procedures should indicate recommended frequencies for maintenance/planning functions in wet and dry seasons.

1.23.2 Management plans are necessary for where there is any future maintenance required to ensure sustainability of that feature, i.e. waterways, bio retention basins etc.

CP 1.24 Project Documentation

1.24.1 Development works will not be accepted until construction records have been certified as being completed by the consulting engineer and accepted by Council.

1.24.2 A complete copy of the following documents shall be provided to Council for acceptance prior to the "Works Acceptance" inspection:

- 1.24.2.1 ITP certified by the consulting engineer;
- 1.24.2.2 "Works Acceptance" inspection checklist;
- 1.24.2.3 "As Constructed" submission (including ADAC files) in accordance with CP1.21;
- 1.24.2.4 management plans, operation and maintenance manuals in accordance with CP 1.23;
- 1.24.2.5 water and sewerage inspection certificates including pump station and reservoir commissioning certificate; and
- 1.24.2.6 digital copy of CCTV survey for sewer and stormwater with engineering report and certification.

1.24.3 Copies of all test results required to confirm compliance with Council standard specifications shall be assembled and retained as part of the project documentation within the consulting engineers record storage facilities. Whilst not a complete listing, the following details some major records to be included:

- 1.24.3.1 fill compaction test results;
- 1.24.3.2 subgrade CBR's;
- 1.24.3.3 subgrade replacement material quality, thickness and locations;
- 1.24.3.4 subgrade replacement material compaction test results;
- 1.24.3.5 subsoil drain filter media quality statements (or grading is where required);
- 1.24.3.6 subbase course and base course material quality statements and thicknesses;
- 1.24.3.7 subbase course and base course compaction test results;
- 1.24.3.8 prime or primer spray seal and application rates;

1.24.3.9 AC core test results;
1.24.3.10 sewer pressure test records;
1.24.3.11 grading to sewer bedding quality statements;
1.24.3.12 grading to water main bedding quality statements;
1.24.3.13 water main pressure test records;
1.24.3.14 pump station commissioning and test certification by Council (sewer and water) including wet–well, pumps and switchboard;
1.24.3.15 any concrete testing required by the technical specifications;
1.24.3.16 pipework material quality statements for all pipework material (water, sewer, stormwater et cetera);
1.24.3.17 Geo fabric material quality statements;
1.24.3.18 digital copy of CCTV survey for sewer and stormwater with engineering report and certification;
1.24.3.19 any other testing results or statements required to conform with this manual;
1.24.3.20 any other job specific testing carried out ordered by the consulting engineer, if used.

1.24.4 The consultant should prepare a letter to Council requesting acceptance of a pump station for the purpose of achieving "Works Acceptance" for the subdivision. The letter should include/enclose:

1.24.4.1 the pump station allotment number, as it appears on the survey plan;
1.24.4.2 the name of the pump station and RTU number;
1.24.4.3 copy of approved design drawings;
1.24.4.4 copy of as – constructed drawings (can be preliminary);
1.24.4.5 copy of completed pre-commissioning checklist;
1.24.4.6 details of any nonconformances and uncompleted works;
1.24.4.7 rectification plan if required;
1.24.4.8 copy of ITP;
1.24.4.9 certification by the consultant for structural design, buoyancy and compliance with design drawings and this manual;
1.24.4.10 request that Council make application to Ergon for connection of power accompanied with a locality plan with street names showing the pump station location to attach to the application; and
1.24.4.11 evidence that an application for commissioning a sewerage pump station has been lodged.

1.24.5 The information to be provided to Council shall include as a minimum the requirements of the pump station commissioning checklist (Appendix H). The following pump station information shall also be provided to Council:

1.24.5.1 pump manufacturer, model, type, and impeller diameter (as a cut sheet);
1.24.5.2 rating of the motor;
1.24.5.3 weight of the pump and motor;
1.24.5.4 Manufacturers performance curve (as a cut sheet);
1.24.5.5 curves with at least four points plotted of the actual performance established in the field, or similar supervised work certificate plotted with the manufacturers pump curve;
1.24.5.6 KWH/1000 L pumped;
1.24.5.7 complete wiring diagrams and details (if not Council standard);

1.24.5.8 mechanical details and parts list of pump and motor;
1.24.5.9 maintenance catalogue showing also daily, weekly, monthly and annual maintenance requirements; and
1.24.5.10 a complete set of the manufacturers recommended spares delivered to Council.

1.24.6 Should any of the above test results fail to meet specification the consulting engineer shall include in the record, details of retesting/rectification carried out.

1.24.7 The construction record should be retained analogically assembled and bound document including a table of contents confirming completeness and presented to Council on completion of the works.

1.24.8 Site-specific as constructed drawings for pump stations and reservoirs. The drawings must be prepared in accordance with the requirements set out in Council's ADAC and Survey guidelines.

CP 1.25 "Works Acceptance" Inspection

1.25.1 The "Works Acceptance" inspection requires attendance by:
1.25.1.1 The consulting engineer for the project;
1.25.1.2 The contractor; and
1.25.1.3 Council's nominees.

1.25.2 It is the responsibility of the contractor and the consulting engineer to ensure any necessary requirements of the works are to an acceptable standard (as defined in approved design and construction documentation) prior to the conduct of a "Works Acceptance" inspection.

1.25.3 The general requirements to be met prior to Council's "Works Acceptance" inspection of the works are as follows:
1.25.3.1 the site is clean, tidy, free of rubbish, rocks, sticks, unauthorised stockpiles, etc.
1.25.3.2 allotment earthworks and site grading to be free draining and in accordance with the approved design;
1.25.3.3 integrity of environmentally significant areas is maintained;
1.25.3.4 all sewers flushed and gravity sewers inspected by CCTV; and
1.25.3.5 valve boxes and manhole tops visually located and not covered.

1.25.4 Prior to requesting a "Works Acceptance" inspection, the consulting engineer is responsible for confirming:
1.25.4.1 that the approved works have been completed;
1.25.4.2 any non-compliant issues or defects noted during the construction process, have been rectified to Council satisfaction;
1.25.4.3 the above listed items are in accordance with the approved drawings, Council's technical specifications and accepted engineering and landscaping practice; and
1.25.4.4 project documentation listed in CP 1.25 have been submitted. Failure to do so may result in cancellation of the inspection and/or the incurring of a reinspection fee.

1.25.5 Further to the above, and prior to the “Works Acceptance” inspection, the consulting engineer shall be responsible for the completion of the “Works acceptance” Inspection Checklist (Form 4) as appropriate to the works being constructed.

1.25.6 The completed checklist shall be presented to the relevant Council officer prior to the “Works Acceptance” inspection. Council officers will not undertake a detailed check of all items raised in the checklist but will examine some aspects of the works on an audit basis. The original of the completed checklist shall be retained with the records for the project upon completion of the works.

CP 1.26 Bonding of Uncompleted Works

1.26.1 For subdivision works council may, at its discretion, approve the bonding of uncompleted works to enable early sealing of survey plans. If Council does consent to the early sealing of survey plans, the developer must disclose to prospective purchasers that all services may not be available until the outstanding works are completed. Council will only consider early plan sealing for the full stage of the development is defined in the Operational Works approval. Parts of a stage will not be considered for early plan sealing.

1.26.2 Prior to the submission of any bond or plans for sealing, the following matters must be completed to the satisfaction of Council:

- 1.26.2.1 engineering plans have been approved; and
- 1.26.2.2 all survey pegs placed;
- 1.26.2.3 all allotment preparation work and earthworks on allotments have been completed in accordance with the requirements of this manual, with finished surface levels, the degree of compaction achieved and geotechnical assessments required on any of the allotment submitted and approved by Council.
- 1.26.2.4 Roads have been constructed to subbase level;
- 1.26.2.5 all stormwater systems including kerb and channel constructed;
- 1.26.2.6 sewer systems to be installed, tested, operational and “as constructed” plans lodged and accepted;
- 1.26.2.7 water supply system to be installed, tested, commissioned and “as constructed” plans lodged an accepted;
- 1.26.2.8 satisfactory evidence is to be provided to Council of a negotiated agreement with service providers for telecommunications, cabling, reticulation of electricity and the provision of street lighting and gas service providers for provision of gas (if applicable);
- 1.26.2.9 all outstanding rates are paid;
- 1.26.2.10 all works within allotments are fully completed and no further disturbance required on the allotments;
- 1.26.2.11 appropriate erosion and sediment control measures are in place for all disturbed areas;
- 1.26.2.12 all other bonded works (or works under agreement) are included in a bona fide contract between the developer and the contractor to be completed within 90 days;

1.26.2.13 all contributions required by the conditions of approval shall be paid prior to sealing of survey plans (infrastructure charges, contributions to service providers, Department of Main roads contributions, etc).

1.26.2.14 "As constructed" information provided for all completed works and accepted by Council;

1.26.2.15 submission of CCTV survey of completed sewers and stormwater drainage systems; and

1.26.2.16 building approval for all buildings/structures.

1.26.3 When the above matters have been completed, the applicant or consulting engineer shall submit the following to Council:

1.26.3.1 Security lodgement Form (Form 2) to be completed clearly indicating that the purpose of the bond is for uncompleted works;

1.26.3.2 fully priced schedule of outstanding works including the cost of preparation of the "as constructed" submission;

1.26.3.3 cash bond or unconditional bank guarantee to the value of 1.5 times the estimated value of the uncompleted works as certified by the consulting engineer. A bank guarantee should include:

1.26.3.3.1 a binding contractual relationship between counsel and the guaranteeing bank;

1.26.3.3.2 specific requirements for renunciation of the guarantee; and

1.26.3.3.3 require adequate notice of renunciation and must not have an expiry date.

1.26.3.4 certification from the consulting engineer that the works on each allotment have reached a stage acceptable to Council and that the outstanding works are programmed for completion within 90 days. The outstanding construction works program must be Council approved;

1.26.3.5 all bonds submitted shall be clearly identified as to the particulars of the site and the purpose of the bond.

1.26.3.6 Council may, at its discretion, require an Uncompleted Works inspection to ensure that the on allotment works and all associated documentation has been completed to Council's satisfaction. Should an inspection be deemed necessary, Council will require five (5) days' notice and payment of the required inspection fee in advance of any inspection.

CP 1.27 Sealing of Plan of Survey

1.27.1 Where operational works are associated with the reconfiguration of land or creation of new titles the Applicant is required to submit plan of survey which accords with the proposal plan approved by Council, suitable for deposit in the office of the Registrar of Titles and duly certified by a Registered Surveyor (Consulting Cadastral), together with 4 copies of the plan, and a completed application form for sealing of survey plans, building units, or group titles plan within 2 years from the date of approval of engineering drawings and specifications for subdivisions involving works.

1.27.2 Where the survey plans differ from the approved proposed plan, details of any changes are to be provided with the application.

1.27.3 The application form and plans, certificate(s) of compliance for any water, sewer reticulation and stormwater drainage system (including CCTV survey), together with the relevant fee are to be lodged with Council.

1.27.4 Upon being satisfied that the Plan of Survey conforms with the approval granted, and all required works have been carried out, or adequate security in accordance with Council's policy for bonding of uncompleted works is provided and all outstanding rates, contributions and charges have been paid, Council will note its approval under seal on the plan of survey and return the plan of survey to the Applicant for lodgement in the Titles Office.

1.27.5 The Applicant is required to submit the plan of survey to the Titles Office within 6 months of Council sealing the plan. Failure to do so will require the plan of survey to be resubmitted to Council for resealing.

Final Acceptance of Works

CP 1.28 “Final Acceptance” Inspection General Requirements

1.28.1 The “Final Acceptance” inspection will generally confirm the matters raised in the “Final Acceptance” inspection checklist (Form 4) and any other matters outstanding relevant to the works. The checklist is to be completed by the consulting engineer prior to the conduct of the “Final Acceptance” inspection. Failure to do so may result in cancellation of the inspection and/or the incurring of a reinspection fee.

1.28.2 During the defects liability period, it is the responsibility of the developer to rectify any works found to be defective or found to exhibit faults attributed to the design of the works and/or the performance of the construction activities in terms of quality and conformance with the design and specifications.

1.28.3 Once a period of 12 months minimum (or other such period as determined by Council) has elapsed from Council’s acceptance of the works “Works Acceptance”, a “Final Acceptance” inspection is to be arranged with Council. Payment of an appropriate inspection fee may be required.

1.28.4 The “Final Acceptance” inspection is to be attended by:

- 1.28.4.1 Council’s nominees;
- 1.28.4.2 the consulting engineer for the project; and
- 1.28.4.3 the contractor.

1.28.5 The consulting engineer for the work shall be responsible for ensuring that Council’s requirements for acceptance of the works are satisfied prior to requesting a final acceptance inspection.

1.28.6 Council’s requirements for final acceptance of the works are:

- 1.28.6.1 No outstanding payments are due to Council or other Authorities from the development;
- 1.28.6.2 completion of the “Final Acceptance” inspection checklist;
- 1.28.6.3 satisfactory “Final Acceptance” inspection;

1.28.6.4 All conditions of the approvals for as constructed drawings, works acceptance and plan sealing have been completed to the satisfaction of Council.

1.28.7 Following a satisfactory Final Acceptance inspection, the consulting engineer shall submit a written request to Council for Final Acceptance of the works and release of the defects liability bond. Council will, upon confirmation that no outstanding payments arising from the development are due to Council, confirm acceptance of the works, and arrange for the release of the defects liability bond.

DP 1 – DEVELOPMENT PRINCIPLES

General

DP 1.01 Introduction

1.01.1 This section of the Development Manual has been prepared to provide guidance on the design principles and issues to be considered by the designer in the preparation of layout plans for new urban developments. It is to be read in conjunction with the relevant planning scheme, and any local laws and policies.

DP 1.02 Urban Development Objectives

1.02.1 In addition to the requirements of the relevant planning scheme, local laws and policies, urban development layouts should:
- 1.02.1.1 Protect and enhance environmentally significant areas;
- 1.02.1.2 Be sympathetic to the existing topography and landform;
- 1.02.1.3 Minimise the impacts on the surrounding environment;
- 1.02.1.4 Facilitate the provision of urban services; and
- 1.02.1.5 Provide a safe urban living environment.

DP 1.03 Identification of Site Constraints and Values

1.03.1 In preparing an urban development layout, it is important to identify the natural constraints and values of the site and any engineering constraints on the provision of urban services and amenities.

1.03.2 Factors that may impose constraints on the development layout include but are not limited to:
- 1.03.2.1 Existing significant vegetation;
- 1.03.2.2 road and service connections to adjoining properties;
- 1.03.2.3 public transport networks;
- 1.03.2.4 railway and cane tram way lines;
- 1.03.2.5 external stormwater drainage catchments;
- 1.03.2.6 downstream stormwater drainage and receiving waters;
- 1.03.2.7 low-lying areas subject to flooding and ponding;
- 1.03.2.8 constraints and impact on adjoining properties;
- 1.03.2.9 constraints and limitation of existing utility services and planned augmentation works;
- 1.03.2.10 Main roads resumption requirements;

1.03.2.11 existing topographical features;
1.03.2.12 water quality issues; and
1.03.2.13 geotechnical considerations.

1.03.3 Designers are encouraged to consult with Council and other relevant authorities prior to or during the preparation of the site layout and design concept. Designers should in addition to the requirements of this manual ascertain any specific requirements of these authorities as they relate to the designs in hand.

DP 1.04 Vegetation Protection and Environmentally Significant Areas

1.04.1 Prior to preparing a development layout, all areas that have significant environmental value should be identified and incorporated into the layout design to enable them to be preserved and protected. Any disturbances within these areas shall be minimised to the satisfaction of Council and other relevant authorities, as may be appropriate.

1.04.2 All existing natural streams, watercourse and riparian vegetation shall be preserved. To minimise the impacts on stream bank vegetation, all streams and watercourses shall be protected by a drainage reserve. The extent of the drainage reserve shall be determined by the following criteria:

1.04.2.1 Not less than 3m clear of tree trunks of adjacent trees;
1.04.2.2 Not less that 10m clear of the high bank of the adjacent drainage path;
1.04.2.3 Not less than 20m clear of the high bank of a perennial stream;
1.04.2.4 Clear of the ARI 100 year storm event influence from the adjacent drainage path; and
1.04.2.5 Clear of the vertical projection of the tree canopy of the adjacent trees.

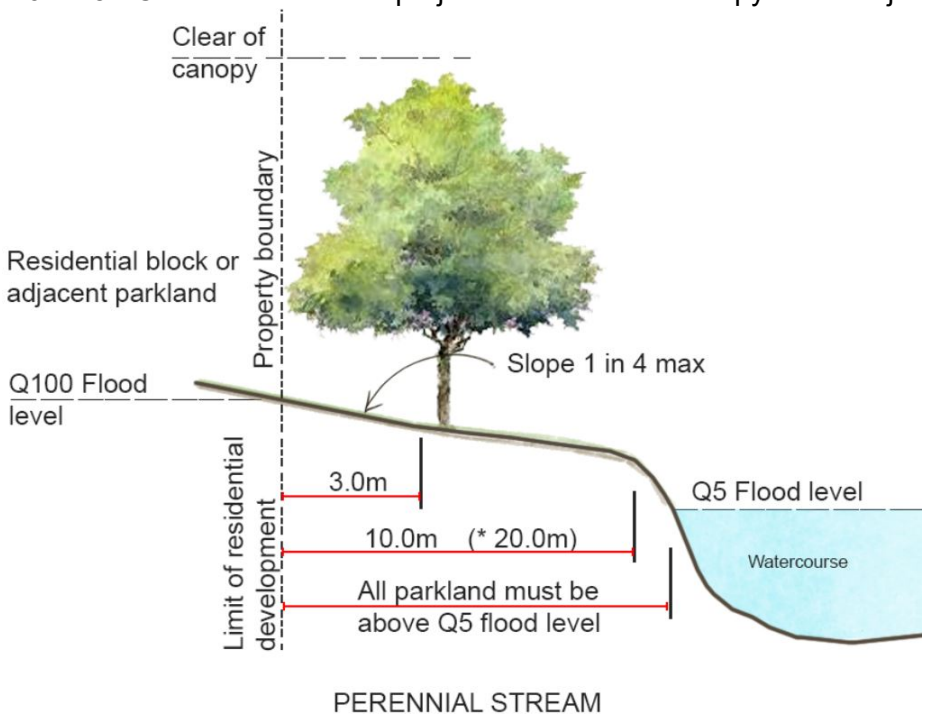


Figure DP1.1 Limits of development adjacent to natural stream banks

1.04.3 In order to retain any established landscape character, all trees located within existing road reserves shall be protected and retained unless approved otherwise by Council.

1.04.4 Reference should be made to the Vegetation Management Act and any Local Laws and Policies to ascertain any requirements in relation to tree clearing.

DP 1.05 Crime Prevention Through Environmental Design

1.05.1 It is important when designing development layouts that the principles of crime prevention through environmental design are considered, in particular:

1.05.1.1 Natural surveillance of public open spaces is optimised; and

1.05.1.2 Long pathway or obscured park areas that remain unlit should be avoided.

Engineering Issues

DP 1.06 General

1.06.1 The optimum site and road layout needs to be developed through consideration of social, environmental, town planning, traffic and engineering issues.

1.06.2 Although the engineering design of roads is the province of the engineer, it is essential that the surveyor and planner preparing the site layout the fully aware of the engineering issues to ensure that the road layouts proposed are satisfactory in this regard. Major alterations to the development layout may otherwise be necessary to accommodate engineering requirements.

1.06.3 The factors to be taken into consideration when designing new development layouts include the following:

1.06.3.1 Proposed land use;

1.06.3.2 Road hierarchy, interim and ultimate;

1.06.3.3 Public transport network;

1.06.3.4 Local planning policies, bikeways/paths and open space;

1.06.3.5 Council's drainage management plans;

1.06.3.6 Council's traffic management plans;

1.06.3.7 Railway and cane tram way lines;

1.06.3.8 access requirements for service vehicles and emergency vehicles;

1.06.3.9 topography of the area;

1.06.3.10 adequate road frontage to parks and drainage reserves;

1.06.3.11 existing utility services constraints and proposed augmentation works;

1.06.3.12 crime prevention through environmental design;

1.06.3.13 impacts on adjoining properties;

1.06.3.14 existing stormwater drainage;

1.06.3.15 flooding and ponding;

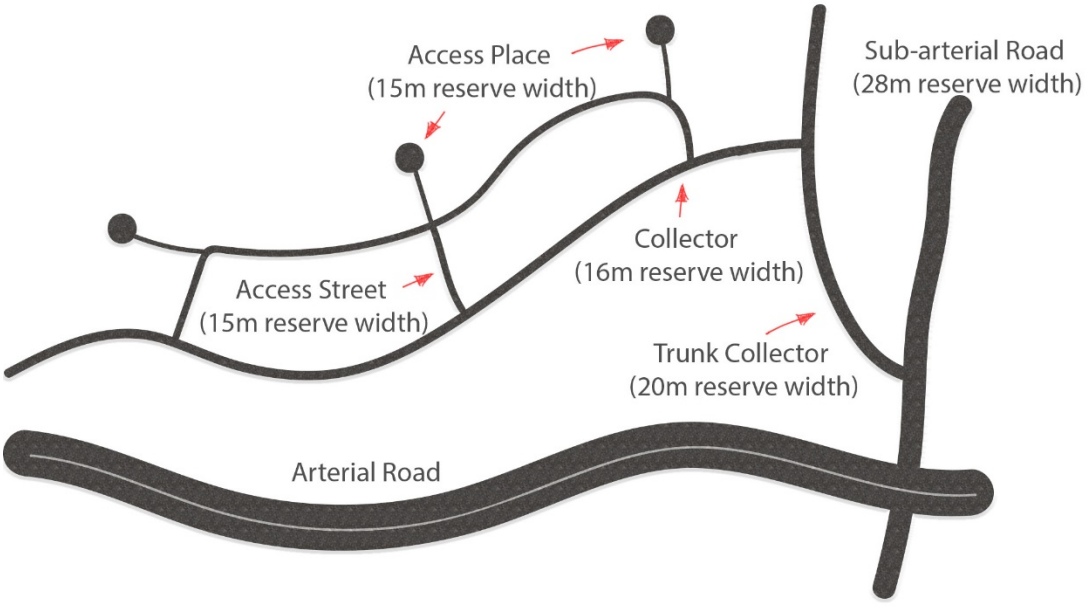
1.06.3.16 preservation of natural watercourses;

1.06.3.17 significant existing vegetation;
1.06.3.18 bushfire protection measures;
1.06.3.19 impact of earthworks;
1.06.3.20 water quality improvement structures and features;
1.06.3.21 existing soil conditions; and
1.06.3.22 geotechnical considerations.

DP 1.07 Road Network

1.07.1 The provision of a Road network within a subdivision development is to be designed to achieve the following aims:
1.07.1.1 convenient and safe access to all allotments for pedestrians, vehicles and cyclists;
1.07.1.2 safe, logical and hierarchical transport linkages with existing Street system;
1.07.1.3 appropriate access for buses, emergency and service vehicles;
1.07.1.4 convenient service corridors for public utilities;
1.07.1.5 opportunity for street landscaping; and
1.07.1.6 convenient parking for visitors.

1.07.2 A hierarchical Road network is essential to maximise Road safety, residential amenity and legibility. Each class of Road in the network serves a distinct set of functions and is designed accordingly. Atypical hierarchy is shown below.



1.07.3 The maximum number of turning movements at intersections or junctions that a visitor should be required to undertake to reach a particular address within the development should be minimised.

1.07.4 The road network should be designed to ensure that roads connect to next order of road in the hierarchy. Under no circumstances should a road connect to another road, which is more than two, levels higher or lower in the hierarchy.

1.07.5 Where an Access Place forms part of a pedestrian or cycle network, suitable connectivity with adjoining Access Places or open space systems should be provided to ensure such pedestrian and cycle network are functionally efficient.

1.07.6 Developments layouts should be designed with a road layout to achieve the desired speed environment. The use of traffic control devices in lieu of a suitable road layout is not preferred.

1.07.7 It is important that the road hierarchy adequately caters for buses. The main criteria in determining the location of bus routes is that no more than 10 per cent of residents should have to walk in excess of 500 metres to catch a bus. Normally roads above the Access Street in the hierarchy are designed as bus routes.

DP 1.08 Site Regrading Concept

1.08.1 Excessive site regrading should be avoided, wherever possible site layouts should be developed to position roads and drainage networks to take advantage of natural surface grades. Site layouts that minimise the disturbance of the land will require less erosion and sediment control measures during construction phase and reduce the risk of environmental harm.

1.08.2 Where earthworks are proposed on any development site identified in the Whitsunday Regional Council Planning Scheme Landslide Overlay as having a gradient of 15% or greater input should be sought from a qualified geotechnical engineer to ascertain slope stability and potential construction issues.

DP 1.09 Stormwater Drainage

1.09.1 The design of the drainage system, and earthworks for the proposed development shall be such that the upstream drainage is not adversely affected and that the downstream drainage system is capable of adequately catering for the discharge of the additional flow produced as a result of the development.

1.09.2 If the downstream system is not capable of carrying the modified discharge, the designer shall indicate the measures proposed to ensure the downstream system is capable of carrying the modified discharge. This will involve negotiation with adjoining landowners for minor creek systems to produce easements over downstream drainage paths. Written approval from the respective property owners is required for the easement and any engineering works on their property from the development site to the legal point of discharge.

1.09.3 The development layout shall be designed to accommodate both existing and future developed flows from upstream catchments based on development in accordance with the relevant Planning Scheme.

1.09.4 In preparing a development layout, consideration should be given of the overall site drainage philosophy, and overland flow paths, to ensure that the road network has sufficient drainage capacity to safely convey stormwater runoff to its receiving waters with minimal nuisance or damage to the community.

1.09.5 Consideration should be given in the preparation of the layout to ensure that in the event of drainage system failure, adequate emergency relief paths are provided. In particular, downhill sloping cul-de-sac heads should be avoided where a sufficient width pathway or open space cannot be provided to convey the overland flow.

DP 1.10 Stormwater Quality Management

1.10.1 In recognition of the impacts that development may have on the quality of water within the waterways, the over-riding objective for water quality management is to minimize the potential for development activity to cause harm to the environment / receiving waters.

1.10.2 All developments are required to include appropriate SQID's that ensure removal of suspended matter (litter) and treatment of contaminated stormwater prior to crossing the boundary of the development or discharge into downstream roadside gutters, stormwater drainage systems or waterways.

1.10.3 The location of the interception devices within the drainage system is to be planned to ensure that the first flush waters from all parts of the site are treated and they can be easily accessed for cleaning and maintenance.

DP 1.11 Sewerage Reticulation

1.11.1 In preparing a development layout, consideration should be given to the provision of sewerage reticulation connections to adjoining properties based on their future development in accordance with Council's Strategic Plan.

1.11.2 Where an existing sewerage reticulation line pass through a development site, the development layout should where possible incorporate the sewer with the development layout. Where this is not practical the layout should be prepared to minimise the extent of the sewerage relocation work necessary.

DP 1.12 Electricity Supply and Telecommunication Services

1.12.1 In preparing a development layout, the relevant Service Authorities should be consulted to confirm that the provision of services to the proposed development would be provided and if the provision of land for the purpose of siting infrastructure would be necessary.

DP 1.13 Tramlines through Urban Areas

1.13.1 Where cane tramlines run through urban areas a tramway reserve shall be created over tramline and transferred to Council.

1.13.2 The width of the tramway reserve for a single line shall be a minimum of twelve (12) metres. The reserve should be centrally located around the tramline except where exceptional circumstances prevent this. (e.g. adjoining tramway easement or reserve is placed off centre).

1.13.3 Under certain embankment / cutting conditions it may be necessary to widen the easement to provide a 3.0m wide access to at least one side of the track.

1.13.4 Where multiple tracks exist, the tramway reserve shall include all tracks plus a distance of six (6) metres from the centreline of the outermost tracks on each side.

1.13.5 This widened section shall be continued past the point of convergence of the tracks (i.e. the point of the switch of the first turnout of single line) a minimum of twenty (20) metres before becoming a standard twelve (12) metre easement again.

1.13.6 Residential areas should be sited away from siding locations if at all possible because of major dust and noise pollution problems. For cases where development will adjoin siding locations (closer than one hundred (100) metres from any part of the planned subdivision to the cane unloading point) then each such location would need to be the subject of a special study between the developer, the appointed consultants, representatives of the Mill and Council, in order to identify the unique problems of the location.

1.13.7 The number of road crossings should be kept to a minimum. Factors affecting the positioning of road crossings include: sight distances, track grades, proximity of the nearest crossing and the noise problem associated with the use of the train whistle at close successive crossings. Of particular importance is the adjacent grading of the track. The locating of road crossings on or near the base of falling grades should be avoided. Any road crossing proposal must be submitted to the Mill for the assessment of its likely implications on its own operations and on road users and residents.

DG1 - DESIGN GUIDELINES – ROAD GEOMETRY

Scope & Aims

DG 1.01 Road Geometry

1.01.1 This section sets out the minimum standards developed specifically for the design of roadworks using principles of Street design to enable safety and improved amenity and to reduce pedestrian/vehicular conflicts.

1.01.2 The geometry of a road is to be designed to achieve the following aims:

1.01.2.1 provide convenient and safe access to all allotments for pedestrians, vehicles and cyclists;
1.01.2.2 provide appropriate access for buses, emergency and service vehicles;
1.01.2.3 provide a convenient verge for public utilities;
1.01.2.4 provide an opportunity for street landscaping; and
1.01.2.5 provide convenient parking for visitors.

DG 1.02 Reference Documents

1.02.1 Australian Standards:
1.02.1.1 AS1158 Lighting for Roads and Public Spaces;
1.02.1.2 AS1348.1 Road and Traffic Engineering – Glossary of Terms, Road Design and Construction;
1.02.1.3 AS1428 Design for Access & Mobility;
1.02.1.4 AS2890.1 Parking Facilities: Off-street parking;
1.02.1.5 AS2890.2 Parking Facilities: Off-street Commercial Vehicle Facilities;
1.02.1.6 AS2890.5 Parking Facilities: On-street Car Parking;
1.02.1.7 AS/NZS 3845 Road Safety Barrier Systems;
1.02.1.8 AS 4678 Earth retaining structures
1.02.1.9 AS4282 Obtrusive Effects of Outdoor Lighting.
1.02.1.10 Disability Standards for Accessible Public Transport – IPWEAQ
1.02.2 Department of Transport & Main Roads:
1.02.2.1 Road Planning & Design Manual;
1.02.2.2 MUTCD;
1.02.2.3 Transport Operations (Road Use Management) Act.
1.02.3 Austroads:
1.02.3.1 Guide to Road Design;
1.02.3.2 Guide to Traffic Management
1.02.3.3 Guide to Road Safety;
1.02.3.4 Cycling Guidelines;
1.02.4 Other:
1.02.4.1 IPWEAQ Complete Streets;
1.02.4.2 Australian Model Code for Residential Development.

DG 1.03 Consultation

1.03.1 Designers are encouraged to consult with the Council and other relevant authorities prior to or during the preparation of the design. Designers should in addition to requirements of this manual ascertained specific requirements of these authorities as they relate to the designs in hand.

Road Design Criteria

DG 1.04 Design Speed

1.04.1 For geometric design of roads, design speeds shall be as nominated in Table D1.1 unless specified otherwise by Council. Developments should be designed with a road layout to achieve the desired speed environment. The use of Traffic Control Devices in lieu of a suitable road layout is not preferred.

1.04.2 Adoption of a low design speed discourages speeding, attention should be given to ensuring that potentially hazardous features are visible to the driver and adopting traffic engineering measures which will help a driver avoid errors of judgement.

1.04.3 Design speeds shall be calculated on largest radius track between kerb and centreline unless a physical constraint is incorporated in the design to maintain vehicle tracking in traffic lane.

DG 1.05 Longitudinal Gradient

1.05.1 A general minimum gradient of 0.5% should be adopted for all roads, which will ultimately include kerb and channel. In very flat conditions where approved by Council it may be reduced to 0.3%.

1.05.2 A desirable minimum gradient of 1.0% should be adopted for all roads, which will have earth table drains, except where approved otherwise by Council, in exceptional cases.

1.05.3 Roads constructed, without kerb and channel, completely in embankment may have zero grade.

1.05.4 Maximum grades shall be as nominated in Table D1.1.

1.05.5 Longitudinal grade 3 intersections should not exceed 4%, the actual gradients being dependent on the type of terrain. Design of the road alignment and the grades used are interrelated. A steep grade on a side street is undesirable if vehicles must stand waiting for traffic on the priority road.

1.05.6 Turning circles and cul-de-sacs on steep grades should have grades less than 5%.

1.05.7 Where minimum radius crest vertical curves are used local widening is to be provided to facilitate safe ingress/egress from properties.

DG 1.06 Horizontal Alignment

1.06.1 Horizontal alignment shall generally comply with the requirements of Austroads, Complete Streets, or Department of Transport and Main Roads manuals, as applicable.

1.06.2 Designers should ensure that, for a given design speed, the minimum radius of curvature utilised is such that drivers can safely negotiate the curve. Curves that progressively tighten produce an uncomfortable sense of disorientation and alarm. Sudden reverse curves that drivers cannot anticipate also have a potential to cause similar conditions.

1.06.3 The horizontal alignment shall ensure adequate sight distances taking into account construction of solid fencing on property boundaries.

DG 1.07 Vertical Curves

1.07.1 Vertical curves should be used on all changes of grade where the algebraic change of grade exceeds:

1.07.1.1 Access Place, Access Street, Collector Street – 1%

1.07.1.2 Trunk Collector Streets – 0.6%

1.07.2 The length of the crest vertical curve for stopping site distance should conform to Austroads;

1.07.3 for adequate riding comfort, lengths of stag vertical curves should conform to Austroads;

1.07.4 Every effort should be made to provide vertical curves as long as possible, for improved appearance.

1.07.5 Drainage poses a practical limit to the length of stag curves and a maximum length (in metres) 15 times the algebraic some of the intersection vertical grades should be adopted. This is to avoid water ponding in excessively flat sections of curb and channel. A minimum grade of 0.5% should be maintained in the curb and channel.

1.07.6 In general, a minimum 10 m length vertical curve shall be provided with a side road joins the through road at three-way intersections.

1.07.7 A tangent point of a vertical curve in the side road shall be located at, or outside of, the kerb line of the through road. Council may approve the use of concrete invert in lieu of a vertical curve with a side road is at Access Place and the algebraic change of grade is less than 6%.

1.07.8 The three-dimensional coordination of the horizontal and vertical alignment of a road should be aimed at improving traffic safety and aesthetics. The following principles should be applied:

1.07.8.1 The design speed of the road in both horizontal and vertical planes should be of the same order;

1.07.8.2 Combined horizontal and vertical stopping sight distance and minimum sight distance should be considered three dimensionally;

1.07.8.3 Sharp horizontal curves shall not be introduced at or near the crest of a vertical curve;

1.07.8.4 Horizontal curves should leave the vertical curve and be longer than the vertical curve; and

1.07.8.5 A short vertical curve on a long horizontal curve or a short tangent in the grade line between sag curves may adversely affect the road's symmetry and appearance.

DG 1.08 Crossfalls

1.08.1 Carriageway crossfalls for streets shall conform to the requirements of Austroads and/or Complete Streets.

1.08.2 Generally, pavement crossfalls on straight roads shall be:

- 1.08.2.1 Bituminous seal coat - 3%
- 1.08.2.2 Asphaltic concrete pavement – 3%
- 1.08.2.3 Cement concrete pavement – 3%
- 1.08.2.4 Paved Surfaces – 3%
- 1.08.2.5 Gravel – 5%.

1.08.3 Median crossfalls - the maximum crossfall on grassed medians on divided roads shall be desirably 1 in 6 with an absolute maximum of 1 in 4. Refer also Department of Transport and Main Roads Design Manuals. However, at median openings, the pavement crossfall should not exceed 5 per cent.

1.08.4 For roundabouts detailed consideration of the crossfall is required taking into account diameter, heavy vehicle turning, etc.

Table D1.1 WRC Street and Road Hierarchy – Deemed to Comply Requirements

Roadway Classification	No. of Dwellings	Traffic Generation (vehicles per day)	Reserve Width[1] (Minimum)	Carriageway Width [3,6] (Minimum)	Shoulder Width (Minimum)	Verge Width (each side) (Minimum)	Max Grade (Desirable) %	Design speed (km/h)
Access Place	0-10	0-99	14	6.0m		4.0m	(12) 16 [4]	40
Access Street	10-25	100-499	15	6.0m		4.5m	(12) 16 [4]	50
Collector Street	25-299	500-2,999	20	7.5m		5.0m	(8) 10	60
Trunk Collector Street	300-599	3,000-5,999	24	10.0m	1.5m (min)	5.0m	(8) 10	60
Sub Arterial Road	600-2,000	6,000-20,000	26	2 x 5.5m carriageway 5.0m median		5.0m	(6) 8	60
Rural	Refer table D1.4 for details of Rural Road Elements							
Arterial and Major Arterial	The requirements for these categories shall be provided by the Council or relevant authority (DTMR). Traffic volumes shall be identified in a traffic management report.							
Industrial Access	-	-	20	12m		4m	(6) 10	60
Industrial Collector	<30ha	-	22	14m		4m	(6) 8	50

1. Carriageway (and reserve) widening shall be provided on bends in accordance with Austroads.
2. Widening of carriageway to 10m shall be required on all bus routes, and a minimum road reserve of 18m provided.
3. Carriageway widths are measured from the invert of the kerb and channel on one side of the carriageway to the invert of the kerb and channel on the opposite site of the carriageway.
4. The absolute maximum grade shall be 20% for a maximum length of 60m. The maximum length of grades less than 20%, but not less than 16%, shall be 60m plus 25m for each 1% the grade is less than 20%. The maximum length of any grade greater than 16% shall be 160m.
5. Road reserve widths may require widening to accommodate table drains, provision for services, on-street car parking provision and bus bays.
6. Minimum reserve must be provided, irrespective of minimum verge and carriageway widths specified.
7. Where the road is nominated as part of the bikeway network, allowance for bike lanes shall be added to this width (minimum bikeway width is 1.5m or 2.0m where the design speed is >60km/h).
8. Refer to Council's standard drawings.

DG 1.09 Carriageway Width

1.09.1 Minimum carriageway widths for all streets shall be as nominated in Table D1 .1.

1.09.2 The carriageway widths must allow vehicles to proceed safely at the operating speed intended for that level of road in the network and with only minor delays in the peak period. This must take into consideration the restrictions caused by parked vehicles where it is intended or likely that this will occur on the carriageway. Vehicles include tracks, emergency vehicles and, on some roads, buses.

1.09.3 The safety of pedestrians and cyclists where it is intended that they use the carriageway must also be assured by providing sufficient width and visibility.

1.09.4 The carriageway which should also provide for unobstructed access to individual allotments. Motorists should be able to comfortably enter or reverse from an allotment in a single movement, taking into consideration the possibility of a vehicle being parked in the carriageway opposite the driveway.

1.09.5 The design of the carriageway should discourage motorists from travelling above the intended speed by reflecting the functions of the road in the network. In particular, the width and horizontal and vertical alignment should not be conducive to excessive speeds.

1.09.6 Appropriate road reserve width should be provided to enable the safe location, construction and maintenance of required paths and public utility services (above or below ground) and to accommodate the desired level of streetscape.

1.09.7 Where a “split-level” road is proposed, a stable form of retaining structures such as reinforced concrete, crib block, gabion or masonry walling (or other approved alternative) is required between upper and lower road levels.

1.09.8 Traffic islands shall be designed in accordance with the current DTMR or AUSTROADS design manuals.

1.09.9 Where upgrades are required the applicant may undertake a traffic count to confirm the number of vehicle movement per day on the subject road.

DG 1.10 Verges

1.10.1 Minimum verge width for all streets shall be as nominated in Table D1 .1.

1.10.2 A suitable design of the verge will depend on utility services, access to allotments, pedestrian usage, tree preservation and storm water drainage.

1.10.3 All verges shall fall from the frontage property boundary to the adjacent kerb and channel with acceptable Cross falls of between 3% to 5%. In the case where the allotment falls away from the road reserve (i.e. the allotment is lower than the level of the road), the verge shall have a minimum fall from the frontage property boundary to the adjacent kerb of 3%.

1.10.4 The maximum slope permissible within a road verge is 1 in 4.

1.10.5 The verge when considered in conjunction with the horizontal alignment and permitted fence and property frontage treatments should provide appropriate

sight distances, taking into account expected speeds and pedestrian and cyclist movements.

1.10.6 Utility service locations shall be in accordance with the relevant authorities' requirements.

1.10.7 Verges shall be covered full width with topsoil to a depth of not less than 40 mm and shall be lightly compacted and grassed in accordance with Council's minimum standards and specifications.

DG 1.11 Intersections

1.11.1 All new intersections of Access Places, Access Streets and Collector Streets, shall be three-way intersections designed and located in accordance with Austroads.

1.11.2 A roundabout shall be used in the design of four way intersections.

1.11.3 Intersections of Trunk Collector, Industrial, and Sub Arterial roads shall be designed in accordance with AUSTROADS design manual and shall allow for potential improvement to incorporate other traffic control methods e.g. traffic signals.

1.11.4 Intersections with state-controlled roads shall be designed and constructed in accordance with the requirements of DTMR.

1.11.5 The design of intersections or junctions should allow all movements to occur safely without undue delay. Projected traffic volumes shall be used in designing all intersections or junctions on trunk collector streets or higher order roads.

1.11.6 Truncations shall be provided to real property boundaries in order to maintain minimum verge widths and adequate sight distances taking into account potential for construction of solid fencing on the property boundaries.

1.11.7 The turning radii at intersections measured at the kerb invert shall be 9.0m minimum and accommodate the intended movements without allowing desired speeds to be exceeded.

1.11.8 All vehicle turning movements are accommodated using AUSTROADS design vehicle and turning templates, as follows:

- 1.11.8.1 For turning movements involving trunk collector streets or collector streets, the "design semitrailer" with turning path radius of 15 m.
- 1.11.8.2 For turning movements involving access streets but not involving collector streets, the "design single unit track/bus" with turning path radius of 13 m.
- 1.11.8.3 For turning movements and access places but not involving collector streets or access streets the garbage collection vehicle with turning path radius of 12 m.
- 1.11.8.4 For turning movements at the head of cul-de-sacs for all streets, except access place, have sufficient area provided for the "design single unit track"; and
- 1.11.8.5 Road furniture shall be located to allow for clear manoeuvring of the design semitrailer.

1.11.9 Intersection channelisation is to be provided and designed in accordance with the current DTMR or AUSTROADS design manuals.

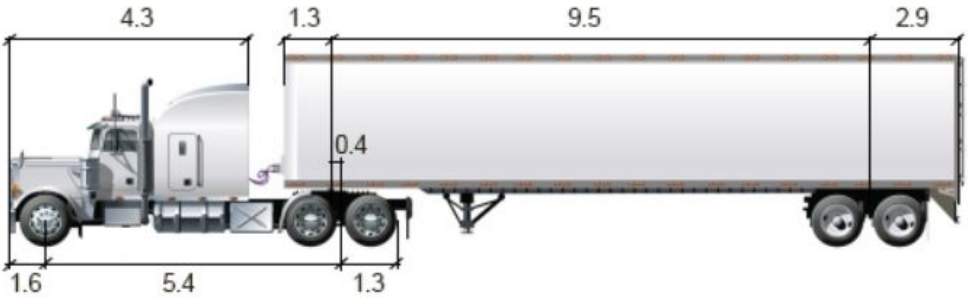
1.11.10 All channelisation shall be designed to accommodate a design vehicle providing a clearance of not less than 0.6 m between the wheel track and the kerbs at all points, unless specified otherwise by Council.

1.11.11 Traffic islands or medians of less than 2m width to be hard surfaced in concrete with a patterned broomed finish incorporating a coloured pigment in accordance with Council's requirements. This colour should generally be terracotta unless otherwise approved by Council.

1.11.12 Traffic islands, which are to be grassed or landscaped, shall be provided with a water service conduit and a perimeter subsoil drainage line connected to the underground drainage system or an open drainage channel.

1.11.13 On Trunk Collectors, Sub-Arterial and Arterial roads, median breaks will only be permitted at approved intersections.

1.11.14 Pavement markings associated with channelisation and signs shall be provided in accordance with the MUTCD.

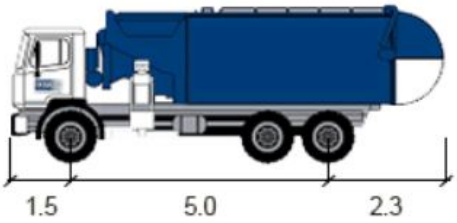


Semi-trailer

Tractor width	:	2.50	Trailer width	:	2.50
Tractor track	:	2.50	Trailer track	:	2.50
Turning radius (outside):		15.00			

Single unit truck/bus

Width	:	2.50
Track	:	2.50
Turning radius (outside):		13.00



Garbage truck

Width	:	2.50
Track	:	2.50
Turning radius (outside):		12.00

Figure 1.3 Standard Vehicles

DG 1.12 Roundabouts

1.12.1 Design of roundabouts will generally be in accordance with current Department of Transport and Main Roads Design Manuals and AUSTROADS Guide to Road Design.

1.12.2 Roundabout shall only be used at intersection of Collector Streets and Access Streets or higher order roads only. All roundabouts shall have a minimum inscribed circle diameter of 30.0m.

1.12.3 Centre islands which are to be grassed or landscaped shall be provided with a water service conduit and a perimeter subsoil drainage line connected to the underground drainage system or an open drainage channel.

1.12.4 Landscaping to centre islands to be in accordance with Council minimum standards and Specifications.

1.12.5 Roundabouts shall include provision for on road cycle lanes unless alternate cycle paths are provided.

DG 1.13 Cul-De-Sac Turning Areas

1.13.1 The turning areas at the ends of the cul-de-sac in streets is to be designed in accordance with Austroads and/or Complete Streets, excepting as follows:

1.13.1.1 Three-point turns (T-Heads) will not be permitted without the prior consent of Council. Council may review site specific alternatives where topography and site constraints exist.

1.13.1.2 Where a full turning circle is not provided to the minimum radius below, provision for turning within kerbs for Council's design garbage truck must be demonstrated.

1.13.2 Where a full turning circle is provided the minimum kerb radii shall be:

1.13.2.1 Approach and departure curves – 15m

1.13.2.2 The turning circle – 10m.

1.13.3 Turning areas at the ends of cul-de-sac in industrial developments shall be full turning circles based on criteria for the specific application, with the following minimum kerb radii:

1.13.3.1 Approach and departure curves – 30m

1.13.3.2 The turning circle – 15m.

1.13.4 All turning heads shall have adequate provision for on-street parking at cul-de-sacs in accordance with Austroads and/or Complete Streets. Provision of parking areas within the verge must not compromise the future connection of services to the allotments.

1.13.5 Reference should be made to table D3.2 for rural cul-de-sac requirements.

DG 1.14 Local Area Traffic Management

1.15.1 The road network should be designed to manage the movement and speed of traffic in local areas. In this regard, any traffic management devices such as thresholds, slow points, speed humps, chicanes and splitter islands should be designed in accordance with the requirements of AUSTROADS and are to be approved by Council.

1.15.2 Devices other than at intersections should be located to be generally consistent with streetscape requirements, existing street lighting, drainage pits, driveways, and services may decide the exact location of devices.

1.15.3 Emergency vehicles must be able to reach all residences and properties.

1.15.4 Where bus routes are involved, buses should be able to pass without mounting kerbs and with minimised discomfort to passengers.

1.15.5 Traffic management devices and associated road furniture must not prevent the passage of larger vehicles (i.e. semi-trailers) however their principle function is not to be compromised.

1.15.6 In newly developing areas where street systems are being developed in line with LATM principles, building construction traffic must be catered for.

1.15.7 Maximum vehicle speeds can only be reduced by deviation of the travelled path. Pavement narrowings have only minor effects on average speeds, and usually little or no effect on maximum speeds.

1.15.8 Speed reduction can be achieved using devices, which shift vehicle paths laterally (slow points, roundabouts, corners). The use of vertical devices (i.e. humps, platform intersections, platform pedestrian/school/bicycle crossings) is not desirable and shall only be used where specifically approved by Council.

1.15.9 Speed reduction can be helped by creating a visual environment conducive to lower speeds. This can be achieved by 'segmenting' streets into relatively short lengths (less than 200-300m), using appropriate devices, streetscapes, or street alignment to create short sight lines.

1.15.10 Adequate critical sight distances should be provided such that either party in a potential conflict situation may take evasive action. Sight distances should relate to likely operating speeds.

1.15.11 Sight distances to be considered include those of and for pedestrians, cyclists and property accesses, as well as for drivers.

1.15.12 Night time visibility of street features and LATM devices must be adequate and in accordance with the MUTCD.

1.15.13 Many devices will be designed for their normal use by cars, but with provision (such as mountable kerbs) for larger vehicles. Some typical dimensions include:

1.15.13.1 Pavement narrowing:

1.15.13.1.1 Single lane 3.5m between kerbs;

1.15.13.1.2 Between obstructions - 3.75m; and

1.15.13.1.3 Two lane 6.0m minimum between kerbs.

1.15.13.2 Bicycle lanes (including adjacent to pavement narrowings) – 1.5m minimum;

1.15.13.3 Plateau or platform areas;

1.15.13.4 75mm to 150mm height maximum, with 1 in 15 ramp slope;

1.15.13.5 Dimensions of mountable areas required for the passage of large vehicles to be determined by appropriate turning templates.

DG 1.16 Bus Stops

1.16.1 Bus stops should be provided on all bus routes so no more than 10 per cent of residents should have to walk in excess of 500 metres to catch a bus. Normally roads above the access street in the hierarchy are designed as bus routes. Table D1.2 details minimum criteria for bus stops.

1.16.2 Unless otherwise approved, bus stops shall be constructed in accordance with AUSTROADS Guide to Road Design, MUTCD and Disability Standards for Accessible Public Transport.

1.16.3 Tactile Ground Surface Indicators (TGSI) are to be installed at all bus stops and shelters in accordance with AS/NZS 1428.4:2009.

Table D1.2 Bus Stop Criteria

Road	Stops (Spacing)	Description
Collector Streets	400 metres [1]	Single Bay and shelter [2]
Trunk Collector or higher order road	400 metres	Single Bay and shelter [2]

Notes:

1. Loop roads with single entry/exits only require stops and bays on one side of the road.
2. Shelters are subject to Council's requirements.

DG 1.17 Access to Allotments

1.17.1 Criteria for acceptable access to allotments are to be in accordance with Council's Standard Drawings.

1.17.2 Criteria for acceptable access to steep allotments are to be in accordance with Section DG 2.12.

1.17.3 Criteria for acceptable access to lots in the Rural, Rural residential & Emerging communities zones are to be in accordance with Section DG 1.30.

1.17.4 All rear allotment access (hatchet or battleaxe lots), shall be provided with a reinforced concrete driveway (unless in a Rural, Rural residential or Emerging communities zone, where Council may approve another surface), have a minimum width of 3.0m and extend the full length of the access handle.

1.17.5 All rear allotment access driveways shall commence at the adjacent kerb and channel with a standard kerb crossover or at the existing edge of pavement. Conduits for internal allotment services are to be provided adjacent to the concrete driveway for the full length of the access unless otherwise approved.

1.17.6 All rear allotment access via an easement to more than one lot, shall be provided with a reinforced concrete driveway (unless in a Rural, Rural residential or Emerging communities zone, where Council may approve another surface) and have a minimum width of 5.5m to allow two-way access.

1.17.7 Where lots are accessed via an access easement, a 10.0m transition to singular (3.0m wide) access may be provided from the second last lot's crossover extending the full length of the access handle to the last lot.

1.17.8 All lots associated with an access easement must only gain access through the access easement.

DG 1.18 Parking Provisions

1.18.1 Parking provisions in accordance with the relevant sections of Austroads and/or Complete Streets shall be accorded with on all roads, except that for Major Collector Street with a traffic generation of 3000 vpd - 5999 vpd.

1.18.2 Streets which cannot comply with the on-street parking provisions of Austroads and/or Complete Streets, due to reduced allotment frontage widths or carriageway widths, shall make provision for indented or verge parking bays at a minimum frequency of 1 parking bay per 2 allotments. Particular attention should be made to providing adequate provision for on-street parking at cul-de-sacs, turning heads and elbow bends.

1.18.3 Verge widths are to be maintained alongside indented or verge parking areas. Where necessary, property boundaries shall be adjusted to meet this requirement.

DG 1.19 Pathways

1.19.1 Unless otherwise approved, pathways will be constructed taking into consideration the Disability Discrimination Act and Disability Standards for Accessible Public Transport.

1.19.2 Where a pathways link is located between allotments, the minimum width of land dedicated to Council shall be 5.0m. Concrete paving is to be for the full width of the pathway link and at least 2.5m wide and extend to the adjacent kerb and channel together with a kerb ramp. Vehicular access is to be restricted at the ends of pathways through the installation of bollards at the property line in accordance with the Councils requirements.

1.19.3 Maximum cross fall on all access pathways 2.5%.

1.19.4 Pathways constructed using alternate material (e.g. Asphalt, Paving blocks) are to be approved by Council.

1.19.5 The pathway shall extend to the property boundary remote from the roadway where the path is not connecting two street frontages.

1.19.6 Bends shall be provided with a minimum internal radius of 6m.

1.19.7 All pathways shall have a non-slip surface, generally, this can be achieved by applying a stiff broom to the wet surface. (Alternate methods shall require Council approval).

1.19.8 Where a pathway link is used for stormwater drainage overland flow relief it shall have a one way crossfall and be constructed in full width concrete with a

layback kerb and channel or approved equivalent along one edge to contain the required flow within the concrete.

1.19.9 Pathways are not to be aligned with stormwater pits where a stormwater pit is required to be located at the end of a pathway for overland flow, the pedestrian path is to be offset and appropriate measures provided to guide pedestrians away from the pit and remove any potential hazards.

1.19.10 The requirements for pathways to be constructed longitudinally along roads shall be in accordance with Table D1.3.

Table D1.3 Pathways along roads

Road Classification	Pathway Requirements [2]
Access Place	Nil (Kerb ramps to intersections only)[1]
Access Street	1.5m wide Pathway on one side of the reserve[3]
Collector Street	2.0m wide Pathway on one side of the reserve[3]
Sub Arterial/Arterial	2.5m wide Pathway on both sides of the reserve
Industrial	1.5m wide Pathway on each side of the reserve.

Notes:

1. **Unless required as part of a pedestrian/cycle network;**
2. **Minimum widths in the above table may be varied with the approval of Council;**
3. **Increase to 2.5m for cycleways.**

1.19.11 All pathways shall have appropriate immunity against cross drainage.

1.19.12 The maximum gradient shall be 16 per cent with a maximum crossfall of 2.5 per cent. Where the pathway is parallel with a road with a grade greater than 16 per cent footpath gradient shall match that of the road.

1.19.13 The finished surface level of concrete work shall be not more than 20mm above the finished surface level of adjoining ground and shall finish flush with adjoining hard surfaces.

DG 1.20 Bikeways

1.20.1 The minimum width of land dedicated to Council for a bikeway shall be 5.0 metres with a minimum 2.5 metre wide concrete paving in accordance with Cycling Aspects of AUSTROADS Guides and MUTCD - Part 9, Bicycle Facilities.

1.20.2 Bikeways constructed using alternate material (e.g. Asphalt, Paving blocks) are to be approved by Council.

1.20.3 Bikeways located in parks shall be constructed above the flow of a storm of 5 year ARI, unless approved otherwise by Council.

1.20.4 Where bikeways connect to or crosses over an Access Street or higher order road, a slow point shall be installed as approved by Council.

1.20.5 All bikeways shall have a non-slip surface. Generally, this can be achieved by applying a stiff broom to the wet surface. (Alternate methods require Council approval).

DG 1.21 Kerb and Channel

1.21.1 Concrete kerb and channel, and layback kerb and tray shall be provided on both sides of all roads except as otherwise provided for in Austroads and/or Complete Streets.

1.21.2 Standard kerbs in accordance with Council's Standard Drawing shall be used in the following cases:

- 1.21.2.1 Residential Streets – Layback Kerb and Layback Kerb and Channel;
- 1.21.2.2 Medians – Maintenance Strip Kerb;
- 1.21.2.3 Grassed and Landscaped Traffic Islands – Maintenance Strip Kerb;
- 1.21.2.4 Concrete Traffic Islands - Semi-mountable Kerb; and
- 1.21.2.5 Roundabouts (centre island only), - Maintenance Strip Kerb.

1.21.3 Where proposed construction adjoins existing kerb and channel the Designer shall confirm with Council whether the existing profile shall be extended or whether the new construction will be tapered smoothly to the existing kerb and channel. The grading of kerb and channel will normally conform to the road centreline grading. However, at locations where the kerb and channel grading diverts from the centreline grade, such as at intersections or on superelevated curves the following shall apply.

1.21.4 Minimum channel grade should be 0.5 percent unless approved other approved by Council.

1.21.5 Every effort should be made to provide vertical curves as long as possible, for improved appearance.

1.21.6 At all changes in horizontal alignment, kerbs and kerb and channel shall be constructed with horizontal curves.

1.21.7 To improve appearance where small deflections occur (e.g. on tapers), horizontal curves shall be as long as possible. Refer also to current Department of Main Roads or AUSTROADS.

1.21.8 Kerb ramps shall be provided at all tangent points of intersection kerb returns, at park entrances and at any other locations where required by Council.

1.21.9 Access crossovers for Industrial, Commercial and Multi Residential site shall be installed in accordance with Council's Standard Drawings.

DG 1.22 Signs and Road Markings

1.22.1 Permanent signing and road marking shall be in accordance with the current edition of the MUTCD. Where there is a choice of line marking colour, then only white or yellow paint is to be used.

1.22.2 Temporary or construction signing and road marking shall be in accordance with current edition of the MUTCD.

1.22.3 The relevant sign reference number from the MUTCD shall be included on the construction drawings.

1.22.4 All signs and pavement markings shall be adequately dimensioned to ensure accurate setting out.

1.22.5 Signs located in grassed areas shall have a surrounding 500mm dia x 100mm thick concrete mowing strip.

1.22.6 Signs located in concrete islands or medians shall be installed with the "V Loc" socket system and fitted with anti-theft bolts.

1.22.7 The bottom of all un-sleeved posts shall be flattened prior to placing in concrete footing.

1.22.8 Vandal proof bolts and fittings shall be used on all permanent signing.

1.22.9 Street Name signs shall be installed in accordance with Council's Standard Drawing.

DG 1.23 Road Edge Guide Posts & Guardrails

1.23.1 Road edge guide posts shall be provided at all locations where concrete kerb and channel is not constructed e.g. half road construction, tapers, ends of roads etc.

1.23.2 Guide posts shall conform to and be installed in accordance with Department of Main Roads 'Manual of Uniform Traffic Control Devices'.

1.23.3 Guardrails shall be installed in accordance with the Department of Main Roads Road Planning and Design Manual.

DG 1.24 Pedestrian Foot Bridges

1.24.1 Pedestrian foot bridges are to be provided where necessary and are to be constructed from concrete, steel or timber (all steelwork is to be hot dipped galvanised) and shall be provided with handrails / fences for pedestrian safety.

1.24.2 The clear width of all pedestrian bridges shall match the width of the approaching pathway / bikeway unless otherwise approved by Council and shall have squeeze points to control access.

1.24.3 Designers shall consult with Council at concept stage to confirm location, widths, flood immunity etc.

DG 1.25 Tram Line Crossings

1.25.1 Road crossings are to be constructed in accordance with Department of Transport and Main Roads Standard Drawings.

1.25.2 Flashing lights and crossing warning signs to the Department of Transport and Main Roads standards are to be erected on all new road crossings or crossings where the traffic density will increase because of the development.

1.25.3 Prior to commissioning of flashing lights and warning lights appropriate temporary controls including warning signage shall be installed and maintained at all road crossings.

DG 1.26 Fencing

1.26.1 All fencing located inside the road reserve shall have a minimum height of 1.2m, and shall be of a type that discourages climbing and constructed in accordance with Council's Standard Drawing.

1.26.2 A continuous chain wire mesh fence shall be constructed along all interfaces between the development and the tramway reserve and shall be constructed in accordance with Council's Standard Drawing.

Rural Design Criteria

DG 1.27 General

1.27.1 In addition to the foregoing sections this section specifically applies to all those sites identified as being suited to rural and rural residential subdivisions inclusive of rural home sites and hobby farms types of developments. For roads within the Rural Living Areas reference should be made to Table D1.1. Table D1.4 details specific road demands for rural roads.

	Rural Access Place	Rural Access St	Rural Collector	Rural Sub Arterial	Rural Arterial
Traffic Volumes or Road Class (vpd)	<100	100-199	200-999	1000-7999	>8000
Road Reserve (flat terrain ≤ 5%)	20m	20m	20m	25m	25m
Road Reserve[2] (undulating/Hilly >5%)	25m	25m	25m	30m	30m
Formation	8m	8m	10m	10m	12m
Pavement Width	6m	6m	6.5m	8m	10m
Seal Width	Optional[1]	6m (min)	6.5m	8m	10m
Shoulders[3]	1.0m	1.0m gravel	1.75m gravel	As collector Incl. 0.5m sealed on each side	As collector Incl. 1.5m sealed on each side
Desirable Speed Environment	80km/h	80km/h	100km/h	100km/h	100km/h
Design Speed for Individual Elements (Minimum)	80km/h	80km/h	80km/h	80km/h	80km/h

Notes:

1. **Sealing 4.0m wide shall be required for longitudinal grades in excess of 10% and may be required at sites where existing adjacent roads are sealed.**
2. **In undulating terrain, this width shall be increased to enable services to be constructed on accessible flatter land on top and below batters.**
3. **Where the road is a designed on-road bicycle route (signposted and pavement marked) the shoulder provision needs to confirm to AUSTROADS Part 14 – Bicycles.**

1.27.2 Design speed is to be generally used as the basic parameter of design standards and the determination of the minimum design value for other elements in rural subdivisions is to be based on the concept of a "speed environment" as outlined in AUSTROADS Guide to Road Design.

1.27.3 Where appropriate superelevation, widening and centreline shift and their associated transitions are to comply with AUSTROADS Guidelines.

1.27.4 Where the table drain will have a flow velocity greater than 2.5m/s or is likely to scour, a stone pitched, or suitably lined dish drain is to be constructed along the invert. (Generally, table drains steeper than 6 % will require scour protection).

DG 1.28 Horizontal and Vertical Alignment

1.28.1 Horizontal and vertical curves are to be designed generally to the requirements of AUSTROADS Guide to Road Design. These requirements are essential to satisfy the safety and performance of proper road design. Roads having both horizontal and vertical curvature should be designed to conform to the terrain to achieve desirable aesthetic quality and being in harmony with the landform.

DG 1.29 Intersections

1.29.1 Intersections should generally be in accordance with AUSTROADS.

1.29.2 Adequate sight distance should be provided at intersections both horizontally and vertically. Each intersection location shall be examined for conformance with the criteria for Approach Sight Distance (ASD), Entering Sight Distance (ESD) and Safe Intersection Sight Distance (SISD).

DG 1.30 Access to Allotments

1.30.1 All accesses onto sealed roads are to be sealed. Accesses off gravel roads do not have to be sealed.

1.30.2 Drainage under accesses shall be designed and constructed to a size and length as determined by RPEQ. Minimum pipe size – 375mm diameter, Minimum length – 4.8m long.

1.30.3 All pipe and box culverts under accesses shall have headwalls to protect and retain gravel fill.

1.30.4 Precast vertical headwalls with wings are preferred, but insitu cast concrete or grouted stone may be used subject to Council Approval.

1.30.5 Precast sloping headwalls to be used on all access where the road design speed is 100km/h or where the culvert is within 4.5m of the traffic lane and the road speed is 80 km/h.

1.30.6 Accesses are to be designed to ensure that stormwater runoff from the road and the access discharge to the table drain.

1.30.7 Accesses shall be constructed in accordance with Council's Standard Drawing unless otherwise approved by Council.

DG 2 – DESIGN GUIDELINES - Site Regrading

General

DG 2.1 Scope

2.1.1 This section sets out the minimum standard specifically designed for site regrading involved land development and subdivision.

2.1.2 The designer needs to make reference to the associated design manual related to DG 1 – Road Geometry, DG 4 – Stormwater Drainage and DG 5 – Stormwater Quality Management.

DG 2.2 Objectives

2.2.1 This Manual aims to assist the Designer in achieving:

2.2.1.1 Efficient and economical design;

2.2.1.2 Enhancement of the environmental character and maintenance of natural features of the site; and

2.2.1.3 Minimal impact on adjoining properties and developments.

DG 2.3 Reference Documents

2.3.1 AS3798 Guidelines on Earthworks for Commercial and Residential Development

2.3.2 AS4373 Pruning of Amenity Trees

2.3.3 AS4970 Protection of Trees on Development Sites

2.3.4 State Planning Policy

DG 2.4 Site Regrading Concept

2.4.1 Areas of a site proposed for building or recreational purposes may not be suitable in their natural state for their intended function without improvement works, the designer shall review the natural surface contours and where necessary shall design finished surface levels that ensure the land is suitably prepared.

2.4.2 Excessive site regrading should be avoided, wherever possible site layouts should be developed to position roads and drainage networks to take advantage of natural surface grades. Site layouts that minimise the disturbance of the land will require less erosion and sediment control measures during construction phase and reduce the risk of environmental harm.

2.4.3 The designer shall consider the implications of site regrading in relation to the existing natural environment. Generally, site regrading shall be minimised in heavily treed areas.

2.4.4 The design of site regrading areas preferably should aim to achieve a balanced cut to fill to minimising haulage of imported fill or spoil to and from the development site.

2.4.5 Where practical, areas should be regraded to minimise the necessity for underground drainage systems with surface inlet pits, and allow surface water to flow naturally to roads or drainage reserves without excessive concentration.

DG 2.5 Clearing

2.5.1 Unless otherwise approved by Council any pruning and/or protection of trees shall be carried out in accordance with AS 4970 and AS 4373.

2.5.2 Clearing must be kept to a minimum. Trees and vegetation of significance shall be identified prior to design in order that the amount of disturbance may be minimised through appropriate design.

2.5.3 Reference should be made to the Vegetation Management Act and any relevant Local Laws and Policies prior to any tree clearing.

2.5.4 Generally, in areas with significant trees and vegetation:

2.5.4.1 Roadways clearing shall be limited to the limits of approved earthworks plus a sufficient lateral clearance to ensure that the works are not interfered by the trees or vegetation; and

2.5.4.2 Allotment clearing shall be limited to the minimum areas required to safely construct services such as sewers and catchment drains, and the limits of approved earthworks to allotments plus a sufficient lateral clearance to ensure the works are not interfered by the trees or vegetation.

2.5.5 No trees shall be damaged or removed from areas to be dedicated under the control of Council without prior written approval of Council.

2.5.6 Trees on existing roads shall not be damaged or removed without the approval of Council. All trees on existing roads affected by the works shall be shown and details given of proposed protection or relocation methods.

2.5.7 Prior to any clearing, all existing and future parkland shall be delineated to ensure its protection from unauthorised clearing.

DG 2.6 General Standard of Lot Preparation

2.6.1 Special requirements will apply where necessary but generally lots are to be cleared of low scrub, fallen timber, debris, stumps, large rocks and any trees which in the opinion of Council are approaching the end of their functional life or are dangerous or will be hazardous to normal use of the development. Prior consultation with Council is necessary. Such requirements shall be shown on the design plan.

2.6.2 Class 1, 2 and 3 Pest Plants are to be removed and disposed of in accordance with Land, pest and Stock Route Management Act and Regulation.

2.6.3 All timber and other materials cleared from lots shall be removed from the site. All roots, loose timber, etc which may contribute to drain blockage shall be removed.

2.6.4 All trees nominated by Council in its conditions of approval shall be preserved by approved means to prevent destruction normally caused by placement of conventional filling or other action within the tree drip zone. Details of the proposed protection measures shall be detailed on the design plans.

DG 2.7 Filling

2.7.1 If any land is to be filled all practices must ensure compliance with AS 3798 ”Guidelines on Earthworks for Commercial and Residential Developments” and State Planning Policy 2/02.

2.7.2 Fill comprising industrial wastes or by-products is not permitted.

2.7.3 No person shall be permitted to fill any land where, in the opinion of Council, such filling will detrimentally affect the area available in any natural or artificial watercourse for either present or estimated future flood flows, or will detrimentally reduce the volume within a flood plain available for the storage of flood waters.

2.7.4 No person shall be permitted to fill any land if such filling may detrimentally affect natural drainage of any of the surrounding land.

2.7.5 All new allotments are to be flood free. Immunity levels shall be in accordance with relevant Council Policies and Planning Scheme requirements.

2.7.6 Every allotment shall be filled and drained to achieve Council's performance criteria, such that an area is available above the adopted flood line, or stipulated flood level, in accordance with the following documents:

- 2.7.6.1 Queensland Urban Drainage Manual (QUDM);
- 2.7.6.2 Council's Local Laws & Policies; and
- 2.7.6.3 Council's Flooding and Drainage Policies

DG 2.8 Compaction

2.8.1 Compaction of earthworks shall be in accordance with AS 3798 “Guidelines on Earthworks for Commercial and Residential Developments”.

DG 2.9 Cartage of Soil

2.9.1 The designer shall nominate in their design submission whether excess spoil is generated by the proposed earthworks and in these cases shall nominate the proposed spoil dump site and external haul route which shall be subject to the written approval of the Council.

2.9.2 In cases where the spoil is generated from works within existing declared roads, Council may nominate that the spoil be placed on Council controlled land within 5 km of the project site.

2.9.3 Where rock is disposed of on site, the position of the rock is to be approved by Council and shown on the ‘as constructed’ drawings.

2.9.4 Unless otherwise approved by Council all topsoil shall be retained on the development site and utilised effectively to encourage appropriate revegetation.

DG 2.10 Allotment Earthworks

2.10.1 Allotments shall be provided with a minimum finished surface gradient of 0.5%, including catch drains, to facilitate drainage.

DG 2.11 Batter Treatments

2.11.1 Cut and fill batters shall not straddle allotment boundaries unless otherwise approved by the Council.

2.11.2 Cut batters shall not extend into existing or proposed parks or bushland reserves unless specifically approved by Council. Fill batters may extend into proposed parks or bushland reserves with a maximum slope of 1 in 10 unless otherwise approved by Council.

2.11.3 In general, cut and fill batters shall be limited to a maximum slope of 1 in 4 (1 in 10 in parks), such that stabilisation is achieved by topsoiling and grassing which can be maintained by conventional tractor slasher.

2.11.4 All embankments and cuttings must be outside the road reserve. The toe of any cut batter is to be 300mm inside the property boundary; the top of any fill batter is to be 300mm inside the property boundary.

2.11.5 In environmentally sensitive areas or steep terrain, consideration may be given to relaxation of clause 4 subject to council approval.

2.11.6 Where subdivision roads are constructed in fill and the batter slope exceeds 1 in 2, Council may require an easement over the batter and to a nominated distance past the toe of the batter.

2.11.7 Batters in road reserves but outside the verge steeper than 1 in 4 may be retained by a retaining structure subject to approval by the Council.

2.11.8 On private land, batters should preferably be 1 in 4 or flatter for batters fronting the road reserve and 1 in 2 elsewhere. Batters steeper than 1 in 2 may be approved subject to the submission of an acceptable landscape treatment.

2.11.9 All batters steeper than 1 in 2 and higher than 1.5m shall require certification as to stability by a Registered Professional Geotechnical Engineer (RPEQ).

DG 2.12 Allotment Accesses

2.12.1 The slope of the natural surface can result in difficulty in providing vehicular access to allotments fronting the road. Driveway grades within the property should be limited for safety and amenity. Refer Table 2.1 for Maximum Driveway Grades

Table D2.1 Maximum Driveway Grades

Location	Desirable	Maximum
Residential	16.6% (1 in 6)	20% (1 in 5) for 6m in every 12m
Industrial	10% (1 in 10)	16.6% (1 in 6)
Maximum change in driveway grades – all areas[1]	8%	10%

Notes:

1. Change of grade is expressed algebraically as the change in gradient between the two roadway grades.

2.12.2 Steep allotment access (10% or greater) and drainage shall be designed and constructed to include the following (unless otherwise approved by Council):

2.12.2.1 The driveway must be a minimum of three (3) metre wide concrete slab, with barrier kerb and channel provided on one side for vehicular safety and drainage purposes;

2.12.2.2 The driveway shall be constructed in such a manner as to ensure that the crossfall of the driveway be one-way and directed into the hill, for vehicle safety and drainage purposes;

2.12.2.3 A turn around shall be provided adjacent to each of the proposed dwellings sufficient to allow turning movements for an emergency services vehicle;

2.12.2.4 The driveway shall be located to minimise the visual impact, and minimise the amount of earthworks required; and

2.12.2.5 Both sides of the areas adjacent to the driveway shall be re-vegetated to minimise visual impact. This information is to be included in the application for engineering approval.

DG 2.13 Retaining Walls

2.13.1 All retaining walls are to be 150mm from the property boundary or back for the footing to be wholly contained within the allotments that the retaining wall sits.

2.13.2 Council will allow retaining walls to be constructed up to a maximum height of 1.0m without structural certification provided they are constructed fully in accordance with the technical literature provided by the manufacturer (i.e. Koppers logs, Keystone or similar).

2.13.3 All retaining walls greater than 1.0m high must be designed, detailed and certified by a structural RPEQ. Structural certification and geotechnical assessment if required shall be submitted to Council with design submission.

2.13.4 Retaining walls shall be designed to consider the location of any adjacent services (e.g. sewer). The minimum horizontal clearance between any adjacent services and the outermost edge of the retaining wall structure shall 800mm and outside the zone of influence whichever is the greater. Retaining walls must be designed to ensure that no imposed loads are applied directly to service infrastructure. Retaining walls adjacent to services shall be subject to Council approval.

2.13.5 Retaining walls associated with residential allotments or stormwater drainage must have a design life of 60 years.

2.13.6 All retaining walls must comply with the requirements of AS 4678 – Earth retaining structures.

DG 2.14 Earthworks on Hillslopes

2.14.1 Where earthworks are proposed in any development where the slope of the land exceeds 15% (unless otherwise agreed), Council requires a report from a qualified Geotechnical RPEQ addressing slope stability and construction issues.

2.14.2 The designer shall incorporate the specific measures and recommendation contained within the geotechnical report to control soil and rock movements into the design of roads and house bench pads.

2.14.3 Where batters are 2.0 meters or higher a risk assessment is to be undertaken by the Engineer to determine if fencing is required to be undertaken in accordance with the relevant Australian Standard.

DG 2.15 Earthworks to Parks

2.15.1 All earthworks within proposed or existing parkland shall:
- 2.15.1.1 Be adequately drained;
- 2.15.1.2 Have no batters exceeding 1 in 10; and
- 2.15.1.3 Have acceptable landscaping in accordance with Council's minimum standards.

DG 2.16 Footpaths/Verge Crossfall

2.16.1 All footpaths / verges shall fall from the frontage property boundary to the adjacent kerb and Whitsunday Regional Council Planning Scheme 2017– Schedule 6 –June 2017 (V3.5) 77 channel with acceptable crossfalls of between 2.5% - 5%. In the case where the allotment falls away from the road reserve (i.e. the allotment is lower than the level of the road), the footpath / verge shall have a minimum fall from the frontage property boundary to the adjacent kerb of 3%.

DG 2.17 Topsoiling and Grassing

2.17.1 Topsoil is defined as surface soils high in organic matter and contaminated by residual grass seeds and grass roots.

2.17.2 The area under paved areas, footpaths, batters and areas of fill shall be stripped of topsoil and any other organic matter.

2.17.3 On the completion of the works, topsoil shall be re-spread to allotments, batters and footpaths and fill areas to a depth of 75mm with an absolute minimum of 40mm.

2.17.4 The footpath areas, batters and all disturbed areas including allotments are to be trimmed and drill seeded with an approved grass species.

2.17.5 All cut and fill batters shall be hydro-mulched or approved equivalent.

DG 2.18 Inspection Requirements

2.18.1 Inspections and testing requirements for all allotments and roads shall be to Level 1 in accordance with AS 3798 “Guidelines on Earthworks for Commercial and Residential Developments”.

2.18.2 A higher level of inspection and testing may be required for more significant works as determined by Council.

2.18.3 Council may approve a lower level of inspection and testing for minor works and drainage works.

DG 3 - DESIGN GUIDELINES – Road Pavements

General

DG 3.1 Scope

3.1.1 This section sets out the minimum standards for the design of the road pavement to meet the required design life, based on the subgrade strength, traffic loading and environmental factors, and including the selection of appropriate materials for select subgrade, subbase, base and wearing surface.

3.1.2 The Manual contains procedures for the design of the following forms of road pavement construction:

- 3.1.2.1 Flexible pavements; and
- 3.1.2.2 Rigid pavements (i.e. concrete pavements).

3.1.3 Generally flexible pavements designed in accordance with this manual are preferred for road pavement construction in North Queensland. Council may examine pavement designs for rigid pavements subject to detailed engineering submissions of any such proposals. Council reserves the right to refuse any alternate proposal for pavement design.

DG 3.2 Objectives

3.2.1 The objective in the design of the road pavement is to select appropriate pavement and surfacing materials, types, layer thicknesses and configurations to ensure that the pavement performs adequately and requires minimal maintenance under the anticipated traffic loading for the design life adopted.

DG 3.3 Reference Documents

3.3.1 Department of Transport and Main Roads

- 3.3.1.1 Pavement Design Supplement
- 3.3.1.2 MRTS 30Asphalt Pavements
- 3.3.1.3 Road Planning and Design Manual Chapter 3 Appendix A 1st Edition

3.3.2 AUSTROADS / ARRB Publications

- 3.3.2.1 Guide to Pavement Technology
- 3.3.2.2 Guide to Road Design
- 3.3.2.3 Design of Sprayed Seals
- 3.3.2.4 ARRB-SR35 - Special Report No. 35 - Subsurface Drainage of Road Structures
- 3.3.2.5 APRG 21 - Report No. 21 - A guide to the design of new pavements for light traffic

3.3.2.6 Special Report No. 35 Subsurface Drainage of Road Structures
3.3.2.7 Guide to Pavement Structural Design
3.3.2.8 Technical Report – Pavement Design for Light Traffic – A supplement to Austroads Pavement Design Guide AP-T36/06

3.3.3 Cement and Concrete Association of Australia.
3.3.3.1 T51 Concrete Pavement Design for Residential Streets and Paths

3.3.4 Concrete Masonry Association of Australia.
3.3.4.1 T44 Concrete Segmental Pavements - Guide to Specifying
3.3.4.2 T45 Concrete Segmental Pavements - Design Guide for Residential Access Ways and Roads
3.3.4.3 T46 Concrete Segmental Pavements - Detailing Guide

Pavement Design Criteria

DG 3.4 Design Variables

3.4.1 Regardless of the type of road pavement proposed, the design of the pavement shall involve consideration of the following five input variables:
3.4.1.1 Design Traffic;
3.4.1.2 Subgrade Evaluation;
3.4.1.3 Environment Factors;
3.4.1.4 Pavement and Surfacing Materials; and
3.4.1.5 Construction and Maintenance Considerations

DG 3.5 Design Traffic

3.5.1 The design traffic shall be calculated based on the following minimum design lives of pavement:
3.5.1.1 Flexible - 20 years;
3.5.1.2 Rigid (Concrete) - 40 years; and
3.5.1.3 Segmental Block - 25 years.

3.5.2 Unless determined otherwise by the Council, the minimum number of design Equivalent Standard Axles (ESA's ie, 80 kN axle load passes) for the various road categories shall be as calculated in accordance with the requirements of the AUSTRODS publications Guide to Pavement Technology and APRG Report 21 - A guide to the design of new pavements for light traffic. For design traffic volumes approaching or exceeding 5 x 10^5 ESA's (Trunk Collector Street), Department of Transport and Main Roads' Pavement Design Manual shall be used.

3.5.3 Design traffic shall be calculated for the applicable design life of the pavement, taking into account present and predicted commercial traffic volumes, axle loadings and configurations, commercial traffic growth and street capacity. For new subdivisions, the design traffic shall take account of both the construction

traffic associated with the subdivision development, the in-service traffic, proposed and potential public transport routes and connection to adjacent development.

3.5.4 For interlocking concrete segmental pavements, the simplification of replacing ESA's with the number of commercial vehicles exceeding 3 tonne gross contained in CMAA – T45 is acceptable up to a design traffic of 5×5^5.

3.5.5 The pavement design shall include all traffic data and/or assumptions made in the calculation of the design traffic.

3.5.6 In the absence of other traffic data, the traffic values provided in Table D3.1 may be taken as a Whitsunday Regional Council Planning Scheme 2017– Schedule 6 –June 2017 (V3.5) 82 guide to the minimum design traffic, but shall be subject to variation depending on the circumstances for the particular development.

Table D3.1 Minimum Traffic Loadings

Street Type	%CV[1]	%ESA/CV	Minimum ESA's
Urban			
Access Place	3.6	1.0	$5x10^4$
Access Street	5	1.0	$1x10^5$
Minor Collector Street	7	1.0	$5x10^5$
Major Collector Street	10	1.0	$1x10^6$
Sub Arterial	10	1.0	$3.25x10^6$
Rural			
<250vpd	5	1.0	$2.5x10^5$
>250vpd	9	1.0	$2.5x10^6$
Industrial	To be determined by specific design data		$5x10^5$
Business/Commercial	To be determined by specific design data		$5x10^5$

Notes:

1. Consider potential for bus routes.

DG 3.6 Subgrade Evaluation

3.6.1 Subgrade evaluation shall be carried out by a NATA registered materials test authority on each different natural sub-grade material evident and shall be by the conduct of soaked 4 day CBR laboratory testing.

3.6.2 Design CBR for each subgrade area shall be determined in accordance with the method outlined in AUSTROADS publications Guide to Pavement Technology and ARRG Report 21 - A guide to the design of new pavements for light traffic.

3.6.3 The following factors must be considered in determining the design strength/stiffness of the subgrade:

3.6.3.1 Sequence of earthworks construction;

3.6.3.2 The compaction moisture content and field density specified for construction;
3.6.3.3 Moisture changes during service life;
3.6.3.4 Subgrade variability; and
3.6.3.5 The presence or otherwise of weak layers below the design subgrade level.

3.6.4 The subgrade Design CBR adopted for the pavement design must consider the effect of moisture changes in the pavement and subgrade during the service life, and hence consideration must be given to the provision of subsurface drainage in the estimation of equilibrium in-situ CBRs, and hence in the design of the pavement structure.

3.6.5 If the in situ subgrade test results in a CBR of 3 or less, the pavement is to be designed with input from RPEQ engineer experienced in the design of road pavements.

DG 3.7 Environment Factors

3.7.1 The environmental factors, which significantly affect pavement performance, are moisture and temperature. Both of these factors must be considered at the design stage of the pavement. Reference should be made to AUSTROADS publications Guide to road Design and Special Report No. 35 Subsurface Drainage of Road Structures.

3.7.2 The following factors relating to moisture environment must be considered in determining the design subgrade strength/stiffness and in the choice of pavement and surfacing materials:
3.7.2.1 Rainfall/evaporation pattern;
3.7.2.2 Permeability of wearing surface;
3.7.2.3 Depth of water table;
3.7.2.4 Relative permeability of pavement layers;
3.7.2.5 Whether shoulders are sealed or not;
3.7.2.6 Pavement type (boxed or full width); and
3.7.2.7 Subject to flooding (e.g. Causeways and Floodways).

3.7.3 The effect of changes in moisture content on the strength/stiffness of the subgrade shall be taken into account by evaluating the design subgrade strength parameters (i.e. CBR or modulus) at the highest moisture content likely to occur during the design life, i.e. the Design Moisture Content. The provision of subsurface drainage may, under certain circumstances, allow a lower Design Moisture Content, and hence generally higher Design CBR.

3.7.4 The pavement design shall include all considerations for environmental factors, and any assumptions made that would reduce or increase design subgrade strength or affect the choice of pavement and surfacing materials.

DG 3.8 Materials Testing

3.8.1 All materials testing shall be carried out by a NATA registered materials testing authority using the procedures described in the manuals or codes of practice as appropriate to Department of Transport and Main Roads and Standards Association of Australia.

Pavement Thickness Design

DG 3.9 Pavement Structure – General

3.9.1 The minimum pavement provided shall be as detailed in Table D3.2

Table D3.2 Minimum Pavement Design Criteria

Street Type	Minimum Pavement (mm)[1]	Surface Treatment	Minimum Base Course CBR	Minimum Subbase Course CBR
Access Place / Access Street / Residential Street	200	Minimum 30mm AC	80	45
Collector Streets **- Minor** **- Major**	 250 250	Minimum 30mm AC Minimum 30mm AC	 80 80	 45 60
Sub Arterial	300	50mm AC	80	60
Rural & Rural Residential **<100vpd** **100-999vpd** **>1000vpd**	 150 200 200	Gravel Two Coat Seal Two Coat Seal	 60 80 80	 45 45 60
Industrial	250	50mm AC	80	60

Notes:

1. **Minimum pavement thickness does not include the depth of surfacing.**
2. **All cul-de-sac heads and intersection turnouts in Rural and Rural Residential developments are required to have a 30mm asphalt surface treatment or concrete as a minimum.**

3.9.2 Notwithstanding subgrade testing and subsequent pavement thickness design, the thickness of subbase and base layers shall not be less than the following:
3.9.2.1 Flexible payment: Subbase 100mm, Base 100mm

3.9.2.2 Rigid pavement: Subbase 100mm, Base 150mm

3.9.3 The subbase layer shall extend a minimum of 150mm behind the rear face of any kerbing.

3.9.4 The base and surfacing shall extend to the face of any kerbing. Where the top surface of the subbase layer is below the level of the underside of the kerbing and/or guttering, the base layer shall also extend a minimum of 150mm behind the rear face of the kerbing. Regardless of pavement design, all kerbing to be constructed on a minimum of 100mm pavement material.

3.9.5 For un-kerbed roads, the subbase and base layers shall extend at least to the nominated width of shoulder.

3.9.6 A change of pavement types may be considered for intersection thresholds and traffic control features.

DG 3.10 Flexible Pavements

3.10.1 Flexible pavements with a design traffic up to 5 x 10^5 ESA's shall be designed in accordance with AUSTROADS publications Guide to Pavement Technology and ARRG Report 21 - A guide to the design of new pavements for light traffic.

3.10.2 Flexible pavement with a design traffic above 5 x 10^5 ESA's shall be designed in accordance with Department of Transport and Main Roads' Pavement Design Manual.

3.10.3 In areas of high water table (within 300mm of subgrade level). Base course should be cement modified (1% by weight)

3.10.4 Concrete segmental pavements with design traffic up to 5 x 10^5 and estimated commercial vehicles exceeding 3T gross shall be designed in accordance with CMAA-T45.

3.10.5 For design traffic above 5 x 10^5 estimated commercial vehicles exceeding 3T gross the design shall be in accordance with AUSTROADS Guide to Pavement Technology with the calculation of design traffic in terms of ESA's.

DG 3.11 Rigid Pavements

3.11.1 Rigid (concrete) pavements, with design traffic up to 5 x 10^5 ESA's shall be designed in accordance with either CCAA -T51 or AUSTROADS Guide to Pavement Technology.

3.11.2 Rigid (concrete) pavements for design traffic above 5 x 10^5 ESA's, the design shall be in accordance with AUSTROADS Guide to Pavement Technology.

Surfacing Design

DG 3.12 Bitumen Wearing Surface

3.12.1 Except where the pavement is designed for asphaltic concrete or segmental paver surfacing or where a gravel pavement is permitted, the wearing surface shall be a bituminous as follows:

- 3.12.1.1 Urban Residential, Low Density Residential – Primer or primer seal, plus 2 seal coats of sprayed bitumen) Seal (14mm / 7mm Aggregate) (only permitted where widening existing bituminous seals)
- 3.12.1.2 Rural & Rural Residential - Primer or primer seal, plus 2 seal coats of sprayed bitumen Seal (16mm / 10mm Aggregate).

DG 3.13 Segmental Pavers

3.13.1 Segmental pavers shall be concrete segmental pavers 80mm thick, shape Type A, and designed to be paved in a herringbone pattern unless otherwise approved by Council. Concrete segmental pavements are only to be used for pathways and local pavement 'highlight' features (e.g. 'threshold' treatments). The use of clay pavers on road wearing surfaces is not permitted.

3.13.2 The edges of all paving shall be constrained by either kerbing and/or guttering, or by concrete edge strips.

3.13.3 Sand bedding layers are to be provided with adequate drainage.

DG 3.14 Asphaltic Concrete

3.14.1 All roadworks shall be surfaced with an appropriate thickness of Asphaltic Concrete in accordance with Table D3.2.

3.14.2 Council requires the use of dense graded asphalt on all roads.

3.14.3 All roads greater than 10% in grade shall have a 10mm primer seal or other Council approved measure applied to the base course prior to the placement of the AC.

3.14.4 Asphalt Surfacing:

- 3.14.4.1 Where asphalt surfacing is required to be between 30mm and 50mm, it is considered to function as a wearing surface only;
- 3.14.4.2 Asphalt 40mm or thicker is required to be a dense graded asphalt (DG14) in accordance with Department of Transport and Main Roads' MRTS 30;
- 3.14.4.3 Asphalt of 30 – 40 mm thickness must be a dense graded asphalt (AC10) in accordance with Austroads; and
- 3.14.4.4 A light prime is to be applied over the pavement material prior to the asphalt being laid.

DG 3.15 Subsoil Drains

3.15.1 Subsoil or sub-pavement drains shall be provided on both sides of the formation in the following Whitsunday Regional Council Planning Scheme 2017– Schedule 6 –June 2017 (V3.5) 89 locations, unless the geotechnical report indicates the absence of subsurface moisture at the time of investigation and the likelihood that changes in the subsurface moisture environment will not occur within the design life of the pavement and/or the pavement has been specifically designed to allow for likely variations in subgrade and pavement moisture contents:

- 3.15.1.1 Cut formations where the depth to finished subgrade level is equal to or greater than 400mm below the natural surface level;
- 3.15.1.2 Locations of known hillside seepage, high water table or isolated springs;
- 3.15.1.3 Irrigated, flood-prone or other poorly drained areas;
- 3.15.1.4 Subgrades, which are highly susceptible to moisture, (i.e. commonly displaying high plasticity or low soaked CBRs);
- 3.15.1.5 Pavement materials, which are susceptible to moisture;
- 3.15.1.6 Existing pavements displaying signs of distress due to excess subsurface moisture; and
- 3.15.1.7 At cut to fill transitions.

3.15.2 Subsoil drains shall always be installed to all grassed/landscaped central medians and islands, unless otherwise approved by Council.

3.15.3 Where only one side of the formation is in cut, and the other side in fill, it may be sufficient to provide subsoil or sub-pavement drains only along the edge of the formation in cut.

3.15.4 In some circumstances it may be necessary to note on the engineering design the need for additional subsoil and sub-pavement drains that may become apparent during the construction process, due to changes in site moisture conditions or to areas of poorer subgrade being uncovered that were not identified in the geotechnical investigation.

3.15.5 The requirements for subsoil drains should be assessed and designed by a registered geotechnical engineer or specialist pavement engineer.

3.15.6 Subsoil drains shall be constructed in accordance with Council's Standard Drawing.

3.15.7 In kerbed roads, the preferred location for the line of the trench is directly behind the kerb.

3.15.8 In un-kerbed roads, subsoil and sub-pavement drains shall be located within the shoulder, preferably at the edge of the pavement layers.

3.15.9 At the time of sub-soil drainage installation tree root barriers are to be installed in the appropriate locations and the kerb suitably marked (temporarily) to indicate where the tree is to be planted.

3.15.10 The minimum desirable longitudinal design grade shall be 1.0 - 1.5%. (Absolute minimum grade of 0.5%).

3.15.11 Trench widths shall be a minimum of 300mm, with a minimum depth below finished subgrade level of 300mm in earth and 200mm in rock. All subsoil drain trenches shall be wrapped in an appropriate geotextile fabric.

3.15.12 Outlets shall be spaced at maximum intervals of 150 metres. Where possible, subsoil and subpavement drainage pipes shall discharge into gully pits or other stormwater drainage structures. Where not possible, outlets shall be provided through fill batters.

3.15.13 Flushing Points are to be provided at the commencement of each run of drain, and at intervals not exceeding 50 metres. Flushing points shall generally be located directly at the rear of kerb or at the edge of shoulder, as applicable.

3.15.14 Flushing Points and Outlets shall be constructed in accordance with Council's Standard Drawing.

DG 3.16 Drainage Mat (Blankets)

3.16.1 Drainage mats are designed where there is a need to ensure continuity of a sheet flow of water under fills, to intercept and control seepage water and springs in the floors of cuttings, to intercept water which would otherwise enter pavements by capillary action or for protection of vegetation or habitat downstream of the road reserve where a fill would otherwise cut the flow of water.

3.16.2 In embankments drainage mats are constructed after the site has been cleared and grubbed and before commencement of embankment construction.

3.16.3 In excavations drainage mats are constructed after completion of the subgrade construction and before construction of the pavement.

3.16.4 The minimum thickness of compacted filter material shall be 300mm plus an allowance for the expected consolidation or 500mm if the amount of consolidation of embankment foundation is not known.

3.16.5 The requirements for and design of drainage mats shall be undertaken by a geotechnical engineer experienced in the design of road pavements.

3.16.6 All drainage mats shall be wrapped in appropriate geotextile.

DG 4 – DESIGN GUIDELINES – Stormwater Drainage

General

DG 4.1 Scope

4.1.1 This section sets out the minimum standards for the design of stormwater drainage systems for urban and rural areas.

4.1.2 The designer needs to make reference to the associated design manuals related to D1 Road Geometry and D5 Stormwater Quality Management.

4.1.3 The Queensland Urban Drainage Manual (QUDM) shall be the basis for the design of stormwater drainage, except as amended by these manuals.

DG 4.2 Objectives

4.2.1 The objectives of stormwater drainage design are as follows:

4.2.1.1 To collect and convey stormwater from a catchment to its receiving waters with minimal nuisance, danger or damage and at a development and environmental cost which is acceptable to the community as a whole;

4.2.1.2 Limit flooding of public and private property, both within the catchment and downstream, to acceptable levels; and

4.2.1.3 To provide convenience and safety for pedestrians and traffic in frequent stormwater flows by controlling those flows within prescribed velocity/depth limits.

4.2.2 For new developments a stormwater drainage system in accordance with the "major/minor" system concept in accordance with QUDM; that is, the "major" system shall provide safe, well-defined overland flow paths for rare and extreme storm runoff events while the "minor" system shall be capable of carrying and controlling flows from frequent runoff events.

4.2.3 For redevelopment areas where the proposed development replaces an existing development, the on-site drainage system is to be designed in such a way that the estimated peak flow rate from the site for the design average recurrence interval (ARI) of the receiving minor system is no greater than that which would be expected from the existing development and is not concentrated in such a way as to cause nuisance to downstream properties.

DG 4.3 Reference Documents

4.3.1 Department of Energy and Water Supply - Queensland Urban Drainage Manual Institute of Engineers Australia.

4.3.2 Australian Rainfall and Runoff - A Guide to Flood Estimation Australian Standards

4.3.3 AS 3600-2009 Concrete Structures.

DG 4.4 General

4.4.1 The QUDM shall be the basis for design of stormwater drainage except where amended by these manuals.

4.4.2 Minor system flows (as defined by QUDM) are to be conveyed underground to a legal point of discharge unless otherwise approved by Council.
4.4.3 Councils have or are in the process of producing drainage management plans for particular catchments within their boundaries.
4.4.4 The design of the stormwater drainage system, for the development shall be such that the upstream drainage is not adversely affected and that the downstream drainage system is capable of adequately catering for the discharge of the modified flow produced as a result of the development.
4.4.5 If the downstream system is not capable of carrying the modified discharge, the designer shall indicate the measures proposed to ensure the downstream system is capable of carrying the modified discharge. This will involve negotiation with adjoining landowners for minor creek systems to produce easements over downstream drainage paths. Written approval from the respective property owners is required for the easement and any engineering works on their property from the development site to the legal point of discharge.
4.4.6 Alternatively, where a development will result in increased runoff the stormwater drainage system may include on-site measures to such as detention basins, to ensure that the peak discharge from the development area is restricted to a level no greater than that discharging prior to the development.
4.4.7 All works proposed within creeks and natural watercourse, or lands under the control of other Authorities must have the approval of all relevant authority prior to commencing the work and evidence of such approvals shall be provided with the design submission.
4.4.8 The design of the stormwater drainage system shall accommodate the future developed peak flows from upstream catchments on the basis of development in accordance with the Planning Scheme.
4.4.9 The designer shall be responsible for assessing the existing and future developed flow regime entering the development site from upstream catchments and shall provide detailed calculations with the design submission.
4.4.10 Unless approved otherwise by the Council, piped drainage systems shall extend to the boundaries of the subject land, with inlet and discharge works within the subject property.
4.4.11 All Material and components of the Stormwater Drainage system shall be durable and fit for purpose, with a minimum lifespan 60 years.

DG 4.5 Design Average Recurrence Interval

4.5.1 Design Average Recurrence Interval (ARI) shall be in accordance with Table D4.1 (modified from QUDM Table 7.3.1).
4.5.2 For the purpose of drainage, a major road shall be defined as a major collector or higher order road.

Table D4.1 Recommended Design Average Recurrence Intervals

Design Type	ARI Interval (years)	
Major System Design	100	
Minor System Design		
Central Business & Commercial	10	
Industrial	5	
Urban Residential High Density (greater than 20 dwelling units/ha)	10	
Urban Residential Low Density (greater than 5 and up to 20 dwelling units/ha)	5	
Rural Residential (2 to 5 dwelling units/ha)	5	
Open Space (Parks etc)	1	
Major Road	Kerb & Channel Flow	10[1]
	Cross Drainage (Culverts)	50[2]
Minor Road	Kerb & Channel Flow	Refer to relevant category in QUDM
	Cross Drainage (Culverts)	10[2]

1. The design ARI for the minor drainage system in a major road shall be that indicated for the major road, not that for the Development Category of the adjacent area; and

2. Culverts under roads should be designed to accept the full flow for the minor system ARI shown, in addition, the designer must ensure adequate public safety controls (e.g. D*V product) exist and that nominated Major Storm flow does not cause unacceptable damage to adjacent properties, or adversely affect the use of the land. If upstream properties are at a relatively low elevation, it may be necessary to install culverts of capacity greater than that for the minor system ARI design storm to ensure unacceptable flooding of upstream properties does not occur. In addition, the downstream face of causeway embankments may need protection where overtopping is likely to occur.

DG 4.6 Design Rainfall Data

4.6.1 Design Intensity Frequency Duration (IFD) Rainfall Charts can be obtained from http://www.bom.gov.au/water/designRainfalls/revised-ifd/?year=2016. The IFD Chart for the nearest suburb should be used for stormwater drainage design.

DG 4.7 Catchment Area

4.7.1 The catchment area of any point is defined by the limits from where surface runoff will make its way, either by natural or man-made paths, to this point. Consideration shall be given to likely changes to individual catchment areas due to the full development of the catchment.

4.7.2 The catchment boundary shall be determined by using the most accurate information available and details of catchments shall be provided to Council with the design submission.

DG 4.8 Kerb Inlets and Manholes

4.8.1 Kerb Inlet pits shall be in accordance with Council's Standard Drawings. All pits are to be recessed sufficiently to maintain a continuous lip line in accordance with these drawings. Alternate proprietary kerb inlets systems may be used only where approved by Council.

4.8.2 Where alternate proprietary kerb inlets systems have been approved for use by a Council, a copy of certified inlet capacity design charts for the alternate inlets shall be provided to Council with the design submission.

4.8.3 Blockage factors shall be used for the design of the drainage system as shown in Table D4.3.

Table D4.3 Kerb Inlet Blockage Factors

Inlet Type	Blockage Factor
On Grade – Side Entry (no grate)	20%
On Grade – Side Entry (with grate)	10%
On Grade – Grate Only	50%
Sag - Side Entry (no grate)	20%
Sag – Side Entry (with grate)	Nil
Sag – Grate Only	50%

4.8.4 The kerb inlet capacity design charts shall be used in accordance with the following:

4.8.4.1 Curves indicated on the charts that are shown in full are considered "Reliable" curves;

4.8.4.2 Curves indicated on the charts that are shown dashed up to an Approach Flow of 250 l/sec are considered "Satisfactory" for use;

4.8.4.3 Curves indicated on the charts that are shown dashed with an Approach Flow in the range 250 l/sec to 500 l/sec are "Estimates Only" and are to be used with caution in critical locations; and

4.8.4.4 No extrapolation beyond the limits of these charts shall be permitted.

4.8.5 Side entry pits with grates are preferred. Grated inlet pits with no side entry shall only be used in areas with a low risk of consequential damage from blockage and shall be subject to Council approval.

4.8.6 Manholes shall be provided on stormwater drainage lines in accordance with the requirements of QUDM. Manholes for pipes up to 1200mm dia shall be constructed in accordance with the Council's Standard Drawings. Council may examine proposals for the use of proprietary manufactured directional changes for stormwater systems and the acceptance of these will be subject to the satisfaction of the Council.

4.8.7 Other factors to be considered in the design are as follows:

- 4.8.7.1 Pits to be free draining;
- 4.8.7.2 Kerb inlet pits at intersections generally are to be located at the tangent point taking into account the position of pedestrian paths and kerb ramps. Inlets shall not be placed on kerb return unless specifically approved by Council;
- 4.8.7.3 Reductions in pipe sizes shall not be permitted; and
- 4.8.7.4 Pipework openings are to be located within a single wall. i.e. pipes shall not be permitted to enter through the corner of the pit structure.

4.8.8 The desirable maximum inlet pit depth should be limited to 1.5m to enable maintenance.

4.8.9 The desirable minimum and maximum stormwater manhole depth is to be limited to 1.2m and 3.0m respectively.

4.8.10 Inlet pits should be located at the mid-point of allotment frontages to reduce the likelihood of conflict with service conduits and future driveways.

DG 4.9 Pipes/Box Culverts

4.9.1 Stormwater drainage pipes and boxes shall be generally of reinforced concrete (including FRC) construction and in accordance with the following:

- 4.9.1.1 Minimum pipe size 375mm dia, minimum box culvert size 450mm x 300mm;
- 4.9.1.2 Minimum clear cover shall be 600mm in general or in accordance with manufacturers specification, otherwise approved by the Council;
- 4.9.1.3 The minimum vertical and horizontal clearances between a stormwater pipe and any other pipe or service conduit shall be 150mm;
- 4.9.1.4 In areas of high water table, the designer must consider buoyancy uplift in relation to pipe/culvert joints; and
- 4.9.1.5 In aggressive environments or where any part of the pipe / box culvert is below the Highest Astronomical Tide (refer to Queensland Tide Table for local conditions), pipes / box culverts will have cover to reinforcement in accordance with the exposure classification requirements of AS 3600.

DG 4.10 Overland Flow

4.10.1 Overland flow paths or emergency relief paths shall be formed and located in accordance with the requirements of QUDM. The following additional requirements shall also be required.

- 4.10.1.1 Where a pathway link is used for overland flow the pathway shall be concrete for its full width, shall have a maximum crossfall of 2.5 % and be constructed with a layback kerb and channel or approved equivalent along one edge. The ARI 100 year flow shall be contained completely within the pathway;
- 4.10.1.2 The footpath profile at the overland flow tip out point shall be designed to provide a fall from the kerb at the road edge towards the pathway / park;
- 4.10.1.3 Flows through parks shall have non-erosive velocity or adequate protection against scouring to the satisfaction of Council;
- 4.10.1.4 Where a stormwater pit is required to be aligned with a pathway for overland flow, the pedestrian path is to be offset and appropriate measures provided to guide pedestrians away from the pit and remove any potential hazards; and
- 4.10.1.5 Where flows discharge into receiving waters or drainage reserves, adequate protection against scouring of the batter slope shall be provided to the satisfaction of Council.

DG 4.11 Drainage Calculations

4.11.1 If a legal point of discharge and tailwater conditions have not been provided by Council as development conditions, they shall be confirmed with Council prior to proceeding with detailed design.

4.11.2 Hydraulic calculations shall generally be carried out in accordance with QUDM. The calculations shall substantiate the hydraulic grade line adopted for design of the system. A sample of a summary sheet for hydraulic calculations is given in QUDM.

4.11.3 Catchment plans and hydraulic calculations including any additional calculations in support of overland flow path capacities, weir flows over kerbs, culvert designs etc. shall be provided to Council with the design submission. Where a hydraulic modelling programme is used, calculations to be provided with the design including listings of all programme input parameters.

DG 4.12 Open Channels

4.12.1 Generally, open channels will only be permitted where they form part of the trunk drainage system and shall be designed to have smooth transitions with adequate access provisions for maintenance and cleaning. Where Council

permits the use of an open channel to convey flows from a development site to the receiving water, such a channel shall be designed in accordance with QUDM.

4.12.2 Maximum side slopes on grass lined open channels shall be 1 in 4, with a preference given to 1 in 6 side slopes, channel inverts shall generally have minimum cross slopes of 1 in 10.

4.12.3 Low flow provisions in open channels to prevent scouring from trickle flows shall be provided to all grass lined channels. Trickle flow protection shall be contained within a pipe or hard lined channel and shall be designed to cater for the 3 month ARI storm event (60 per cent of the 1 Year ARI storm event flow).

4.12.4 Subsurface drainage shall be provided in grass-lined channels to prevent waterlogging of the channel bed.

4.12.5 Profiles of all grass lined channels shall such that mowing may be undertaken by a tractor and slasher to the satisfaction of Council.

4.12.6 Where the flow velocity and / or depth within an open channel pose a safety hazard, barrier fencing and / or appropriate hazard warning signs shall be provided to discourage access to the channel. The extent of precautions should be determined following consultation with Council.

4.12.7 The depth velocity product and the gutter flow widths are to be included in the submitted drainage calculations.

DG 4.13 Allotment Drainage

4.13.1 Interallotment drainage systems must be designed in accordance with *Q.U.D.M section 7.13*. The minimum standard shall be Level 3 as defined in *Q.U.D.M table 7.13.4*, however the Engineer may direct a higher level for specific developments or parts thereof.

4.13.2 Interallotment drainage system must be provided to all allotments where:

- 4.13.2.1 Any part of the allotment falls away from the frontage roadway; or the mid-block finished surface level is less than 600 mm above the lowest invert level along the frontage kerb and channel.

4.13.3 Interallotment pipes shall generally be:

- 4.13.3.1 R.C. Pipe (minimum class 2) rubber ring jointed;
- 4.13.3.2 F.R.C pipe rubber ring jointed; and
- 4.13.3.3 uPVC pipes to be rubber ring jointed. Standard manufactures fittings shall be used in all cases: site fitted saddles are not permitted.

4.13.4 Interallotment drainage system shall be discharged into an underground drainage system or approved open channel. Discharge of interallotment systems to kerbs and channel shall not be permitted.

4.13.5 The depth of the house connection shall be determined as follows (subject to the above minimum);

- 4.13.5.1 Determine the longest run of house drain to the connection point possible within the allotment;
- 4.13.5.2 Allow 0.3 meters cover to the house drain at the head of the line; and
- 4.13.5.3 Allow minimum grade of 1 in 100 for the house drain.

4.13.6 Inspection manholes may be precast or cast insitu concrete boxes or precast FRC or RC pipe systems to the dimensions shown in table D4.4.

Table D4.4 Inspection Manholes

Maximum Depth to invert (mm)	Boxes – internal dimensions (mm)	FRC or RCP Systems
900	600 x 600	600mm diameter
>900	600 x 900	750mm diameter
Minimum wall thickness	100[1]	N/A

Notes:

1. **Precast boxes shall be approved prior to installation, wall thickness may vary according to manufacturer.**

4.13.7 Manholes shall be provided in the following locations:

4.13.7.1 One per lot;
4.13.7.2 Changes in grade;
4.13.7.3 Changes in direction;
4.13.7.4 Changes in pipe diameter; and
4.13.7.5 End of lines.

DG 4.14 Telemetry Systems

4.14.1 Where required by the Local Authority pump station control panel shall incorporate SCADA equipment for transmission of monitoring data and control to Council's existing master system. Council should be contacted to obtain a copy of their Technical Specification for Telemetry Systems.

4.14.2 It should be noted that where amalgamated Councils have varying telemetry systems, left over from pre-amalgamation Councils, pump station telemetry systems and requirements may vary within that Council and requirements must therefore be reconfirmed as a part of the design.

DG 4.15 Retaining Walls

4.15.1 Where retaining walls are incorporated in the retention of earth batters, adequate drainage shall be incorporated behind the top of the wall to ensure surface stormwater flows do not flow over the top of the wall but are contained in a designed system to pass the wall.

4.15.2 Appropriate scour protection is to be provided to the base of the wall.

4.15.3 Retaining walls within drainage lines must be block and concrete core filled, with weepholes, Design drawings to be provided to Council.

DG 4.16 Detention Basins

4.16.1 Detention basins may be considered as drainage solutions but shall be subject to approval of Council. Where approved detention basins shall be designed in accordance with QUDM.

DG 4.17 Headwalls

4.17.1 Pipe / Box culvert headwalls shall be in accordance with the Department of Transport and Main Roads Standard Drawings 1303 – 1306 and 1318 Proprietary precast headwall may also be used as an alternative to cast insitu structures.

4.17.2 The designer shall ensure that in addition to standard aprons and cut-off walls adequate protection works commensurate with design velocities and flows shall be provided to prevent downstream scouring and erosion.

4.17.3 Where floodgates are to be used, headwalls and aprons shall be specifically designed to accommodate the floodgate and minimise the potential for debris and siltation to impede the operation of the floodgate. Most precast headwalls are not suitable for use with floodgates.

DG 4.18 Table Drains

4.18.1 Table drains shall generally be constructed with a minimum depth of 600mm or to a depth of 300mm below the pavement subgrade, whichever is greater.

4.18.2 Table drain profiles may be either v-shaped or trapezoidal. Reference should be made to the Local Authority Specific Requirements for each Councils preferred profile.

DG 4.19 Easements

4.19.1 Where stormwater drainage pipes pass through property other than a road reserve an easement shall be provided over the line in favour of the Council. The width of this easement is determined by the depth at which the stormwater pipe is laid and based on twice the depth to the pipe obvert plus the pipe diameter (with a minimum width of three (3) metres) and located centrally over the pipe.

4.19.2 If a stormwater pipe passes adjacent to a property and based on the above formula the area of influence passes within the property, an easement over that portion shall be required.

4.19.3 The width of easement shall contain the ARI 100 year storm flow from the upstream catchment or be three (3) metres wide, whichever is greater. 4. Allotment drainage or catch drains which have a change in horizontal alignment greater than 45 degrees shall be provided with concrete or wire-reinforced rock mattresses at such change points which shall be designed to cater for flows in accordance with QUDM.

4.19.4 Easement required over interallotment drainage systems must be built to a level 3 as defined in Q.U.D.M.

4.19.5 The property owner will be responsible for all routine above ground maintenance within interallotment drainage easements. Council shall be responsible for repairs of a capital nature. For example, the property owner must ensure that drainage paths are clear and kept unblocked at all times, such as removing leaves and debris.

DG 4.20 Outlet & Outlet Protection

4.20.1 Outlet into natural watercourse, open channels and tidal areas shall be designed in accordance with the requirements of QUDM.

4.20.2 Protection works to outlet shall be designed to meet the following criteria:

- 4.20.2.1 Dissipate the outflow velocity to minimise scouring;
- 4.20.2.2 Provide protection from stream flows in receiving waters;
- 4.20.2.3 Provide protection from overland (Major Storm) flows into receiving waters; and
- 4.20.2.4 Provide protection from local scouring or undermining of the outlet structure.

4.20.3 Where a headwall is located within the tidal splash zone, it will be designed to comply with the exposure classification requirements of AS 3600.

4.20.4 An energy dissipating outfall shall be provided where the velocity of the outflow or nature of the discharge from the pipe system into the receiving water could cause scouring in the receiving channel.

4.20.5 All tidal outlets shall be fitted with floodgates to prevent the intrusion of salt water into the system.

4.20.6 Outlets with floodgates shall be designed to ensure that they can operate freely at all times, and are protected from siltation, excessive vegetation growth, debris and the impacts of stream flows in the receiving waters.

4.20.7 The designer shall provide calculations to show that they have accounted for losses due to floodgates or other water control devices in the hydraulic design.

4.20.8 All outlets shall be located to facilitate inspection and maintenance access.

DG 5 – DESIGN GUIDELINES – Water Reticulation

General

DG 5.1 Scope

5.1.1 This document sets out the acceptable solutions for the planning, design and construction of water reticulation systems that are to be constructed by a Developer and handed to Council to operate. This section also covers certain service connection issues relating to development approvals and private infrastructure that needs to be to Council standards.

5.1.2 The water reticulation system shall be defined as mains less than 300mm diameter. Design of mains 300mm diameter and greater shall be subject to the specific criteria nominated by Council. All mains less than 300mm diameter shall be designed in accordance with this manual.

5.1.3 No connections will be permitted to bulk water supply mains that are used for the sole purpose of bulk water transfer of water to water reservoirs.

5.1.4 The planning, design, construction and certification of water reticulation infrastructure is to be carried out in accordance with the following provisions:

- 5.1.4.1 Council's general criteria as set out in these manuals and Council's Standard Specifications and Drawings that are based on the Desired Standards of Service;
- 5.1.4.2 The criteria contained within the Water Services Association of Australia WSA 03 – 2011 – Water Supply Code of Australia;
- 5.1.4.3 The designer shall note the Queensland Workplace Health and Safety – Guide to the Workplace Health and Safety Obligations of Designers of Structures and the design shall include the required Safety Design Report; and
- 5.1.4.4 For general guidance on infrastructure elements not contained within council's documents, the criteria contained within the Department of Energy and Water Supply Planning Guidelines for Water Supply and Sewerage may be used for guidance.

5.1.5 Aspects of modification or clarification of the Water Supply Code of Australia WSA 03 – 2011 are detailed in Appendix B of this document.

5.1.6 Council's Land Development Guidelines and Standard Specification and Drawings shall take precedence over the Water Services Association of Australia Codes and the Department of Energy and Water Supply Planning Guidelines for Water Supply and Sewerage.

DG 5.2 General

5.2.1 It is the Consulting Engineer's responsibility to ensure that the current version of this section is used and that all infrastructure is constructed in accordance with this section.

5.2.2 It is the Consulting Engineer's responsibility to ensure that all work is undertaken to council's requirements. Responsibility for supervision, testing, inspection, commissioning and remedial work rests with the Consulting Engineer.

5.2.3 Where a water supply source is being developed to service the development, the source shall either meet or exceed the Australian Drinking Water Guidelines 2011 (ADWG), or the developer shall provide the necessary infrastructure to treat the source to the ADWG, including disinfection before storage and/or distribution.

DG 5.3 Objective

5.3.1 The objective of a water supply system is to provide to the consumer a reticulated portable water supply to meet the demands imposed upon it by both the consumers and fire-fighting requirements.

DG 5.4 Reference Documents

5.4.1 Australian Standards:
- 5.4.1.1 AS/NZS 2566 Buried Flexible Pipelines
- 5.4.1.2 AS 2368 Test Pumping of Water Wells
- 5.4.1.3 AS 3952 Water Supply – Spring Hydrant Valve for Waterworks Purposes

5.4.2 National Health and Medical Research Council

5.4.3 Australian Drinking Water Guidelines

5.4.4 QLD Government Legislation
- 5.4.4.1 Water Act
- 5.4.4.2 Water Supply (Safety and Reliability) Act Water Services Association of Australia
- 5.4.4.3 WSA 03 – 2011 – Water Supply Code of Australia
- 5.4.4.4 WSA 01 –2004- Polyethylene Pipeline Code Information and Guidance Note
- 5.4.4.5 WSA-TN4 Guidelines for design of pressure pipeline systems for water supply using PVC-M and PVC-O pipes

5.4.5 Department of Energy and Water Supply
- 5.4.5.1 Planning Guidelines for Water Supply and Sewerage National Uniform Drillers Licensing Committee 2012
- 5.4.5.2 Minimum Construction Requirements for Water Bores in Australia

DG 5.5 General

5.5.1 All connections or alterations to Council water reticulation mains shall be made by the Developer at the Developers cost and subject to appropriate conditions agreed with Council.

5.5.2 The design of the water reticulation will take into consideration all external demands that are presently acting on the system or are likely to do so in the future. Council shall be consulted to ascertain these external demands, points of connection to existing reticulation and operating parameters.

5.5.3 Council approval of water reticulation does not relieve the Consulting Engineer of responsibility for the design.

5.5.4 In staged developments, to ensure an efficient distribution system is established, the designers are required to submit to the Council an overall layout of the proposed subdivision, including all stages demonstrating that each stage of the development achieves minimum pressures and showing the sizing of mains to be incorporated. This proposal shall be submitted to the Council for approval in principle before the submission of any construction plans and specifications will be accepted for review.

5.5.5 Prior to proceeding with detailed design, the Consultant shall liaise with Council to ascertain whether a network analysis (to determine the optimum size of the internal mains) is required by Council as part of the design submission for the development. For the design of water reticulation schemes and where Council requires a network analysis, it shall be completed by the Consultant at the Developers cost following discussions with Council and be based on the design criteria detailed in Section DG5.7 below.

5.5.6 If a network analysis is required, the designer will be required to provide digital data compatible with Councils software, with the design submission, to enable the reticulation network to be input into Council's network model for checking. The network analysis shall be undertaken for the total development using Bentley WaterCAD compatible software and available for handover to Council for incorporation into the Council network program.

5.5.7 The network analysis shall be based on the design drawings and be spatially accurate.

5.5.8 In sloping development sites, the water reticulation network is to be designed in pressure zones to allow Council to control maximum and minimum pressures within the development.

5.5.9 The network design shall be planned to satisfy the requirements of this manual and to meet Council Customer Service Standards, which are published pursuant to the requirements of the Water Supply (Safety and Reliability) Act 2008, at a minimum whole-of-life cost (capital cost, operational and maintenance cost) for an environmentally acceptable solution and not simply a least capital cost solution. 8. Refer to Appendix D Whitsunday Regional Council Standard Conditions for Water Supply Above RL50.

DG 5.6 Existing Mains

5.6.1 Council should be contacted to obtain copies of any "As Constructed" plans and details of any planned augmentation works.

5.6.2 Where, as a result of the development, existing mains are located on non-standard alignments or have less than minimum cover, the developer shall bear the cost of relocation, replacement or lowering, subject to the approval of the Council.

5.6.3 Pavement widening associated with some developments can place existing mains under the new pavement. In such cases, where the existing main has inadequate cover, the developer shall bear the cost of its replacement in a material approved by the Council, or reconstruction at an adequate cover depth or reconstruction on a standard alignment in the new verge.

DG 5.7 Design Criteria

5.7.1 Flow Parameters - unless advised otherwise by Council, the Average Daily consumption and peaking factors for the design of Water Supply Schemes shall be as follows:

5.7.1.1 Average Daily Consumption (AD) 500 litre/person/day

5.7.1.2 Mean Day max Month (MDMM) 1.50 x AD Peak Day (PD) 2.25 x AD

5.7.1.3 Peak Hour (PH) 1/12 x PD

5.7.2 In the absence of specific flow consumption data, the Average Daily Consumption shall be calculated using the equivalent demands shown in Table 6.1.

Table 6.1 Equivalent Demands

Description	Equivalent Persons/Connection
Single Family Dwelling	
Lots > 1500m^2	3.7
Lots 1101 – 1499m^2	3.4
Lots 901 – 1100m^2	3.1
Lots 401 – 900m^2	2.8
Lots <400m^2	2.5
Multi Unit Accommodation	
Units > 3 bedrooms	0.4 + 0.6/bedroom
Units = 3 bedrooms	2.2
Units = 2 bedrooms	1.6
Units < 2 bedrooms	1.0
Caravan Parks	
Van Site / Camping Site	1.2
Shops/Offices	
Per 90m^2	1.0
Notes:	

1. **Based on 2.8 Equivalent Persons/Equivalent Domestic Connection (EP/EDC), with 1 EDC equivalent to a single residential dwelling on a standard size allotment (401m^2 to 900m^2).**
2. **For undeveloped land equivalent populations shall be calculated in accordance with the maximum allowable population density in the Planning Scheme, or estimation of maximum allowable density agreed with Council prior to design.**

5.7.3 Pressure Parameters – minimum and maximum service Pressures (excluding fire-fighting) – see table 6.2.

Table 6.2 – Pressure Parameters

Requirement	Details
Minimum Pressure	22 metres head at peak hourly consumption
Minimum Pressure Location	At the property boundary for all lots
Minimum Pressure Network Condition (for modelling from a reservoir).	Based on the reservoir level for Peak Hour of the third day of three consecutive Peak Day events (for dynamic models). In the absence of dynamic model results the minimum reservoir level shall be assumed at 15% of storage height. Liaise with Council to confirm minimum pressure constraints available at the connection to the existing system.
Maximum Pressure	80 metres head. Where the pressure in a main exceeds 800 kPa, Council may require the installation of Pressure Reducing Valves (PRV) that may (at Council's discretion) include telemetry control. Prior to proceeding with any design, Council shall be provided with details of the area affected and the number of lots involved.
Maximum pressure location	At the lot boundary
Maximum Pressure Network Condition (for modelling from a reservoir).	Based on reservoir level at 95 percent of top water level.

5.7.4 Fire Fighting Parameters

Table 6.3 – Fire Fighting Parameters

Category	Fire Flow Requirement	Number & Duration
Residential (i.e. An area comprising of predominantly residential dwellings of a maximum of 3 storeys)	15 L/s for 2 hours	1 @ 2 hours
Commercial (i.e. An area comprising of shop and office accommodation of a maximum of 3 storeys) and Industrial	30 L/s for 4 hours For schemes serving a population of less than 1000 a fire flow of 15 L/s for 2 hours should be satisfactory except where a special hazard or risk development exists	1 @ 4 hours
High Risk (i.e. A development where there is a probability of a fire occurring or there is a high cost of resultant damage (personal injury or property))	To be determined	Adopt a special hazard or risk fire
Residual pressure plan is to be 12m minimum at hydrant at all times, assuming that the elevation of the supply point is equal to the ground elevation at the hydrant. Positive residual pressures must exist within the reticulation during the fire event.		

5.7.5 Background Demand - the following minimum criteria should be adopted for background demand during a fire event:

5.7.5.1 Predominantly Residential Areas:

5.7.5.1.1 The minimum residual pressure specified should be exceeded with a background demand of 2/3 Peak Hour demand;

5.7.5.1.2 A check should be undertaken at Peak Hour demand to ensure that pressures in the network remain positive; and

5.7.5.1.3 The calculated background demand should not be less than Average Day demand.

5.7.5.2 Predominantly Commercial / Industrial Areas – In this case, the following scenarios should be investigated with the worst case being adopted:

5.7.5.2.1 At Peak Hour demand of the Commercial / Industrial area (e.g. between 10am to 4pm). The intent of this scenario is to assess the local reticulation performance; and

5.7.5.2.2 At 2/3 Peak Hour demand of the water supply zone (e.g. around 6pm). The intent of this scenario is to assess the zone trunk performance.

5.7.5.3 Mixed Residential / Commercial / Industrial Areas – In such cases a combination of background demand conditions similar to the Predominantly Commercial / Industrial Areas above should be examined.

5.7.6 Storage Parameters – refer table 6.4.

Table 6.4 – Storage Parameters

Component	Sizing
Reservoirs (Ground Level)	3 (PD-MDMM) + (greater of Emergency Storage/Firefighting Storage)
Reservoirs (Elevated)	$6\ (\frac{PH - MDMM}{12})$ + firefighting reserve

5.7.7 Pump Parameters – refer table 6.5.

Table 6.5 – Pump Parameters

Design type		Parameters
Treated water pumps feeding a ground level reservoir		MDMM over 20 hours
Treated water pumps feeding an elevated reservoir		Capacity (L/s) = $\frac{6PH - \text{reservoir operating volume}}{6 \times 3600}$ (Volume in litres)
Standby Pumps		Standby pump capacity to match the largest single unit pump capacity
Reticulation booster pump station		PH + fireflow
Pumped System	Peak Instantaneous flow + fireflow	This situation may exist in smaller systems if variable speed pumps would replace any elevated storage. In these instances, it would be necessary to calculate instantaneous flow based on concurrent demand. This would exceed PH by a significant margin

5.7.8 Pipeline Parameters

Table 6.6 Pipeline Parameters

	Parameter
Pipe Capacity – trunk & reticulated mains	Size for PH + Fire Flow
Friction Equation	Hazen-Williams
Maximum Velocity	2.5m/s velocities up to 4.0m/s may be acceptable during fire flows
Minimum Velocity	N/A

5.7.9 Headloss Calculations - For headloss calculations, the Hazen-Williams formula is generally used. Values of the Hazen Williams friction co-efficient (C) to be adopted are as per table 6.7.

Table 6.7 Headloss Calculations

Pipe Diameter (D)	C Value
D ≤ 150mm	100
150mm < D ≤ 300mm	110
300mm < D ≤ 300mm	120
D > 600mm	125
Note: The above values take into account losses for pipe fittings such as bends, valves, tees, crosses etc and the effect of pipeline ageing.	

5.7.10 Road Crossing

5.7.10.1 all road crossings shall be minimum 100mm diameter;

5.7.10.2 all road crossings under Council controlled roads shall be constructed in Ductile Iron; and

5.7.10.3 all Road crossings under Industrial Roads, Major Collectors or higher order roads shall be constructed with an isolation valve each side of the road.

DG 5.8 Dedication of Land Easements & Permits to Enter

5.8.1 General Infrastructure - All pumping stations, booster stations, storage tanks, reservoirs, water towers and the like are to be located on freehold land that is owned by or will be dedicated to Council at the time of plan sealing, except that small pumping stations may, with State Government's approval, be located in land that is or will become road reserve. This land shall be provided to Council at no cost as freehold and zoned for water infrastructure purposes; and

5.8.2 Pumping Stations not sited beside a road reserve are to be provided with a 5-metre wide access transferred to Council as freehold.

5.8.3 When pipelines and appurtenances relating to pipelines are constructed in land other than in what is or will become, a dedicated road reserve or property owned by Council, Council requires easements to be registered in its favour over all such pipelines and appurtenances;

5.8.4 Easements shall be a minimum of 3 metres wide and located centrally over the pipeline. Mains are to be no closer than 1 m from an easement boundary; and

5.8.5 In the event that works are to be constructed through properties not under the control of the Developer, the Developer shall submit with the Operational Works Application:

5.8.5.1 A 'Permit to Enter & Construct' letter, signed by each property owner through whose property the infrastructure is to be constructed, consenting to the construction of the works;

5.8.5.2 Where the property is owned or to be dedicated to Council approval of the relevant section of Council that will manage the property; and

5.8.5.3 Proof of the registration of easements in favour of Council as specified above.

DG 5.10 Reticulation Network

5.10.1 All water mains shall be laid on a standard alignment and unless directed otherwise alignments shall be as follows:

5.10.1.1 Urban – 2.5m

5.10.1.2 Rural – 2.5m

5.10.2 Bending of pipes is not permitted notwithstanding any clause to the contrary in the WSA Code.

DG 5.11 Cover

5.11.1 Unless noted otherwise on the approved Project Drawings the minimum depth of cover to be provided for mains shall be as follows:

5.11.1.1 Verge, Parks etc. 600mm

5.11.1.2 Under Kerbed Roads 800mm

5.11.1.3 Under Un-Kerbed Roads 900mm

5.11.2 The maximum depth of cover to be provided for mains shall be 1500mm.

DG 5.12 Hydrants

5.12.1 Hydrants shall be installed for fire-fighting purposes on all potable water mains unless approved otherwise by Council.

5.12.2 Generally, hydrants shall be at 80m maximum centres for all urban areas and wherever possible located opposite allotment boundaries, and at every second allotment boundary for Rural, Park Residential and Low Density Residential allotments.
5.12.3 Hydrants shall be located at ends of lines in cul-de-sacs opposite the nearest allotment boundary.
5.12.4 Hydrants shall be located near access legs of battle-axe or hatchet shaped allotments.
5.12.5 Staged developments resulting in temporary dead ends shall have a hydrant located within close proximity to the end of line to enable maintenance flushing.
5.12.6 In undulating areas, hydrants should also be positioned at all high and low points of the main.
5.12.7 Hydrants shall be constructed in accordance with Council's Standard Drawings.

DG 5.13 Valves

5.13.1 Valves shall be located opposite the first truncation point at a three-way intersection; or opposite the nearest allotment boundary.
5.13.2 All valves shall be located within the verge. Valves shall only be located within the road carriageway where specifically approved by Council.
5.13.3 Valves shall be installed where necessary to isolate sections of the system for maintenance purposes such that maintenance can be carried out causing minimum inconvenience and disturbance to the consumers. Generally, the design is to ensure that no more than 4 valves are required to be turned off to isolate a section with the maximum number of houses inconvenienced should be no greater than 20.
5.13.4 Cul-de-sacs shall have an isolation valve if more than 4 lots are served.
5.13.5 At tee junctions a valve shall be located on the leg of the tee. Where necessary to achieve maintenance isolation requirements, additional valves shall be installed to one or both sides of the tee junction.
5.13.6 The maximum spacing between isolation valves shall be 300m.
5.13.7 In higher density areas the spacing of isolation valves may be reduced to the requirement of the Council.
5.13.8 Valves shall be constructed in accordance with Council's Standard Drawings.

DG 5.14 Irrigation

5.14.1 All irrigation systems connected to Council's water supply shall be installed to satisfaction of Council. The installation of water meters, RPZ backflow prevention device and isolation valves are mandatory in all irrigation system. Refer Design Manual D9 Landscaping for design of irrigation systems.
5.14.2 A hydraulic design certificate is required for the irrigation system and to ascertain the required service size.

5.14.3 All connections to Council's existing system shall be completed by the Developer at the Developer's cost and subject to appropriate conditions agreed with Council.

Pump Stations

DG 5.15 General

5.15.1 Pump stations shall be subject to specific requirements of the local authority. Council should be consulted prior to design to confirm the specific requirements for pumps, electrical, switchboards, telemetry, etc.

5.15.2 Council acceptance of pump station design does not relieve the Consulting Engineer of responsibility for the correctness of the design.

DG 5.16 Pump Stations

5.16.1 Pump stations are to be contained in an above ground structure. The structure is to be constructed from reinforced masonry block and/or reinforced concrete. The structure is to be sized to allow for adequate internal access to all items for operational control but particularly for maintenance works. Openings will allow the easy reach and replacement of the largest item contained in the pump station. The use of multistage/centrifugal pumps is preferred.

5.16.2 A back-up power supply is to be provided either by a generator or diesel pump unless a five (5) day reservoir capacity is provided. Suitable arrangements for ducting airflow to the generator / diesel pump and the disposal of exhaust gases so as not to create a nuisance is required. Sufficient fuel is to be stored to operate for 12 hours at rated load (at AD demand).

5.16.3 Noise suppression is to be addressed and incorporated into the pumps station design. The pump station design is to comply with the Environmental Protection Act during normal use.

5.16.4 The tenure of property on which pump stations and access roads are situated are to be transferred to Council as freehold title. Pump station sites are not to encroach upon gazetted road areas unless otherwise approved by Council.

5.16.5 Access to the pump station site is to be via an appropriate standard sealed access and the pump station site is to accommodate maintenance vehicles and their manoeuvring.

5.16.6 Internal and external pump station surfaces are to be painted as directed.

DG 5.17 Telemetry Systems

5.17.1 Where required by the Local Authority, pump station control panel shall incorporate SCADA equipment for transmission of monitoring data and control

to Council's existing master system. Council should be contacted to obtain a copy of their Technical Specification for Telemetry Systems.

5.17.2 It should be noted that where amalgamated Councils have varying telemetry systems, left over from pre-amalgamation Councils, pump station telemetry systems and requirements may vary within that Council and requirements must therefore be reconfirmed as a part of the design.

DG 5.18 Alternative Water Pumping Systems

5.18.1 Alternative water pumping systems to provide increased pressures and flows to individual developments in lieu of a water storage reservoir may be considered by Council if sufficient justification can be provided. Such systems should generally include a number of centrifugal pumps installed in parallel and coordinated by a pump controller, which senses, and responds to water demand. The controller shall also regulate the pump speed to give a graduated increase or decrease in the volume of water being supplied and evenly shares the work between pump units.

5.18.2 In general, Council will only permit the use of such booster pump stations where all of the following conditions apply:

- 5.18.2.1 Where Council considers it impractical to build a storage reservoir for topographical, geotechnical, or aesthetic reasons;
- 5.18.2.2 Where a reservoir would service only that particular development;
- 5.18.2.3 Where the number of lots to be serviced by the booster pump station is less the 25; and
- 5.18.2.4 Where the booster pump station building can be blended with the architectural style of residences within the development.

5.18.3 The consultant should submit an initial report and associated recommendations for consideration by Council prior to any detailed design. As a minimum the report should include:

- 5.18.3.1 Reason for and benefits to the community based on the total life cycle costs of an alternative water pumping system;
- 5.18.3.2 Connection points to the existing system;
- 5.18.3.3 Water supply schematic plan;
- 5.18.3.4 Maintenance issues; and
- 5.18.3.5 Environmental reasons.

DG 5.19 Dual Water Supply Systems

5.19.1 The Dual Water Supply System comprises Water Supply Code WSA 03-2011 and the Whitsunday Regional Council Amendments (Appendix B) to the above supplement.

5.19.2 Appendix C describes Whitsunday Regional Council's specific requirements for Dual Water Supply System works up to and including DN 300 that vary from or are additional to those detailed in the Water Supply Code WSA 03-2011.

DG 5.20 Private Boosters

5.20.1 Written approval for the use of private boosters must be obtained from Council.

DG 5.21 Conduits

5.21.1 A conduit shall be provided to all landscaped or grassed Medians, Traffic Islands and Roundabout islands to facilitate a future water service connection for landscaping purposes.

5.21.2 Where the length of a median exceeds 50m, conduits shall be provided at 50m centres. At roundabouts and channelised intersections the conduit layout should enable all landscape islands to be connected to a single water service connection.

5.21.3 Conduits under roadways shall be a minimum 100mm dia. uPVC Class 9 sealed each end with push-on caps.

5.21.4 Cover to conduits under roads shall be 600mm minimum or 100mm below subgrade, whichever is the greater.

5.21.5 The position of all conduits under roadways shall be clearly marked by the casting a nonferrous cuphead bolt into of the top of the kerb.

5.21.6 Where concrete footpaths are constructed on the road verge and the future water service connections are not being provided, a conduit shall be provided under the footpath opposite the allotment boundary to facilitate the future installation of water services by Council. Generally, water services shall be located at an alternate boundary to Ergon Energy’s pillar box. Exceptions may be considered in individual circumstances were unusual conditions or lot layouts exist and where approved by Council and Ergon Energy.

5.21.7 Conduits under footpaths shall be a minimum 80mm dia. uPVC Class 6 with 300mm cover and are to extend 300mm past the edge of the footpath. The position of all conduits under footpaths shall be clearly marked by casting a non-ferrous cuphead bolt into the property side of the footpath while the concrete is wet.

DG 6 – DESIGN GUIDELINE – Sewerage System

General

DG 6.1 Scope

6.1.1 This document sets out the minimum standards for the planning and design of sewer reticulation systems that are to be constructed by a Developer and handed to Council to operate. This section also covers certain service connection issues relating to development approvals and private infrastructure that need to be to Council standards.

6.1.2 The sewer reticulation system shall be defined as sewers of 150mm and 225mm diameter, used to collect and convey sewage from properties. Designs for sewers larger than 225mm diameter shall be subject to specific criteria nominated by the Council. All sewers 225mm diameter or less shall be in accordance with this manual. This definition of sewer reticulation systems applies only to these Whitsunday Regional Council Sewerage Design Manual and Specifications and is independent of the definition of trunk infrastructure as relates to trunk infrastructure charges.

6.1.3 Wherever possible, development should avoid the use of sewerage pump stations when a gravity solution is available. If a pump station is the only option, a buffer zone and screening should be given to the nearest private property.

6.1.4 The planning, design, construction and certification of infrastructure is to be carried out in accordance with following provisions:

- 6.1.4.1 Council's general criteria as set out in this manual and Council's Standard Specifications and Drawings that are based on the Desired Standards of Service;
- 6.1.4.2 The criteria contain within the Water Services Association of Australia (WSAA) publications identified in D7.4. While vacuum and pressure sewer scheme WSA codes are listed, they are still considered unconventional infrastructure –refer D7.7;
- 6.1.4.3 The designer shall note the Queensland Workplace Health and Safety – Guide to Workplace Health and Safety Obligations of Designers of Structures and the design shall include the required Safety Design Report; and
- 6.1.4.4 For general guidance on infrastructure elements not contained within council's documentation, the criteria contained with the Department of Energy and Water Supply Planning Guidelines for Water Supply and Sewerage may be used for guidance.

6.1.5 Aspects of modification or clarification of the Water Services Association of Australia codes are detailed in Appendix E of this manual.

6.1.6 Council's Land Development Guidelines and Standard Specification and Drawings shall take precedence over the Water Services Association of Australia Codes and the Department of Energy and Water Supply Planning Guidelines for Water Supply and Sewerage.

6.1.7 Smart Sewers are considered Unconventional Infrastructure. Smart Sewer planning, design, construction and certification may be carried out in accordance with Queensland Urban Utilities Sewerage Standards – Nu Sewer – Design and Construction Specification Version 6 and aspects of modification or clarification within the manual and approved by Council.

6.1.8 For construction standards for Electrical Switchboards for Sewage Pumping Stations, refer Appendix J – Addendum to Sewer Pumping Code.

DG 6.2 General

6.2.1 It is the Consulting Engineer's responsibility to ensure that the current version of Whitsunday Regional Council Development Manual is used and that all infrastructure is constructed in accordance with this section as a minimum standard.

6.2.2 It is the Consulting Engineer's responsibility to ensure that all work is undertaken to council's requirements. Responsibility for supervision, testing, inspection, commissioning and remedial work rests with the Consulting Engineer.

DG 6.3 Objective

6.3.1 The objective of the sewerage system is to transport sewage from domestic, commercial and industrial properties using gravity flow pipes and, where gravity system is not possible by pumping to the treatment plant.

6.3.2 While various options can be determined that meet the minimum technical requirements, the selected option should meet least community cost for whole lifecycle. To achieve the optimum solution will require sewerage reticulation issues to be considered at the commencement of the planning process and to integrate with other planning issues, and not be considered an end of process infrastructure provision exercise.

DG 6.4 Reference Documents

6.4.1 Australian Standards:
- 6.4.1.1 AS/NZS 1547-2012 On-site domestic wastewater management.
- 6.4.1.2 AS/NZS 3500-2013 Plumbing and drainage set

6.4.2 Council Approved Products Register

6.4.3 QLD Government Legislation:
- 6.4.3.1 Water Act 2000
- 6.4.3.2 Water Supply (Safety and Reliability) Act 2008
- 6.4.3.3 Plumbing and Drainage Act 2002
- 6.4.3.4 Queensland Plumbing and Wastewater Code

6.4.4 Water Services Association of Australia:
- 6.4.4.1 WSA 02-2014 Gravity Sewerage Code of Australia
- 6.4.4.2 WSA 04-2005 Sewerage Pumping Station Code of Australia

6.4.4.3 WSA 05-2013 Conduit inspection Reporting Code of Australia
6.4.4.4 WSA 06-2008 Vacuum Sewerage Code of Australia
6.4.4.5 WSA 07-2007 Pressure Sewerage Code of Australia
6.4.4.6 WSA 01-2004 Polyethylene Pipeline Code

6.4.5 Department of Energy and Water Supply's - Planning Guidelines for Water Supply and Sewerage

Design Criteria

DG 6.5 General

6.5.1 Sewers shall be designed to accommodate flows from upstream catchments, calculated on the basis of their future development in accordance with Council's Strategic Plan, and accordingly, shall be extended to the upstream boundary(ies) of the proposed development (where required) to service upstream properties with the least whole of life cost. Designers should consult with Council to confirm location of any future connections points, details of any planned augmentation works and sewerage catchment areas.

6.5.2 Council approval of sewerage reticulation does not relieve the Consulting Engineer of responsibility for the correctness of the design.

6.5.3 In staged developments, to ensure an efficient distribution system is established, the designers are required to submit to the Council an overall layout of the proposed subdivision, including all stages, showing the sizing of mains to be incorporated. This proposal shall be submitted to the Council for approval in principle before the submission of any construction plans and specifications will be accepted for review. Refer to Application Procedures.

DG 6.6 Existing Sewers

6.6.1 Prior to proceeding with the design, the designer shall obtain from Council "As Constructed" sewer information relevant to the proposed development and confirm point(s) for connection.

6.6.2 Works associated with some developments can impact on existing mains. Where as a result of the development an existing main has inadequate cover, it shall be reconstructed with a material approved by the Council or such other alternate protection measures deemed necessary by Council. Subsequent to construction, CCTV and/or ovality Testing is to be undertaken as determined by Council after the completion of works in accordance with this Manual and supervised by a Council Representative.

6.6.3 Where finished surface levels around existing manhole covers are altered, the manhole shall be reconstructed to conform with the requirements of this manual.

6.6.4 All connections or alterations to Council sewerage network, shall be made by the Developer at the Developers cost and subject to appropriate conditions agreed with Council.

DG 6.7 Unconventional Infrastructure

6.7.1 Conventional infrastructure includes gravity sewers, lift stations, area pumping stations and pressure (rising) mains. Unconventional infrastructure includes smart sewers, small bore systems of any kind, including vacuum systems, hybrid low pressure systems, common effluent drainage systems, grinder pumps serving small clusters of properties and the like, and any other unconventional or unusual systems.

6.7.2 The use of unconventional infrastructure shall require special approval by Council and may require extended maintenance periods and a higher value for performance bonds.

6.7.3 In unconventional systems, Council may not have approved design criteria. Accordingly, proposals will be considered on the basis of best engineering practice and are to be subject to a lifetime benefit cost analysis.

6.7.4 If unconventional infrastructure is proposed the Consultant shall submit an initial report and associated recommendations for consideration by Council prior to any detailed design. The report should include as a minimum:

- 6.7.4.1 Description of proposed infrastructure;
- 6.7.4.2 Reasons for departing from Conventional systems;
- 6.7.4.3 Reasons for and cost benefits to Council;
- 6.7.4.4 Connection points to existing system;
- 6.7.4.5 Schematic layout plan; and
- 6.7.4.6 Maintenance and operational issues.

6.7.5 Subject to Council's assessment of the Consultant's initial report and prior to any detailed design, Council may engage an independent Consultant to act for Council in assessing the initial report and to recommend suitable system parameters.

6.7.6 All costs associated with the engagement of the independent Consultant shall be at the Developers expense.

6.7.7 Any subsequent designs of infrastructure shall be planned to satisfy the requirements to meet Council Customer Service Standards, which are published pursuant to the requirements of the Water Supply (Safety and reliability) Act, at a minimum whole-of-life cost (capital cost, operational and maintenance cost) for an environmentally acceptable solution and not simply a least capital cost solution.

DG 6.8 Design Criteria

6.8.1 Capacity – population estimates shall be based on those equivalent demands detailed in Table 6.1; and

6.8.2 The minimum pipe capacity shall be based on the criteria detailed in Table 6.2.

Table 6.1 Equivalent Demands

Description	Equivalent Persons/Connection
Single Family Dwelling	
Lot > 1500m^2	3.7
Lot 1101m^2 to 1500m^2	3.4
Lot 901m^2 to 1100m^2	3.1
Lot 401m^2 to 900m^2	2.8
Lot <400m^2	2.5
Multi-Unit Accommodation	
Units > 3 bedrooms	0.4 + 0.6/bedroom
Units = 3 bedrooms	2.2
Units = 2 bedrooms	1.6
Units < 2 bedrooms	1.0
Caravan Parks	
Van Site / Camping Site	1.2
Shops/Offices	
Per 90m^2 GFA	1.0

Notes:

1. **Based on 2.8 Equivalent Persons / Equivalent Domestic Connection (EP/EDC) with 1 EDC equivalent to a single residential dwelling on a standard size allotment (401m^2 to 900m^2)**
2. **For undeveloped land equivalent populations shall be calculated in accordance with the maximum allowable population density in the Planning Scheme for that land use, or estimation of maximum allowable density agreed with Council prior to design.**

Table 6.2 Sewerage Loading

Average Dry Weather Flow (AWDF)	270/EP/d	Based upon analysis of pump station flows and STP inflow records during dry weather
Peak Wet Weather Flow (PWWF)	5 x ADWF or C^1 x ADWF whichever is greater	C^1 Peaking Factor = 15 x (EP)(^-0.1587) Note - Minimum value C^1 to be 5

Peak Dry Weather Flow (PDWF)	C^2 x ADWF	C2 Peaking Factor = 4.7 x (EP)-0.105
Vacuum Sewer Peak Wet Weather Flow (PWWF)	4 x ADWF	Peaking Factor of 4
Smart Sewer Peak Wet Weather Flow (PWWF)	4 x ADWF	Peaking Factor of 4

6.8.3 Pipe velocity shall be based on the details show in Table 6.3

Table 6.3 Pipe Velocities

Design Criteria	Recommended Value
Mannings 'n' (PVC)	0.013
Mannings 'n' (Poly)	0.013
Minimum Velocity @ PWWF	0.6m/s
Minimum Velocity @ PDWF	0.3m/s
Depth of Flow @ PWWF – Proposed Sewers	Max Flow depth shall not exceed ¾ pipe full

6.8.4 Minimum grades for sewer reticulation mains are to be as summarised in Table 6.4

Table 6.4 Minimum Grades for Gravity Sewers

Diameter	Minimum Grade	Minimum Grade Percentage
100mm – Property Connection Branches	1 in 60	1.66%
150mm – Property Connection Branches	1 in 80	1.25%
150mm – First MH Length, head of sewer	1 in 100	1.00%
Second MH Length	1 in 150	0.67%
Remaining MH Lengths	1 in 150	0.67%
225mm	1 in 290	0.34%
300mm	1 in 420	0.24%
375mm	1 in 570	0.18%
450mm	1 in 730	0.14%
525mm	1 in 900	0.11%
600mm	1 in 1000	0.10%
675mm	1 in 1200	0.08%
≥ 750mm	1 in 1500	0.07%

6.8.5 The maximum allowable Equivalent Domestic Connections for various gravity sewer pipeline grades and diameters is listed in Table 6.5 below.

Grade	150 diameter	225 diameter	300 diameter	375 diameter
570				1530
550				1557
500				1633
450				1721
420			983	1782
400			1007	1826
350			1076	1952
300			1163	2108
290		549	1183	2144
250		591	1274	2310
200		661	1424	2582
180	236	697	1501	2722
150	259	763	1644	2982
125	284	836	1801	3266
100	317	935	2014	3652
75	366	1080	2325	4217
50	448	1322	2848	5164

6.8.6 Sewer Depths – sewers shall not be greater than 3m deep unless approved by Council.

6.8.7 Where sewers are greater than 3m deep, the consultant engineer must submit calculations demonstrating sufficiency of the strength of the proposed pipe type and trenching condition.

DG 6.9 Sewer Alignment

6.9.1 The preferred, or standard, alignment of sewer lines in relation to property boundaries is presented in Table 6.6.

Table 6.6 Preferred Alignment of Sewers

Location	Alignment
Carriageway	Not Permitted, crossings only
Verge	Not usually permitted, subject to Council approval
Private Property (other than Commercial property)	
Side Boundary	0.8m inside allotment
Front and Rear Boundary	1.5 inside allotment
Commercial Boundary	
Front Boundary	1.5m inside front of allotment

6.9.2 Where sewer lines are located along the road frontage of allotments, the preferred alignment is 1.5m inside the allotment. However, to reduce the number of manholes on curved roads and where truncations occur, the sewer alignment may be varied slightly subject to Council approval.

6.9.3 Where the allotment is located adjacent to a designated Council Park or Drainage Reserve, and the sewer is proposed to be constructed adjacent to the Park or Drainage Reserve boundary, the sewer shall be constructed on a 0.8m alignment and wholly within the Park or Drainage Reserve. Where the sewer is proposed to be located elsewhere in the park, approval for the location must be obtained from Council.

6.9.4 Where sewers are to be located within existing road reserves, the designer shall check that the sewers do not conflict with other utility services and locate the sewers to the satisfaction of Council and in accordance with the services clearances as set out in WSA 02-2014 5.4.

6.9.5 Where retaining walls are located on or near the boundary of allotments, sewers, property connection points, manholes etc. must not be constructed under or within the zone of influence of the retaining wall foundations. Consideration is to be given to the difficulty of maintenance excavation on the lower side of retaining walls.

6.9.6 Where access for persons is required, adequate clearance must be provided around access structures and property connection points. For access structures, an area within a 1.5 metre radius (on three sides to permit the set up and use of confined space equipment and other maintenance equipment such as jet rodders and remote cameras) must be provided around the central point of the facility.

6.9.7 Stubs must be extended a minimum of 0.5m past the property boundary.

DG 6.10 Manholes

6.10.1 Manholes shall be placed on gravity sewers at the following locations:

- 6.10.1.1 At changes of pipe diameter;
- 6.10.1.2 At ends of lines where ends are more than 30m from previous manhole;
- 6.10.1.3 At ends of lines where the line depth is greater than 1.5m;
- 6.10.1.4 At end of lines servicing greater than one Property Connection Branches; and
- 6.10.1.5 At council approved connections to trunk sewer.

6.10.2 Manhole shall not be constructed across property boundaries. Minimum clearance from the edge of manhole to the property boundary shall be 400mm.

6.10.3 The maximum change of angle through a manhole shall be 90° unless specifically approved otherwise by Council.

6.10.4 Manholes shall be constructed in accordance with the Standard Drawings S-0020 – S-0026.

6.10.5 Rectangular covers shall be provided to manholes less than 1500mm deep measured from the top of the manhole cover to the obvert level of the outlet.

This has been derived so that a minimum 1.0m high clear working space is available within the manhole.

6.10.6 End of line treatments/alternatives may be acceptable as determined by Council.

DG 6.11 Covers and Surrounds

6.11.1 Manhole covers shall be finished flush with the surface in roadways, footpaths and paved surfaces. Elsewhere, unless noted otherwise on the approved Project Drawings, covers shall be finished 50mm above the surface of the ground, in a manner designed to avoid as far as possible, the entry of surface water.

6.11.2 Manhole covers are to be gas tight.

6.11.3 Manhole covers are to be located such that the position of the access opening is directly over the outlet pipe.

6.11.4 The installation of all precast manhole covers shall be in accordance with the manufacturers' recommended procedures and requirements and subject to appropriate conditions agreed with Council.

DG 6.12 Dedication of Land, Easements and Permits to Enter

6.12.1 General Infrastructure –

6.12.1.1 All pumping stations, lift stations, storage tanks and the like are to be located on freehold land that is held by or will be transferred to Council at the time of plan sealing, except that lift stations, and small pumping stations may, with State Government's approval, be located in land that is or will become road reserve. This land shall be provided to Council at no cost as freehold and noted for sewerage purposes;

6.12.1.2 Pumping Stations and lift stations that are not sited beside a road reserve are to be provided with a 5-metre wide access transferred to Council as freehold; and

6.12.1.3 Dedicated or freehold land requirements shall include provision for the pump station offset as indicated in D7.16 Pump Stations.

6.12.2 Pipelines –

6.12.2.1 When pipelines and appurtenances relating to pipelines are constructed in land other than in what is or will become, a dedicated road reserve or property owned by Council, Council requires easements to be registered in its favour for all sewage rising (pressure) mains and all gravity sewers.

6.12.2.2 Easements shall be a minimum of 3m wide and located centrally over the pipeline, where no property boundary is common to any easement boundary. In the case where a pipeline is laid on a standard alignment from a proposed property boundary, the boundary of the lot and one boundary of the easement must be coincident and where the property boundary is to be created in the future, the boundary must be coincident to the easement boundary.

6.12.2.3 Sewers are to be no closer than 1m from an easement boundary except where the sewer is on a preferred alignment; and

6.12.2.4 In the event that works are to be constructed through properties not under the control of the Developer, the Developer shall submit with the Operational Works Application a 'Permit to Enter & Construct' letter, signed by each property owner through whose property the infrastructure is to be constructed, consenting to the construction of the works;

6.12.2.5 Where the property is owned or to be dedicated to Council approval of the relevant section of Council that will manage the property; and

6.12.2.6 Proof of the registration of easements in favour of Council as specified above.

DG 6.13 Property Connections

6.13.1 Property connections shall be installed in accordance with Council's Standard Drawing.

6.13.2 Property connections should generally be located at the lowest corner of the allotment between 0.5 and 1.5m upstream of the allotment boundary or manhole.

6.13.3 Property connections will not be accepted within 0.5m of a lot boundary.

6.13.4 Property connections into manholes will be permitted at ends of line manholes only. Elsewhere, property connections are required "on line" and not into manholes.

6.13.5 Property connections into maintenance shafts require Council approval.

6.13.6 Combined Property Drains are not permitted in any development works.

6.13.7 For commercial / industrial premises, where the PCB is to be built over, a manhole is to be constructed at the point of connection.

6.13.8 Where a sewer main lies within an adjoining allotment, the property connection is to extend a distance of 1.0m into the allotment. For battle-axe allotments with the property connection located within the access, the Property drain shall extend from the property connection along the access to a point 1.0m within the main part of the allotment or, where a sealed driveway is required for the full length of the hatchet 'handle' then 1m past the extents of the driveway to allow a suitable future point of connection. Where a sewer is contained within a stormwater drainage easement, then the property connection should extend a minimum of 1m past the easement boundary and into the lot it is serving. All property connections should be finished a minimum of 1m clear of any infrastructure.

6.13.9 Property connections sizes shall be as follows:

6.13.9.1 Residential (single Dwelling) – 100mm dia; and

6.13.9.2 Others (i.e. Commercial, Industrial, Multi Residential) – 150mm dia.

6.13.10 Property connections to existing sewer mains shall only be permitted when the construction of a new main to service the proposed properties is not possible.

6.13.11 All Property connections shall be deep enough to service the entire lot using the following property drain design criteria:

6.13.11.1 300mm minimum cover at the start of the drain or at any other control point on the allotment, (where property drains are subject to vehicular traffic, cover shall be increased to 600mm);

6.13.11.2 1 in 60 minimum grade from the most distant corner where any Property or structure can be located on the allotment, on an alignment parallel to the property boundary; and

6.13.11.3 Consideration will be given to the finished level of the lot after all earthworks are complete including likely benching for building platforms.

DG 6.14 On-Site Sewerage Facilities – Treatment and Disposal

6.14.1 The Consultant shall submit a report containing a detailed assessment of site and soil factors as per AS1547 2000 Appendix 4.1B. The report shall consider all major constraints and opportunities relating to the management of wastewater in relation to the development. The report must include all site and soil evaluation (SSE) findings and recommendations so that the most appropriate on-site sewerage facility can be chosen for the development and, in particular, be of sufficient quality and size to receive, treat and absorb all wastewater outputs that is likely to be produced on a property. It is not necessary at this stage to indicate a location for the land application area (LAA) but the report must include a site plan for each lot which indicates all unfavourable land due to site restraints, required setbacks and site features thus leaving the final location of the land application area (LAA) flexible until the detailed report is carried out at building stage and final building location is determined.

6.14.2 The minimum requirements for the wastewater disposal report:

6.14.2.1 Site plan showing dams, creeks, bores and water courses over the whole development site;

6.14.2.2 Flood overlay for entire development if applicable (available on Councils website)

6.14.2.3 Contour plan maximum of 1 metre intervals;

6.14.2.4 Areas of each block with proposed Lot No’s and property boundaries;

6.14.2.5 Proposed use of the land to be developed;

6.14.2.6 Soil survey, including indicative permeability of soil by either a percolation test or textural classification of soil (minimum of one test site per proposed lot);

6.14.2.7 Depth of ground water, if any encountered during testing;

6.14.2.8 Estimated daily flows of 300 litres per bedroom per day to be utilised in calculations for daily flows;

6.14.2.9 Method of disposal, e.g. Irrigation, ETA, Absorption;

6.14.2.10 Minimum level of treatment of wastewater for each proposed lot;

6.14.2.11 Size of estimated disposal area to suit system;

6.14.2.12 Calculations to justify disposal site; and

6.14.2.13 Assessment of any additional accumulative nutrient loadings of the area caused by onsite waste water disposal from the proposed development.

Pumping Stations and Pressure Mains

DG 6.15 General

6.15.1 Council should be consulted prior to design to determine specific requirements for pumps, electrical, switchboard and telemetry etc. Outlined below are Council's minimum requirements unless specified otherwise.

6.15.2 Council prefers that sewage be conveyed by gravity. Pump station will only be accepted if all other options have been considered and rejected.

6.15.3 Council requires documentary evidence that life cycle costs of all options have been analysed before approving a pumping station.

6.15.4 When the use of a pumping station has been approved it must be designed and constructed in accordance with this Manual and WSA 04-2005 and WRC Standard Drawings.

6.15.5 A submersible sewage pumping station built to Council requirements and incorporating two submersible sewage pumps with motor sizes up to 22 kW each will be regarded as a "standard" installation. Any station with pumps larger than 22kW will be regarded as a "non-standard" installation and will need to be specifically designed to suit the design flows. The design of a "non- standard" station must be carried out in consultation with Council.

6.15.6 Wet well washers are required in all sewage pumping stations unless otherwise approved by council.

DG 6.16 Pump Stations

6.16.1 Pump stations shall be designed as detailed on Standard Drawings S0050 – S-0052 and S-0057 – S-0060. Project specific design drawings are to be provided with the operational works submission which include the following: Relative levels (A through G) as denoted on these drawings as well as all pump start, stop and alarm levels appropriate to operating conditions shall be provided with the pump station design.

6.16.2 Operation levels for pump stations to be controlled by ultra-sonic level controllers or hydrostatic probes and not by float switches. Major pump stations as determined by the Council shall be controlled by ultra-sonic level controllers.

6.16.3 The pump stations overflow pipe shall be designed to cater for the maximum possible flow. Council and the Department of Environment and Heritage Protection should be consulted to determine emergency storage and overflow requirements.

6.16.4 The designer shall be responsible for obtaining all necessary licenses and approvals associated with the provision of pump station emergency overflow.

6.16.5 Pump stations shall be located as far as possible away from existing or proposed habitable dwellings. A 100m setback is desirable with absolute minimum of 30m unless otherwise approved by Council for standard pump stations only. New developments are to comply with the setback conditions from existing pump stations.

6.16.6 The tenure of property on which pump stations and access roads are situated shall be transferred to Council as freehold title. Pump station sites shall not encroach upon gazetted road areas unless otherwise approved by State Government and Council

6.16.7 Access to the pump station site shall be via an appropriate standard sealed 3.5m wide road (within the 5m access reserve) and the pump station site shall accommodate maintenance vehicles and their manoeuvring. An acceptable layout and hard standing area will need to be determined in consultation with council.

6.16.8 The sealed access can be either of the following construction:

6.16.8.1 2 coat seal on 100mm sub-base and 100mm base course, subject to the sub grade strength indicated by the CBR;

6.16.8.2 30mm asphalt on minimum 100mm base course; and

6.16.8.3 125mm thick reinforced concrete.

6.16.9 Pump stations will be located a minimum 300mm above the 1%AEP flood and/or storm event whichever is greater. The finished ground level around the pump station will be shaped to fall away from the pump station. 10. Detailed calculations of the pump station, Sewerage Pump Station Commissioning Plan and pressure main sizing shall be submitted to Council with the design and/or Operational Works submission in the format required by Council.

6.16.10 The Sewerage Pump Station Commissioning Plan shall be completed in accordance with WSA 04- 2005 2.17.

6.16.11 Pump Station switchboards are to be painted with a graffiti resistant paint prior to application.

6.16.12 New or upgraded pump stations which are or will be part of the trunk main reticulation network or have less than 6 hours emergency storage capacity will be required to have a standby generator as part of the sewer scheme. The standby generator will be located a minimum of 300mm's above the 1%AEP flood and/or storm event whichever is greater.

DG 6.17 Sewage Pumping Systems

6.17.1 Sewage Pumping Station Design Criteria - Sewage pumping stations shall be designed in accordance with the minimum specific design criteria shown in Table 7.14 and WSA 04-2005.

Table 7.14 Sewage Pumping Station Design Criteria

Description	Adopted Design Parameter	Comments

Pump Motor Drives	- <15kW – Soft Start - >15 to 22kW – VFD - >22kW – special design – refer to Council	Where VFD's are used, cables are to be shielded. Where VFD's are used, a magnetic flow meter must be provided with the pump station.
Number of Pumps	Two (2)	Pump station controls must allow for automatic alternating duty pumps.
Wet Well Operating Volume (kL) - Fixed Speed Pumps	$\frac{0.9 \times Q}{N}$	Where 'Q' is the flow rate (l/s) if a single pump operating and 'N' is the allowable number of pump starts, the number of pump starts (N) should be not more than 10 for pumps less than 50kW rating. For pumps greater than 50kW rating, according to manufactures recommendations
Wet Well Operating Volume (kL) – Variable Speed Pumps	$\frac{0.9 \times Q}{N}$	Q = Discharge of a single pump (L/s) at 50 Hz. N = Maximum number of starts per hour recommendation by the motor manufacturer.
Bottom Water Level (duty pump cutout)	- For fixed speed pumps: 100mm above minimum submergence level of pumps. - For variable speed pumps: minimum of 100mm above top of motor casing.	In case of variable speed drives a permanent water level must be maintained above the motor casing to ensure continuous cooling of the motor.
Well Diameter	Minimum internal well diameter 2100mm internal well diameter may be increased in increments of 300mm depending upon considerations such as: - Clearance around pumps and pipework; - Depth of pump station; and - Geotechnical conditions.	
Top Water Level (TWL) (standby start)	Must be set no higher than 300mm below invert level of inlet sewer. Must be no lower than 100mm above duty start but confirmed by project specific design.	
Operating Range (TWL – BWL)	This shall be in accordance with WSA 04, Clause 5.4. Generally this	

	range should be between 1000mm and 2800mm.	
Duty Point	With static head corresponding to top water level and pipe friction factors as follows determine Duty Point 1 and 2: - Duty Point 1 – Single Pump operation: - C1 x ADWF (L/s) vs. Static Head = Friction Head (m) - Duty Point 2 – Duty Pump operating in parallel with Standby Pump: - 5 x ADWF (L/s) vs. Static Head + Friction Head (m).	Where: Static Head = Highest Point in Pressure (Rising) Main – Water Level in Wet Well. Friction Head = is a derived from the Hazen Williams formula. C1 = Peaking Factor from Table 7.2 of this Manual.
Pump Selection	Select a pump that is capable of operating at both duty points and which operates within the range of the system resistance curves that are determined by the Conditions detailed below: - Where pressure sewers are allowed to interconnect with existing sewers (refer Table 7.15), pumps are to be designed to operate against the ultimate pressure in the receiving main unless otherwise approved by Council; - Condition 1 – Normal Operating Condition lower limit system resistance curve: - Static Head corresponding to Top Water Level with pressure (rising) main friction factors as follows: C = 120 (dia. 300mm) - Condition 2 – Normal Operating Condition Upper limit system resistance curve: - Static Head corresponding to Bottom Water Level with pressure (rising) main friction factors as follows: C = 100 (dia. <300mm)	The friction factors used in pump selection depend on Top and Bottom Water Level so as to ensure the fullest possible range of heads are taken into account in the selection of the pumps.
Emergency Storage	6 hours ADWF	May vary dependent on location of the overflow. Emergency storage may

		include gravity sewers, manholes and pump station we well volume above TWL.
Duty Pump Capacity	Refer DNRM Guidelines (or subsequent department)	Refer DNRM Guidelines (or subsequent department)
Standby Pump Capacity	Refer DNRM Guidelines (or subsequent department)	Refer DNRM Guidelines (or subsequent department)
Total Pump Station Capacity	Refer DERM Guidelines (or subsequent department)	Refer DERM Guidelines (or subsequent department)

6.17.2 Pump Information - The following information shall be provided when the plans are submitted for approval:
- 6.17.2.1 Preliminary pump selection;
- 6.17.2.2 Rating of the motor;
- 6.17.2.3 Weight of the motor;
- 6.17.2.4 Duty Point;
- 6.17.2.5 Estimate of KWh/1000 litres pumped; and
- 6.17.2.6 Performance, power and efficiency curve.

DG 6.18 Pressure Mains

6.18.1 For detailed design of sewer pressure mains (rising mains) the requirements of Design Manual D6 Water Reticulation should be noted and the mains shall be designed as per the procedures relevant to Water Supply Mains with the exception of the following:
- 6.18.1.1 Air release valving should be provided to high points as required;
- 6.18.1.2 Scour valving should be provided to low points as required. Scouring must be to a scour manhole or adjacent gravity sewer system;
- 6.18.1.3 Thrust Block and Trenching Details shall be as per the Standard Drawings W-0040 and W-0041; and
- 6.18.1.4 Line valves, scours and air valves are to be provided as required to reduce scour volume.

6.18.2 Consideration needs to be given to the potential for sulphide generation in pressure mains.

6.18.3 Sewer rising mains shall be a minimum 125mm DN HDPE PN16 unless approved otherwise by Council. Sewer rising mains shall be ‘cream’ in colour.

6.18.4 Sewer pressure mains shall be ‘cream’ in colour.

6.18.5 All Discharge manholes shall be fitted with a HDPE or wound PVC manhole liner suitable for exposure to sewerage. Where the discharge manhole is an existing manhole, the manhole internal surfaces shall be adequately dried and then coated with an approved epoxy coating.

6.18.6 Sewer pressure mains shall be designed in accordance with the minimum specific design criteria shown in Table 7.15 and WSA 04- 2005.

Table 7.15 Pressure Main Design

Description	Adopted Design Parameter	Comments
Flow equation	Hazen-Williams	
Minimum Diameter	100mm – unless otherwise approved by Council	
Friction Factors	Refer Item 10 in Table 7.14	
Minimum Velocity (on a daily basis)	0.75m/s	To prevent the deposit of solid materials such as grit
Preferred Minimum Velocity (on a daily basis)	1.5m/s	To provide for slime stripping on a regular basis
Maximum Velocity	2.5m/s	To prevent damage to pipe lining
Configuration	Pressure Mains should be sized to optimise the balance between reduction of detention times and life cycle cost. Factors to be considered include but not be limited to: - Population growth; - Staging; - Operational features to provide for maintenance and replacement activities; - Minimisation of energy costs; and - Detention times (reduction of odours)	
Interconnection of Pressure (rising) Mains from different Pump Stations	Only with the approval of Council. Generally interconnection of pressure (rising) mains from different pump stations will not be approved unless there are substantial economic and operational benefits	Selection of the class of mains shall be for the maximum condition, refer pump selection, Table 7.14

Private Pump Station and Pressure Mains

DG 6.19 General

6.19.1 Sewage pumping stations serving more than one “Titled” property shall meet the requirements of this Manual and WSA 04–2005.

6.19.2 Where a gravity sewer connection is not directly available to a development, Council may approve a private sewage pumping station, which will discharge via a private pressure (rising main) to the property line, after which, it shall be a Council main, and then connected to Council’s reticulation infrastructure. The

Developer shall prepare and provide to Council "As Constructed" drawings. A private pressure main is not acceptable within a Council controlled road reserve.

6.19.3 All costs associated with connection of a private pressure main to an existing gravity sewer system (system analysis, design and upgrades to provide capacity) shall be met by the Developer.

DG 6.20 Connection to Existing Gravity Main

6.20.1 The approved connection point for a private pressure (rising) main shall be a discharge manhole that is connected to an existing gravity sewer manhole. Discharge manholes shall conform to Council's Standard Drawing.

6.20.2 Council may require the provision of a non-corrosive pipe installed for the length of sewer to the next downstream manhole and will require the provision of an inert lining to all internal surfaces of the pressure main discharge manhole.

DG 6.21 Alternative Connection Points

6.21.1 Council may consider an alternative connection point. Where an alternative is proposed, the Consultant shall request written approval from Council. The request shall outline the reasons for the alternative connection point and the connection methodology proposed.

6.21.2 A private pressure main is not permitted to inject into another private pressure main.

6.21.3 If Council approves the alternative connection to be a Council rising main, the conditions outlined in Table 7.15 shall apply.

DG 6.22 Private Pump Station Sizing and Operation

6.22.1 Pumping stations shall be designed with sufficient in-system storage (in the well, upstream sewers or a dedicated self-draining high level storage) so that in the event of pump or power failure, 6 hours' emergency storage is provided with inflow at average dry weather flow, provided the scheme is not a low pressure sewer scheme or vacuum system. In system storage shall be measured from duty start level to the level of the lowest relief point. Low pressure sewer or vacuum schemes shall be looked at separately by Council.

6.22.2 Less than 6 hours of storage may be provided, as long as a standby generator is part of the sewer scheme.

6.22.3 The pumps are to be set up to operate automatically as Duty / Standby and should be of the positive displacement electric type.

6.22.4 An alarm shall be provided in the form of a prominently positioned flashing red light set to activate at the invert level of the incoming Property drain.

DG 6.23 Private Pressure Mains

6.23.1 Medium density polyethylene pressure main class PN16 is approved for use with cream colouring.

6.23.2 If the pressure main is not readily available in cream colour, the pressure main shall be wrapped in cream coloured tape.

DG 6.24 Specific Requirements

6.24.1 As the private sewage pumping station is a component of the internal plumbing and drainage, Council's Plumbing and Drainage Services Section shall check the design drawings for compliance with current legislation and relevant standards.

6.24.2 Owners of private pumping stations are responsible for all costs and charges associated with the installation, operation and maintenance. Council may consider entering into a service agreement with the owner of the pump station for the ongoing operation and maintenance of the pump station.

6.24.3 As constructed details and the location of the pressure main shall be submitted to Council.

6.24.4 Where Council accepts a Maintenance Service Agreement with the owner of a private pump station, the following conditions will apply:

- 6.24.4.1 The pump station control panel should incorporate SCADA equipment for transmission of monitoring data and control of Council's existing master system;
- 6.24.4.2 Council requirements for integrating the SCADA equipment will not relieve the owner of the responsibility for the operation and maintenance of the pump station during the agreed defect liability period;
- 6.24.4.3 Council will not accept responsibility under the Service Agreement until the pump station has been accepted "off maintenance" with all defects rectified and the pump station is operating to the satisfaction of Council;
- 6.24.4.4 Notwithstanding the above, Council may monitor the operation and performance of the pump station during the defects liability period; and
- 6.24.4.5 The following information shall be provided when the plans are submitted for approval:
  - 6.24.4.5.1 Place of Manufacture of all components;
  - 6.24.4.5.2 Pump Manufacturer, Model, Type, and Impeller diameter (as a cut sheet)

6.24.4.5.3 Rating of the motor;
6.24.4.5.4 Weight of the pump and motor;
6.24.4.5.5 Duty Points;
6.24.4.5.6 KWh/1000 litres pumped;
6.24.4.5.7 Performance curves; and
6.24.4.5.8 Guarantee.

6.24.5 Upon commissioning, the following information shall be provided to the Council for checking prior to survey plans being endorsed by Council:
6.24.5.1 Curves with at least four points plotted of the actual performance established in the field, or similar supervised works certificate;
6.24.5.2 Actual KWh/1000 litres pumped;
6.24.5.3 Complete wiring diagrams and details;
6.24.5.4 Mechanical details and parts list of pump and motor;
6.24.5.5 Maintenance catalogue showing daily, weekly, monthly and annual requirements;
6.24.5.6 A complete set of the manufacturers recommended spares delivered to Council; and
6.24.5.7 A set of cover lifters delivered to Council.

Telemetry Systems and Management Plan

DG 6.25 Telemetry Systems

6.25.1 All pump stations must be fitted with telemetry system in accordance with Council's Specification for Telemetry Systems. Council should be contacted to obtain a copy of their Technical Specification for Telemetry Systems.
6.25.2 It should be noted that where amalgamated Councils have varying telemetry systems, left over from pre-amalgamation Councils, pump station telemetry systems and requirements may vary within that Council and requirements must therefore be reconfirmed as a part of the design.

DG 6.26 Management Plan

6.26.1 Where required, a facility management plan is to be provided which will detail procedures and arrangements in place for routine operation and management of the facility (eg. Service Agreement) The Facility Management Plan shall include:
6.26.1.1 Details of proposed regular maintenance of private sewer systems; and
6.26.1.2 A bi-annual report of sewerage flows to Council's sewer and details of maintenance activities.

DG 7 – DESIGN GUIDELINES – Maintenance Shafts

DG 7.1 General

7.1.1 The use of maintenance shafts is permitted in reticulation sewers subject to the design parameters detailed in this Manual and WSA 02-2014.

DG 7.2 Design Parameters for MS's and TMS's

7.2.1 The following design parameters apply to maintenance shafts and terminal maintenance shafts in addition to or instead of those detailed in WSA 02-2002:

- 7.2.1.1 Sizing and installation of maintenance shafts to generally comply with the manufacturers recommendations;
- 7.2.1.2 Maintenance shafts shall be graded to the intersection point of the sewer main and maintenance shaft coupling / fitting;
- 7.2.1.3 Maintenance shafts may be used on 100mm, 150mm and 225mm diameter sewer mains and Property connection branches only;
- 7.2.1.4 Maintenance shafts shall be used to a maximum depth of 3.0m;
- 7.2.1.5 Testing of maintenance shafts shall generally be carried out in conjunction with the testing of the sewer main;
- 7.2.1.6 Property connection branch inspection tees shall be 2000mm clear of the centre of the Maintenance Shaft;
- 7.2.1.7 Property connections must not be made into maintenance shafts;
- 7.2.1.8 Maintenance shafts must be provided with a Council approved 600mm dia. Ductile Iron Class B cover located within a precast surround. The trench bedding material shall extend below the shaft inspection opening surround;
- 7.2.1.9 A maximum of five (5) Maintenance Shafts will be permitted between two conventional maintenance holes with a total length of sewer of not more than 300m between maintenance holes;
- 7.2.1.10 Maintenance Shafts are to be located with a maximum spacing of 60 metres to a maintenance hole or shaft;
- 7.2.1.11 The combined flow entering a MS will not exceed 22 L/s;
- 7.2.1.12 The flow to be redirected at an angle greater than 45 degrees will not exceed 12 L/s; and
- 7.2.1.13 The vertical distance a sewer connection entering the riser and the invert of a MS will be a minimum of 1100mm. Where this distance is less then 1100mm the incoming sewer will enter at the invert of the MS.

7.2.2 Maintenance shafts and terminal maintenance shafts are not permitted in the following locations:

- 7.2.2.1 As the receiving manhole at a pumping / lift station;
- 7.2.2.2 As a discharge manhole for a pressure (rising) main;

7.2.2.3 Within roadway central medians, roundabouts or within kerb and channel;
7.2.2.4 As the connection structure for future development stages; and
7.2.2.5 In an area zoned Industrial, Commercial, or Multi-unit.

DG 8 – DESIGN GUIDELINES – Water Seals, Boundary Traps and Water-sealed MH's and Gas Check MH's

DG 8.1 General

8.1.1 Water seals - Water seals are not required.
8.1.2 Gas Check MH's - Gas check MH's are not required.
8.1.3 Vertical and Near Vertical Sewers - Prior approval must be obtained from Council for the use of vertical or near vertical sewers.
8.1.4 Vortex Inlets and Water Cushions - Prior approval must be obtained from Council for the use of water inlets and water cushions.
8.1.5 Inverted Syphons – The use of inverted syphons is not permitted.
8.1.6 Flow measuring devices – flow measuring devices are not required to be installed. Notwithstanding, provision shall be made in the design of the valve chamber to allow the future installation of an electromagnetic flow meter.
8.1.7 Wet weather storage - Prior approval must be obtained from Council for using wet weather storage as a means of reducing downstream infrastructure.

DG 9 – DESIGN GUIDELINES – Utilities

General

DG 9.1 Scope

9.1.1 This section sets out the minimum standards for the provision of utility services within new subdivisions and developments.

9.1.2 The designer needs to coordinate the provision of services within the confines of the road verge in consultation with and to the requirements of the Service Authorities / Providers.

DG 9.2 Objective

9.2.1 The objective of the Manual is to assist the designer in making provision for the following utility services within the design of new subdivisions and developments:

- 9.2.1.1 Telecommunications;
- 9.2.1.2 Electricity Supply;
- 9.2.1.3 Road Lighting; and
- 9.2.1.4 Gas.

DG 9.3 Reference Documents

9.3.1 AS/NZS 1158-2010 Lighting for Roads and Public Spaces

9.3.2 Ergon Energy Standard Drawings

- 9.3.2.1 Standard Drawing 5162/1 - Joint Electricity, Gas and Telecommunications; and
- 9.3.2.2 Standard Drawing 5162/2 - Joint Electricity, Gas and Multiple Telecommunications.

9.3.3 Civil Aviation Safety Authority Australia – Manual of Standards Part 139 Aerodromes;

9.3.4 Ergon Energy Lighting Construction Manual;

9.3.5 Ergon Energy Underground Construction Manual

9.3.6 G645:2011 Fibre Ready Pit and Pipe Specification for Real Estate Development Projects / NBN Co Installing Pit and Conduit Infrastructure – Guidelines for Developers

DG 9.4 Service Authority's General Requirements

9.4.1 Prior to an application to reconfigure a lot, the Service Authorities should be consulted to confirm that the provision of services to the proposed development would be provided. E.g. Telstra, Ergon and NBN Co.

9.4.2 Following receipt of Development Approval from Council the designer shall make application to both Authorities for "Offer of Connection Services" for electricity and telecommunication services.

9.4.3 Approved proposal plans shall be supplied to both Authorities, for staged developments, this shall include an overall concept layout outlining stages and expected timing for each stage.

9.4.4 Should any amendment occur in the design, both Authorities are to be notified immediately together with an amended plan.

9.4.5 Where a development includes lots that may have higher service demands (i.e. Industrial, Commercial, Multi Residential etc.), details of the expected yields and the maximum permissible development yield for each lot in accordance with its current zoning shall also be provided to both Authorities.

9.4.6 Underground telecommunication services shall be provided to all new developments.

9.4.7 Unless otherwise approved by Council, an underground electricity supply is to be provided to all new developments and all new consumer mains connections to developments to be supplied from a pillar.

9.4.8 The designer shall be responsible for coordinating and checking the locations of all telecommunication and electrical services to avoid conflicts with other services (i.e. Stormwater pits etc).

9.4.9 Layout plans for telecommunication and electrical services including the road lighting design shall be submitted to Council with the design submission.

9.4.10 Evidence of the agreement to provide an electricity supply and telecommunication services must be given to Council prior to the sealing of plans of survey.

DG 9.5 Telecommunication Services

9.5.1 Installing of underground telecommunication conduits shall be in accordance with the Service Authority's requirements.

9.5.2 Consideration shall be given to the location of any roadside cabinets, pillars and pits within the subdivision design.

9.5.3 Where an underground telecommunication service is to be provided, telecommunication conduits shall be placed in a shared trenching arrangement, refer Ergon Energy Standard Drawings 5162/1 and 5162/2 for shared trench arrangement that incorporates telecommunication, electrical and gas services.

9.5.4 Unless approved otherwise by Council, all telecommunication services shall be located within the road reserve at a distance of 0.3m – 1.2m from the property boundary.

9.5.5 The developer is responsible for the provision of telecommunication conduits across roads, existing roads are to be bored.

9.5.6 Permanent non-ferrous cable markers are to be installed in the kerb to mark the location of all road crossings.

DG 9.6 Electricity Supply

9.6.1 Unless otherwise approved by Council, electricity reticulation is to be placed underground.

9.6.2 Where an underground electrical service is to be provided it shall be placed in a shared trench arrangement. Refer relevant Ergon Energy Standard Drawings for shared trenching arrangements that incorporates telecommunication, electrical and gas services.

9.6.3 Sharing of trenches with sewerage and water mains shall not be permitted. Where existing or proposed services are likely to impede on standard electricity alignments, Council and the Ergon Energy are to be consulted to confirm service alignments and clearances.

9.6.4 Unless approved otherwise by Council, all electrical services shall be located within the road reserve at a distance of 0.3m – 1.2m from the property boundary.

9.6.5 The developer is to liaise with the Ergon Energy in relation to any requirement for an electrical substation with a view to providing sufficient suitable land on which to site the infrastructure.

9.6.6 Where a pad-mount substation is to be located within the frontage of a proposed or existing parkland, the location shall be subject to Council's approval.

9.6.7 No other services shall pass beneath the Ergon Energy pillars or substations.

9.6.8 The developer is responsible for the provision of electrical conduits across roads, existing roads are to be bored.

9.6.9 Permanent non-ferrous cable markers are to be installed in the kerb to mark the location of all road crossings.

9.6.10 Electrical pillars shall generally be located at an alternate boundary to water meters and gas service crossings. Exceptions may be considered in individual circumstances were unusual conditions or lot layouts exist and where approved by Council and the Ergon Energy.

9.6.11 Pillars shall be located at property boundaries exceptions can occur where there are stormwater easements or other constraints. The Ergon Energy should be consulted to determine alternate locations in these cases.

9.6.12 The Ergon Energy conditions of connection including contributions for initial cable installation works shall be met prior to the acceptance of the works "On Maintenance" by Council.

9.6.13 Where advised by the Ergon Energy an additional communication conduit supplied by the service provider shall be laid to Ergon Energy requirements.

Overhead Supply

DG 9.7 General

9.7.1 The overhead electrical reticulation shall be designed in accordance with the Ergon Energy requirements.

9.7.2 Power poles shall be placed on an appropriate alignment as approved by Council and the Ergon Energy.

DG 9.8 Road Lighting

9.8.1 All road lighting designs shall be prepared by an RPEQ Engineer shall be included in the design submission for acceptance by Council.

9.8.2 Road lighting design must be in accordance with this manual and AS/NZS 1158 and the Ergon Energy Lighting Construction Manual and Underground Construction Manual. Specific consideration must be given to identification and lighting of Local Area Traffic Management devices (LATM's) and intersections.

9.8.3 All light columns, luminaries and lamps are to be specified from the Ergon Energy Lighting Construction Manual and Underground Construction Manual.

9.8.4 All installation works shall be in accordance with the Ergon Energy Lighting Construction Manual.

9.8.5 Lighting on declared roads shall be designed and installed to the requirements of the Department of Transport and Main Roads.

9.8.6 It is a Council requirement that road lighting be installed under Rate 2 conditions of Tariff 71 - Public Lamps at all new subdivisions and developments.

9.8.7 The required lighting category for a particular road hierarchy shall be determined from Table D9.1.

Table 9.1 Lighting Categories

Category	Application[1]	Luminaire Type	Lamp Type	Rate[2]
V3	Sub Arterial Road	Aeroscreen	150 – 400 watt HPS	2
V5	Major Collector Road	Aeroscreen	150 – 400 watt HPS	2
P3	Minor Collector Road	Normal	80 Watt MV[4]	2
P4	Residential Street Access Street	Normal[3]	50 Watt MV[4]	2

	Access Place			
P4	Industrial Collector Street Industrial Access Street	Normal	80 Watt MV[4]	2
P1 – P3	Pathway and Cycleway	Normal[5] OR Council Specific	80 Watt MV Council Specified	2 3
P3	Bus Stop	Aeroscreen OR Normal	Wattage as required HPS – Cat V lighting MV – Cat P Lighting	2

1. **Roadway Classifications are contained in Table D1.1 "Street and Road Hierarchy – Deemed to Comply Requirements" of Design Manual "D1 Road Geometry". Where discrepancies exist between No. of Dwellings, Traffic Generation and Roadway Classification, lighting design shall be based on the Council designated Roadway**
2. **Rate 2 – Lighting owned and maintained by the Ergon Energy. Rate 3 – Lighting owned and maintained by Council.**
3. **Where "Nostalgia" luminaires are used, the lamp type is to be an 80 Watt MV. The "Nostalgia" luminaire must meet the glare control requirement stipulated in AS/NZS 1158.3.1:2005, design is to be based on "I" table 201262.CIE and the luminaire sourced directly from Sylvania.**
4. **Once permitted by the Electricity Authority, T5 fluorescent or compact fluorescent lamps shall be used where they offer a lower energy consumption or lower cost solution than the lamps nominated.**
5. **Where lighting is located next to residences (on a pathway or cycleway) then a Type 4 – Aeroscreen luminaire is required.**
6. **In general, street lighting poles are to be located opposite common allotment boundaries, to minimise potential interference with vehicle access, access to services (i.e. hydrants) and glare complaints from residents. It is desirable that poles not be located opposite boundaries of "battle axe" allotments due to a higher potential for vehicle collision.**
7. **Council may consider a lesser standard for subdivisions with lots greater than 4000m2 and outside the designated urban footprint. e.g. Category P5 or lighting at intersections, cul-de-sac's and other hazardous locations.**

9.8.8 Lighting shall be provided at the following locations in accordance with the development approval conditions and AS/NZS 1158:

9.8.8.1 Straight Sections;

9.8.8.2 Curves;

9.8.8.3 Intersections and Junctions;
9.8.8.4 Pedestrian Refuges;
9.8.8.5 Cul-de-sacs; and
9.8.8.6 Local Area Traffic Management Devices including Roundabouts. (The maintained horizontal illuminance is not to be less than 3.5 lux).

9.8.9 Where a pedestrian crossing has been installed it shall be lit in accordance with AS 1158.4 – 2009, Lighting of Pedestrian Crossings.

9.8.10 Lighting of entry points to pathways and cycleways shall be achieved by the selected placement of a road light nearby.

9.8.11 Additional lighting shall be provided at a designated bus stop facility; the design shall include the entry and exit lengths of the bus stop.

9.8.12 Lighting columns are to be offset a minimum of 820mm (+/- 20mm) from the invert of kerb and channel to centre of the pole. For a road with a flush kerb or a low density residential road that has a table drain instead of layback kerb and channel, the lighting column is to be offset 1300mm (+/- 20mm) from the outer edge of traffic lane to centre of the pole.

9.8.13 Where required to clear conflicts e.g. stormwater, sub-soil drain flushing points, water supply infrastructure, sewerage infrastructure, lighting columns can be located up to 0.5m in either direction from boundary prolongation along the roadway and at an alignment up to 1.1m from the invert of the kerb and channel.

9.8.14 The placement of lighting columns shall not occur within 1m of any water main that crosses the road.

9.8.15 Lighting columns that are to be installed at all new subdivisions and developments are to be a four hole base plate mounted steel pole as specified in the Ergon Energy Lighting Construction Manual.

9.8.16 When joining to an existing installation or extending a subdivision in stages, lighting columns and luminaires shall match as near as possible with the existing infrastructure.

9.8.17 The use of aeroscreen luminaires may be required when road lighting is installed near airports, refer to the Civil Aviation Safety Authority Australia – Manual of Standards Part 139.

9.8.18 Documentation shall be submitted to Council with the design submission demonstrating compliance with the AS/NZS 1158.

9.8.19 Foundation footing for minor road lighting must be cast in situ, a precast concrete foundation is not permitted without prior approval of council.

9.8.20 Existing timber street light poles are to be replaced with a steel lighting column when overhead powerlines are augmented underground.

DG 9.9 Park Lighting

9.9.1 Lighting requirements in parks will be advised by Council in accordance with the classification of the park.

9.9.2 A point of supply is required to all parks location will be advised by Council in consultation with Ergon Energy

9.9.3 Pathways or cycle ways within parks that require lighting shall be lit to the minimum lighting category P3 or above as deemed appropriate from the selection criteria tabled in AS/NZS 1158.

DG 9.10 Gas

9.10.1 Gas reticulation within a new subdivision or development may be installed subject to Council's approval.
9.10.2 Where reticulated gas is approved by Council, the gas service shall be located in the shared trench arrangement. Refer Ergon Energy Standard Drawings 5162/1 and 5162/2 for shared trenching arrangements that incorporates telecommunications, electrical and gas services.
9.10.3 The location of a central storage facility shall be on a separate freehold parcel of land with appropriate security to the satisfaction of the Council.
9.10.4 The Developer shall be responsible for obtaining all relevant approvals and licences necessary for installation.

DG 10 – DESIGN GUIDELINES – Landscaping

General

DG 10.1 Scope

10.1.1 This section sets out the minimum standards for landscaping within new subdivisions and on-street works for private developments.
10.1.2 This manual contains procedures for the design of:
10.1.2.1 On-street landscaping works, including buffers mounds, traffic islands and roundabouts; and
10.1.2.2 Public Open Spaces including, signage, furniture and playgrounds.

DG 10.2 Objective

10.2.1 The objective of this manual is to define Councils minimum landscaping requirements and to assist the designer in achieving the following:
10.2.1.1 Visually enhancement of the streetscapes;
10.2.1.2 Enlargement of the habitat and plant diversity in order to provide a food source for indigenous fauna;
10.2.1.3 Enhanced living environments by reducing the impacts of noise, fumes and car headlights;

10.2.1.4 Provision of shade trees; and
10.2.1.5 Crime prevention through environmental design (CPTED).

DG 10.3 Reference Documents

10.3.1 Whitsunday Regional Council:
10.3.1.1 Planning Scheme – Landscaping Code;
10.3.1.2 Local Laws and Policies;
10.3.1.3 Levels of Service/Operations Plan – Parks & Gardens
10.3.2 Australian Standards:
10.3.2.1 AS/NZS 1158.3-2005 Pedestrian area (Category P) lighting
10.3.2.2 AS 3500 National Plumbing and Drainage, Part 1.2 Water Supply – Acceptable Solutions
10.3.2.3 AS/NZS 4486 Playgrounds and playground equipment - Development, installation, inspection, maintenance and operation.
10.3.3 Wet Tropics Weed Pocket Guide

DG 10.4 General

10.4.1 At the time of development, the developer shall provide all on-street landscaping, this shall include street tree planting, grass establishment to road verges, and landscaping of traffic islands and buffer mounds.
10.4.2 Council should be consulted prior to commencement of the design to ascertain whether there are any site specific design requirements.
10.4.3 Some Local Authorities have plant selection guidelines and suburban planting themes designers are encouraged to consult with Council in the preparation of the landscaping design.
10.4.4 Landscaping plans shall be prepared by a person of professional standing in the field of Landscape architecture or landscape design, at a standard acceptable to Council.
10.4.5 CCA treated timber is not to be used for the construction of Council assets.
10.4.6 ACQ, Copper Azole, LOSP, or another alternative timber treatment, will be considered for approval by Council, so long as each individual piece of timber is clearly marked to show the treatment type, e.g. 'ACQ, Copper Azole, LOSP' or other similar text as appropriate. In some instances, (e.g. high use public areas), Council will require these markings to be burn branded into exposed timber areas also. In this regard reference should also be made to Council specific standard drawings for additional marking of treated timber elements that are used in the construction of Council assets in high use public areas.

DG 10.5 Existing Vegetation

10.5.1 In order to retain any established landscape character, all trees located within existing road reserves shall be protected and retained unless approved otherwise by Council.

10.5.2 Significant trees located within the verge of new road reserves shall be protected wherever possible and where advised by Council. This may require the adoption of non-standard utility service alignments therefore designers are encouraged to discuss proposed solutions with Council.

DG 10.6 Verges

10.6.1 All verges shall be covered full width with topsoil to a depth of not less than 50mm and shall be lightly compacted and grassed in accordance with Councils minimum standards and Specifications.

10.6.2 In order to guarantee a high standard of maintenance all verges are to be in a mowable condition, free from rocks and loose stones, and graded to even-running contours.

10.6.3 Aside from grass establishment and tree planting, landscaping of the verge between the property boundary and kerb is not a Council requirement. However, additional landscaping within the verge may be considered subject to Council approval. Generally, any additional landscaping shall be clear of underground services or alternatively limited to ground covers or small shrubs less than in 500mm height.

10.6.4 Should any excavation of the underground services in this vicinity of the additional verge landscaping be required, thus destroying the vegetation, Council will not be held responsible for plant replacement. Maintenance of planting in this vicinity will be the sole responsibility of the adjacent property owner/occupier.

DG 10.7 Street Tree Planting

10.7.1 The ultimate aim of street tree planting is to provide:

10.7.1.1 An attractive streetscape with character and charm. An individual character may be obtained by using a specific tree species for each street;

10.7.1.2 Shade, and the reduction of heat and glare from the road pavement. Parked cars may remain cool during the summer months; and

10.7.1.3 Habitat provision and enhancement. Native flowering trees provide a source of food and shelter for insects, birds and animals.

10.7.2 An avenue of trees of identical species and size planted at regular intervals has far greater visual and aesthetic impact than a mis-matched selection of

incompatible trees. In order to promote continuity in new streetscapes, a single species should be nominated for each street.

10.7.3 Where a development is occurring in an established street setting, an assessment of the existing trees should be made, and the most prevalent and healthy species chosen for verge planting.

10.7.4 Tree species shall be selected for their suitability to the site conditions (e.g. small trees under power lines, drought resistance, soil suitability) and shall be in accordance with any relevant Council plant selection guidelines and suburban planting themes.

10.7.5 To ensure consistency in growth rate and form all trees shall be no less than two (2) metres in height and shall be well established in their root and branch formation. A minimum 45 litre container should ensure a good survival factor.

10.7.6 The alignment and placement of street trees measured from the tree at the estimated ultimate size shall be in accordance with the following:

- 10.7.6.1 Greater than 4.0 metres from electricity or telecommunication poles or pillars;
- 10.7.6.2 Greater than 7.5 metres from streetlights to ensure effective street lighting;
- 10.7.6.3 Greater than 4.0 metre radius from high voltage transmission lines;
- 10.7.6.4 Greater than 2.0 metres from stormwater drainage pits;
- 10.7.6.5 Trees are to be planted in the front of properties at the centre of the lot at a rate of one per lot, or at the necessary rate to provide a maximum 20 metre spacing;
- 10.7.6.6 Trees are to be placed a minimum 1000mm from the back of kerb where achievable;
- 10.7.6.7 Trees are to be placed a minimum of three (3) metres from driveway;
- 10.7.6.8 At intersections trees are to be placed a minimum of ten (10) metres back from the face of the kerb of the adjoining street;
- 10.7.6.9 Trees are to be located so as not to obstruct access to any services or signage; and Trees are to be located so as not to obstruct pedestrian or vehicular traffic, nor create traffic hazard or cause damage to existing trees.

10.7.7 Street trees shall be planted in accordance with Standard Drawings SEQ G-010 – SEQ G-012 and installed in accordance with Council Specifications.

10.7.8 Street trees should not be a plant listed in:

- 10.7.8.1 Land Protection (Pest and Stock Route Management) Regulation;
- 10.7.8.2 Pest Management Plan; or
- 10.7.8.3 Wet Tropics Management Authority Publication Agricultural and Environmental Weeds.

DG 10.8 Buffer Zones

10.8.1 Mounds / Buffers adjacent to major roads controlled by the Department of Main Roads must comply with the requirements as specified by the Department of

Main Roads and as detailed herein. Generally, these buffers are ten (10) metres wide along the full frontage of the major road.

10.8.2 The aim of the Buffer Mound landscaping is to: Reduce the visual impact of adjacent development by screening rooflines; Reduce the visual impact of proposed noise attenuation barriers, which may be constructed at some time in the future on the mound crest; Reduce the visual impact of the mound's severe geometric landform by screening with foliage to ground level; Introduce a "natural" vegetated landscape appearance by replacing open agricultural land with a facade of dense planting; Reinforce the local character by indigenous tree and shrub species; and Provide additional functions, i.e.. shade over adjacent bikeways.

10.8.3 In order to accomplish the above aims, the species mix of plant selection should incorporate a range of species to provide variation in form, colour and texture, to contribute to a natural appearance. The front line of planting should have foliage down to ground level.

10.8.4 To ensure that buffer mounds are given the best possible chance of successful establishment and prolonged survival, a temporary irrigation system is required to be installed to the mounding. The preferred system is with a drip-style irrigation system or similar below the surface of the mulch, which reduces the chances of vandalism and reduces excess water loss as a result of runoff and evaporation.

10.8.5 Strong recognisable character is further reinforced by repetition of some suitable species as street and park trees in the adjacent subdivision

10.8.6 Use of disciplined plant selection based on themes such as colour, texture, or natural species associations, in addition to site suitability, creates higher quality landscapes than random assortments of nursery stock chosen solely for short notice availability and growth suitability.

10.8.7 Advance ordering and growing on contracts are desirable to ensure availability of desired species in the large quantities required.

10.8.8 Local rainforest species, which typify and reinforce the regions image, are preferred. Most are hardy, long-lived and have dense growth, which suppress weeds and reduce long-term maintenance.

10.8.9 The landscaping shall be designed so as not to create a safety risk to people using the mound and adjacent areas (i.e. no thorns, heavy nuts or poisonous fruits or berries).

10.8.10 No tree planting shall be done higher than 1/3 from the base of mound i.e. no trees on top of the mound.

Public Open Space

DG 10.9 General

10.9.1 At the time of development, the developer shall landscape all public open spaces to the satisfaction of Council and in accordance with this manual and Council's Levels of Service/Operations Plan.

10.9.2 Where a development is proposing to undertake any work within existing or proposed park a landscaping plan shall be prepared for consideration by Council.

10.9.3 Developers should have regard to Table 10.1 – Guidelines for Embellishment.

Table 10.1 – Guidelines for Embellishment

		Guidelines for Embellishment													
Classification	**Profile**	**Playground**	**BBQ' s**	**Shelters**	**Amenities**	**Structures**	**Irrigation**	**Mulched Beds**	**Manicured Lawns**	**Grassed Areas**	**Dog Park Areas**	**Exercise Equipment**	**Shade Trees**	**Park Furniture**	**Sporting Equipment**
Regional (Recreational)	High	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
District/ Cemetery (Recreational)	High	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
Local (Recreational))	Medium							✓		✓			✓	✓	
Local (Recreational)	Low									✓			✓		
District & Regional Sports Park	High	✓		✓	✓	✓	✓			✓			✓	✓	✓

10.9.4 Landscaping plans shall be prepared by a person of professional standing in the field of landscape architecture or landscape design, at a standard acceptable to Council.

10.9.5 CCA treated timber is not to be used for the construction of Council assets.

10.9.6 ACQ, Copper Azole, LOSP, or another alternative timber treatment will be considered for approval by Council, so long as each individual piece of timber is clearly marked to show the treatment type, e.g. 'ACQ, Copper Azole, LOSP' or other similar text as appropriate. In some instances, (e.g. high use public

areas), Council will require these markings to be burn branded into exposed timber areas also. In this regard reference should also be made to Council specific standard drawings for additional marking of treated timber elements that are used in the construction of Council assets in high use public areas.

DG 10.10 Crime Prevention through Environmental Design

10.10.1 It is important when designing parks that the principles of crime prevention through environmental design are considered, in particular:

10.10.1.1 Dense stands of vegetation should be confined to park peripheries, and should not be located alongside paths and play equipment. Vegetation should not block casual surveillance of picnic and play areas from adjacent residences;

10.10.1.2 Landscaping should not restrict sightlines and opportunities for natural surveillance within and of a site therefore all new vegetation around centres of activity should be single clean trunked trees with shrubs which do not grow beyond 500 mm height. This will avoid the problem of concealment and allow a greater area of surveillance from the road;

10.10.1.3 Lighting where required should be sufficient to deter loitering and vandalism; Large shrubs and trees should be planted in such a way as to prevent or reduce illicit access to buildings and neighbouring properties; and

10.10.1.4 Safety in large parks or areas of vegetation within a development may be enhanced by planting trees in thin strips which maximises the number of trees planted but which also restricts the ability of offenders to hide within a “mass” of vegetation.

DG 10.11 Treatment to Park Boundaries

10.11.1 Vehicles should be prevented from driving into parks, drainage reserves and public open spaces by the provision of barriers along the road frontages. These may be log barriers, bollards or natural features such as existing vegetation or newly planted and staked trees. Access for maintenance vehicles shall be provided through a lockable gate or removable bollard.

10.11.2 Definition of the park side boundaries should be indicated by installing log barrier fencing or bollards at approximately 20 metre centres, down each side. These should be offset from the surveyed boundary by 100 mm in order to allow future erection of private fencing without having to remove Council’s markers. Definition of the park boundary is intended to deter encroachment onto park by adjacent private properties and to define the park limits.

10.11.3 Log barriers and bollards shall be in accordance with Council’s Standard Drawing, unless otherwise approved by Council.

DG 10.12 Internal Circulation

10.12.1 The park layout should be designed to ensure that internal circulation or movement within the park is:
- 10.12.1.1 Safe;
- 10.12.1.2 Unencumbered;
- 10.12.1.3 Highly visible internally and externally; and
- 10.12.1.4 Linked to external cycle and pedestrian networks.

10.12.2 Design features including access points, street frontages, carparks, pedestrian/bike paths, park equipment and lighting should be considered.

10.12.3 Design of paths, car parking and access points should consider the needs of people with mobility challenges. Pathways shall be in accordance with Design manual D1 and comply with accessibility standards.

DG 10.13 Planting

10.13.1 Council parks seek to provide a range of recreation opportunities and there is scope to utilise planting design to help achieve this objective, options include:
- 10.13.1.1 Shade trees evenly planted throughout the site to maximise protection from the sun;
- 10.13.1.2 Island or corridor planting to concentrate trees for easy maintenance and encourage bird life for pleasure viewing;
- 10.13.1.3 Grouped planting will also provide shade adjacent to open space to allow unencumbered active play areas; and
- 10.13.1.4 Lines of tree planting to define edges of informal kick-about areas.

10.13.2 A minimum 75% of the proposed tree planting should be endemic, and species should be selected on their adaptability to site conditions, and their value to local fauna. Where the proposed park adjoins an area of established native vegetation, an extension of this habitat into the park should be implemented by using compatible species. The designer should also be encouraged to use rare and endangered plant species, or species proven to have excellent bird, butterfly and insect attracting qualities.

10.13.3 In order to promote the unique landscape characteristics of the region exotic flowering trees and non-native palms should only be used as features or emphasis, where necessary.

10.13.4 Some Local Authorities have plant selection guidelines and suburban planting themes and designers are encouraged to consult with Council in the preparation of the landscaping design.

10.13.5 Street trees should not be a plant listed in:
- 10.13.5.1 Land Protection (Pest and Stock Route Management) Regulation;
- 10.13.5.2 Local governments Pest Management Plan; and

10.13.5.3 Publication, Agricultural and Environmental Weeds (Wet Tropics Management Authority).

DG 10.14 Grassing

10.14.1 All parks shall be covered with topsoil to a depth of not less than 50mm and shall be lightly compacted and grassed in accordance with Councils' minimum standards and specifications.

10.14.2 In order to guarantee a high standard of maintenance all parks shall be in a mowable condition, free from rocks and loose stones, and graded to evenrunning contours.

10.14.3 Grass should be established within the proposed park as quickly as possible in order to avoid erosion and sedimentation to the local waterways, and prevent the establishment of weeds in accordance with Council's Manuals and Specifications.

DG 10.15 Mounding

10.15.1 Mounding may be used within the park design to provide topographical interest, to emphasise views, to help screen adjacent properties or eyesores, or as part of the internal design. The mounds should not exceed a gradient of 25% (1 in 4) in order to reduce erosion and allow mowing. Planting of trees and shrubs over the mound will further emphasise height and shape.

10.15.2 Care should be given to ensuring that the mound does not restrict visibility into and out of the park thus threatening the safety of users or provide unwanted visibility into private properties.

DG 10.16 Furniture

10.16.1 Park furniture should reflect the intended function of the park and compliment any distinguishing features present e.g. seating situated to maximise a view scape. Some preferred features of furniture include:

10.16.1.1 Park benches located under a natural or built shade structure to allow day long use. If the shade is built, it should have an impervious roof e.g. colourbond to provide shelter during rain;

10.16.1.2 Well drained ground and hard surfacing below any structure. Surface material could be pavers, coloured or exposed aggregate concrete etc;

10.16.1.3 Shade structures should maximise protection from the sun during the hours of 11 am - 3 pm; and

10.16.1.4 Refuse bins should be located for ease of use and pickup by refuse trucks e.g. adjacent to playgrounds or picnic areas, at park exits.

10.16.2 Designs of furniture should reflect a strong aesthetic and vandal resistant appearance.

10.16.3 Where possible, natural features may be used e.g. mounding for seating, trees or natural rock for bollards to simulate park furniture; and

10.16.4 Some Local Authorities have park furniture themes and master plans designers are encouraged to consult with Council in the preparation of the landscaping design.

DG 10.17 Signage and Interpretation

10.17.1 A park name sign is to be provided. The park name is to be submitted to Council for approval with the landscaping drawings. The proposed name is to preferably have the same theme as the subdivision's street names. The name is to be creative and imaginative in order to appeal to children for local parks and to adults for district and regional parks.

10.17.2 If the park has any historic, cultural or natural value the provision of interpretive signage will provide further interest to local users. Council can provide assistance in developing interpretive concepts

DG 10.18 Lighting

10.18.1 Lighting requirements within parks will be advised by Council in accordance with the classification of the park.

10.18.2 As a guide 2 park lights on poles shall be provided for every park of 4,000 square metres. However, this may vary depending upon the shape and alignment of the park, and the presence of existing vegetation. Generally, parks should be well lit providing a safe nocturnal environment for local users. Council will consider the relaxation of one or both lights where existing street lights are adjacent to the park area. Underground power should be provided to each pole. Light fittings should be vandal resistant.

10.18.3 Pathways within parks that require lighting shall be lit to the lighting category determined from the road Lighting Standards AS/NZS 1158.3 Pedestrian area (Category P) lighting.

DG 10.19 Provision of Water

10.19.1 Facilities for drinking, such as drinking tap / bubbler, shall be provided for each park area, and should be located near active recreational areas, adjacent to a well-used access route, and within an area serviceable from the road frontage.

A soak-away trench shall be provided to the base of each tap to prevent ponding and waterlogging.

10.19.2 In order to irrigate the park 1 water service connection in a cast iron valve box should be provided for each 2,000 square metre of park and should be a minimum 40 mm diameter with hose connection.

10.19.3 As an alternative, irrigation may be provided, on condition that the proposed system complies with the Council Standard Specification for Irrigation.

DG 10.20 Water Features

10.20.1 Water features should not be included in infrastructure to be handed to Council.

DG 10.21 Playgrounds

10.21.1 To ensure play equipment is as safe as possible and appropriate for the intended users, it should conform to the current and relevant Australian Standards for playgrounds and play areas and additional standards as may be established by Council.

10.21.2 Where playground equipment is required by Council as a condition of the development permit of the subdivision, or proposed to be installed by the developer, the following requirements should be considered and incorporated into the design:

10.21.2.1 Type of play equipment proposed should be selected in consultation with Council;

10.21.2.2 The age range of the users should influence the type of equipment provided; and

10.21.2.3 The siting of the playground should not infringe upon adjacent residential properties; a minimum distance of 10 metres between equipment and park boundaries should be provided and suitably landscaped with a minimum of 3 metre of screen planting to reduce noise and visual impact. Such landscaping is to be consistent with CPTED Principles.

10.21.3 To conform to safety requirements impact absorbing surfacing should be installed to the play area, e.g. sand, continuous rubberised matting, shredded car tyres.

10.21.4 Shade cover over playgrounds is to be provided, in order to encourage day long use. Preferably this should be a permanent shade structure approved by Council, however shade trees planted at maximum 6 metre centres around the safety area are acceptable.

10.21.5 The provision of seating overlooking the playground will be required.

10.21.6 Bench seating should be of the recycled plastic or aluminium type.

DG 10.22 Maintenance

10.22.1 The design of a park should carefully consider long-term maintenance requirements. Mulched garden beds containing trees and shrubs are easier to mow around than numerous small trees and shrubs planted individually throughout the grassed areas.

10.22.2 Where single shade trees occur they should be mulched to 200 mm depth in a minimum 1.2 metre diameter circle, thus avoiding damage to trunks by mowers or whipper snippers.

10.22.3 Access to the parks, drainage reserves and public open spaces for maintenance vehicles should be via a lockable gate or removable bollards.

10.22.4 A maintenance programme is required to be submitted to Council with the submission of the landscape designs. The programme should be prepared by the Landscape Architect / Designer and should detail all proposed maintenance works.

Irrigation

DG 10.23 General

10.23.1 All irrigation systems connected to Council's water supply shall be installed to satisfaction of Council. The installation of water meters, backflow prevention device and isolation valves are mandatory in all irrigation system. Refer AS 3500.

10.23.2 The installation of an irrigation system to all landscaped traffic islands and roundabouts is mandatory.

10.23.3 An irrigation plan prepared by an irrigation consultant, shall be submitted to Council for approval together with the landscaping plans, and the proposed planting plans for the traffic islands / roundabouts.

10.23.4 The design of all watering systems must ensure an efficient and economical application of water. Such systems are to be designed to use low water application, and shall run only during Council's nominated times.

10.23.5 The irrigation system shall use the following components and shall be installed in accordance with Council Specifications:

10.23.5.1 A backflow prevention unit, installed to the requirements of AS 3500;

10.23.5.2 20mm, 25mm or 32mm or 40mm diameter blue line poly pipework (as required) to garden bed areas; laid in a ring around the periphery of each garden bed;

10.23.5.3 Pop-up sprinklers to periphery of garden beds. Fixed shrub heads to centre of islands only; and

10.23.5.4 Automatically operated controller in PVC box laid flush with finished ground level.

10.23.6 All irrigation pipework installed under roadways shall be laid in minimum 100mm dia. uPVC Class 9 conduit.

10.23.7 The water connection and installation of the irrigation system shall be carried out by Council personnel or an approved contractor at the developers / applicants cost. The maintenance period for irrigation works shall be 12 months and shall run concurrently with the "On Maintenance" / establishment period for landscaping works. Thereafter all maintenance and watering will be the responsibility of the Council.

10.23.8 The installation of an irrigation system on Council property, other than buffer mounds, traffic islands and roundabouts, e.g. verges will not be permitted unless:

10.23.8.1 The system is separate from the development and all pipework is located adjacent to the kerb and channel; and

10.23.8.2 Or the verge is irrigated from sprinklers that fall within the development property boundaries.

10.23.9 These requirements have come about in order to prohibit the installation of water lines across the underground services located within the verge. These water lines would not appear in Council records and are therefore at risk of breakage during service repair work/trench excavation.

10.23.10 If a separate irrigation system within the verge is desired, the developer will be required to pay all installation costs, which include:

10.23.10.1 Tapping into main;

10.23.10.2 Installation of 25mm diameter (typical) backflow prevention device;

10.23.10.3 Installation of pipework and pop-up sprinklers; and

10.23.10.4 Installation of solenoid valves and automatic controller.

SG – Specification Guidelines

SG 1 – Earthworks

General

SG 1.1 Scope

1.1.1 This specification details all requirements pertaining to earthworks operations associated with construction sites. This specification excludes earthworks associated with roadworks construction.

1.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

1.1.3 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

SG 1.2 Reference Documents

1.2.1 Australian Standards:

1.2.1.1 AS 3798 Guideline on Earthworks for Commercial and Residential Developments

Materials

SG 1.3 Topsoil

1.3.1 Topsoil is defined as surface soils normally high in organic matter and contaminated by residual grass seed and grass roots. Topsoil shall be free from large roots, stones, rocks and unsuitable material as defined below.

SG 1.4 Unsuitable Material

1.4.1 Reference is made to AS 3798 Section 4.2 "Unsuitable Materials" for definitions and guidelines regarding unsuitable materials with regard to earthworks operations.

SG 1.5 Suitable Material

1.5.1 Reference is made to AS 3798 Section 4.3 "Suitable Materials" for the definition and guidelines regarding acceptable materials for earthworks operations.

Construction

SG 1.6 General

1.6.1 Specific reference is made to AS 3798 in relation all activities pertaining to earthworks operations. Specific construction details are noted in Section 6 of AS 3798 and all appropriate methods of testing, frequency of testing and reporting procedures are to be in accordance with this Australian Standard.

SG 1.7 Protection of Earthworks

1.7.1 The Contractor's responsibility for care of the works shall include the protection of earthworks in accordance with the approved Erosion and Sediment Control Strategy.

1.7.2 The Contractor shall install effective erosion and sedimentation control measures, prior to commencing earthworks, and shall maintain these control measures as required.

1.7.3 Adequate drainage of all working areas shall be maintained throughout the period of construction to ensure run-off of water without ponding, except where ponding forms part of a planned erosion and sedimentation control system.

1.7.4 When rain is likely or when work is not proposed to continue in a working area on the following day, precautions shall be taken to minimise ingress of any excess water into earthworks material. Ripped material remaining in cuttings and material placed on embankments shall be sealed off by adequate compaction to provide a smooth tight surface.

1.7.5 Should insitu or stockpiled material become over wet as a result of the Contractor not providing adequate protection of earthworks, the Contractor shall be responsible for replacing and/or drying out the material and for any consequent delays to the operations.

SG 1.8 Clearing and Grubbing

1.8.1 Clearing and grubbing operations shall be in accordance with AS 3798 Section 6.1.4.

1.8.2 The extent of clearing and grubbing shall be taken to mean the removal and disposal of:

- 1.8.2.1 Trees, Shrubs and overhanging branches, both living and dead;
- 1.8.2.2 Tree stumps and roots to a depth not less than 300mm below ground surface;
- 1.8.2.3 Rocks, rubbish and other artificial obstructions from the ground surface;
- 1.8.2.4 Abandoned services to a depth not less than 300mm below ground surface;
- 1.8.2.5 Old foundations, buildings and structures;
- 1.8.2.6 Minor made structures (such as fences);
- 1.8.2.7 Other materials, which are unsuitable for use in the works.

1.8.3 Un-grubbed rocks under embankments may be left undisturbed providing there is a depth of at least 600mm of earth covering over them when the filling operations are completed.

1.8.4 Unless otherwise specified or directed, the area to be cleared is the minimum width required to construct the works plus a margin of 2m beyond tops of cuts and toes of embankments. The area to be cleared and grubbed should be shown on a plan, preferably the Erosion and Sediment Control Plan.

1.8.5 Any trees, shrubs and overhanging branches identified on the Project Drawings to be retained or protected shall be clearly marked by the contractor prior to commencing clearing operations.

1.8.6 Beyond the areas to be cleared only those trees, shrubs and over hanging branches which directly interfere with the construction of the works shall be removed or pruned as necessary.

SG 1.9 Topsoil Operations

1.9.1 Stripping of topsoil shall be in accordance with AS 3798 Section 6.1.5.

1.9.2 Removal of topsoil shall only commence after erosion and sedimentation controls have been implemented and when clearing, grubbing and disposal of materials have been completed on that section of the Works.

1.9.3 Topsoil throughout the extent of the work shall be removed and stockpiled separately clear of the work with care taken to avoid contamination by other materials.

1.9.4 Topsoil material stripped from the site shall be stockpiled for later use in spreading on footpaths, allotments and parkland areas.

1.9.5 Topsoil stockpiles shall not contain any timber or other rubbish and shall be trimmed to a regular shape.

1.9.6 To minimise erosion, stockpiles are to be protected by effective usage of erosion and sediment control devises, which are to be defined within the Erosion and Sediment Control Management Plan.

1.9.7 Where seeding of stockpiles to encourage vegetation cover is specified, such work shall be carried out in accordance with the Specification S8 LANDSCAPING.

1.9.8 Nominally 75mm depth of topsoil is to be re-spread over such areas with an absolute minimum of 40mm material to be provided in any one location.

SG 1.10 General Earthworks

1.10.1 Placement and Compaction of earthworks shall be in accordance with AS 3798 Sections 5 and 6.

1.10.2 The methods of testing and frequency of testing shall be in accordance with AS 3798 Sections 7 and 8.

1.10.3 Unless a higher level of testing is specified or directed the minimum level of geotechnical testing services to be accorded earthworks activities shall be as determined by Level 2 in Appendix B of AS 3798.

1.10.4 All testing is to be carried out by a NATA registered laboratory with appropriate accreditation and suitably qualified personnel.

SG 1.11 Excavations

1.11.1 Materials encountered in excavation shall be loosened and broken down as required so that they are acceptable for incorporation in the works.

1.11.2 All excavations shall be constructed to the shape and slopes shown on the approved Project Documents.

1.11.3 Batter shall be trimmed neatly to the shapes specified and shall be free of loose or unstable material.

1.11.4 Horizontal tolerances for the excavation of batters, measured at right angles to the batter line, shall be – 50mm +250mm (where the + tolerance is in the direction which increases the width of excavation).

1.11.5 Vertical tolerances for all excavation shall be ± 50mm.6. When completed all culvert excavations, benches, berms and drains shall be free draining.

1.11.6 At all times the requirements of the Workplace Health and Safety Act shall be complied with and all works shall be made safe during the performance of such activities.

SG 1.12 Embankments/Fill Areas

1.12.1 All embankments and fill areas shall be constructed to the shape and slopes shown on the approved Project Documents.

1.12.2 When completed, the average planes of the batters of embankments shall conform to those shown on the approved Project Documents.

1.12.3 Horizontal tolerances for the embankment batters, measured at right angles to the batter line, shall be – 0mm +250mm (where the + tolerance is in the direction which increases the width of embankment).

1.12.4 Vertical tolerances for all embankments / fill areas, shall be ± 50mm except where such fill defines the subgrade level for a structure, then the vertical tolerances are to be +15mm – 30mm.

1.12.5 When completed all embankments / fill areas shall be free draining.

1.12.6 At all times the requirements of the Workplace Health and Safety Act shall be complied with and all works shall be made safe during the performance of such activities.

1.12.7 Stabilise final embankment and fill areas with suitable revegetation, landscaping, turf or grass seeding. These areas and works should be shown in the landscape plans.

SG 1.13 Trenching Operations

1.13.1 The excavation for trenches shall be taken out to the exact alignment, width and level as shown on the Project Drawings and associated specifications.

1.13.2 Trenches shall not be excavated wider than the dimensions shown on these relevant drawings and the Contractor shall take all precautions as necessary to ensure that the excavation is made in a careful manner and that it is rendered secure and safe by all appropriate means.

1.13.3 At all times the requirements of the Workplace Health and Safety Act shall be complied with and all works shall be made safe during the performance of such activities.

1.13.4 Suitable drainage shall be accorded to all trenching activities and de-watering of trenches shall be undertaken should infiltration of water occur. All materials excavated from trenches shall be separated by material type for latter inclusion into the works or disposal from the site should these materials be deemed unsuitable in accordance with the requirements of AS 3798.

1.13.5 Excavation and trenching operations shall proceed with sufficient resources to ensure uninterrupted progress and continuance of the works with subsequent services. Completion and backfilling are to be undertaken as soon as possible to minimise the extent of site open to the effects of the environment.

SG 2 – Road Pavements

General

SG 2.1 Scope

1.1.1 This specification details all requirements pertaining to the construction of flexible road pavements, including kerbing, subsoil drainage and trimming of verges.

1.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

SG 2.2 Reference Documents

2.2.1 Australian Standards:
- 2.2.1.1 AS1289 Methods of Testing Soils for Engineering Purposes
- 2.2.1.2 AS2439.1 Perforated Drainage Pipe and Associated Fittings
- 2.2.1.3 AS3706.7 Determination of Pore-sized Distribution – Dry Sieving Methods

2.2.2 All Australian Standards referenced in this specification shall be the current edition.

2.2.3 Department of Main Roads Standard Specifications
- 2.2.3.1 MRS 11.03 Drainage, Retaining Structures and Protective Treatments
- 2.2.3.2 MRS 11.04 General Earthwork
- 2.2.3.3 MRS 11.05 Unbound Pavements
- 2.2.3.4 MRS 11.11 Sprayed Bitumen Surfacing (Excluding Emulsions)
- 2.2.3.5 MRS 11.14 Road Furniture
- 2.2.3.6 MRS 11.17 Bitumen
- 2.2.3.7 MRS 11.19 Bitumen Cutter and Flux Oils
- 2.2.3.8 MRS 11.20 Cutback Bitumen
- 2.2.3.9 MRS 11.22 Supply of Cover Aggregate
- 2.2.3.10 MRS 11.30 Dense Graded Asphalt Pavements
- 2.2.3.11 MRS 11.45 Pavement Marking Department of Main Roads Publications
- 2.2.3.12 Manual of Uniform Traffic Control Devices)

SG 2.3 Pavement Material

2.3.1 Pavement materials used for pavement construction shall comply with Table S2.1 unless otherwise approved by the relevant authority.

Table S2.1 Pavement Materials

Pavement Material	Type of Material Permissable	Grading	CBR (Minimum)
Subgrade Replacement	Type 2.5	B, C or D	15
Sub-base (for Access Places and Access Streets)	Type 2.3	B, C or D	45
Sub-base (for all roads of Major Collector or higher in the hierarchy)	Type 2.2	B, C or D	60
Base (for Access Places and Access Streets)	Type 2.2	B, C or D	60
Base (for all roads of Major Collector or higher in the hierarchy)	Type 2.1	B or C	80

2.3.2 All references to material type in the above table refer to the Main Roads Standard Specification MRS11.05 "Unbound Pavements".

2.3.3 All materials shall be sourced from a Quality Assured material supplier and the results of the manufacturer's testing to assure the quality of the product shall be incorporated with the Contractor's Quality records.

SG 2.4 Asphaltic Concrete Surfacing

2.3.4 For surfacing on pavements with nominal depth 30mm, the material quality requirements, material quality compliance testing requirements and all other matters pertaining to Asphaltic Concrete road pavement surfacing shall conform to the requirements as specified in Austroads.

2.3.5 For surfacing on pavements with nominal depths greater than 30mm, the material quality requirements, material quality compliance testing requirements and all other matters pertaining to Asphaltic Concrete road pavement surfacing shall conform to the appropriate Main Roads Standard Specification (Main Roads Specification MRS 11.30 "Dense Graded Asphalt Pavements").

SG 2.5 Sprayed Bitumen Surfacing

2.5.1 For surfacing of pavements with sprayed bitumen. the material quality requirements, material quality compliance testing requirements and all other

matters pertaining to hot bitumen road pavement surfacing shall conform to the appropriate Queensland Department of Main Roads Specification:

2.5.1.1 Main Roads Specification MRS 11.11 "Sprayed Bitumen Surfacing (Excluding Emulsions)"
2.5.1.2 Main Roads Specification MRS 11.17 " Bitumen"
2.5.1.3 Main Roads Specification MRS 11.19 " Bitumen Cutter and Flux Oils"
2.5.1.4 Main Roads Specification MRS 11.20 " Cutback Bitumen"
2.5.1.5 Main Roads Specification MRS 11.22 "Supply of Cover Aggregate"

SG 2.6 Concrete Interlocking Pavers

2.6.1 Concrete interlocking pavers shall be manufactured and supplied in accordance with the requirements of Specification S3 SEGMENTAL PAVING.

SG 2.7 Road Furniture

2.7.1 The manufacture, supply and material requirements appropriate to the specification for Road Signs and guidepost shall be as per the Main Roads Standard Specification "MRS11.14 Road Furniture".
2.7.2 All signs to be Class 1 reflectivity.
2.7.3 Signs located in concrete islands or medians shall be supplied with the "V Loc" socket system and fitted with anti-theft bolts.

SG 2.8 Pavement Marking

2.8.1 The manufacture, supply and material requirements appropriate to the specification for Pavement Marking shall be as per the Main Roads Standard Specification "MRS11.45 Pavement Marking".

Construction

SG 2.9 Inspection, Sampling & Testing

2.9.1 Inspection, sampling and testing of the pavement shall be in accordance with the requirements of this specification before, during and after the construction of the pavement.
2.9.2 All testing shall be carried out by a NATA registered laboratory with appropriate accreditation and suitably qualified personnel.

SG 2.10 Setout

2.10.1 The construction set-out for roadworks construction shall be by reference to a datum line established by a Registered Surveyor. The datum line may be either the road centreline, a pegged chainage offset line or any alternative datum suitable for the purposes of accurately setting out the roadworks in accordance with the drawings for the works.

SG 2.11 Clearing & Grubbing

2.11.1 All clearing and grubbing works shall be in accordance with the Specification for SG 1 EARTHWORKS.

SG 2.12 Topsoil Operations

2.12.1 All topsoil operations associated with roadworks construction (topsoil stripping, stockpiling and re-spreading), shall be in accordance with the Specification for SG 1 EARTHWORKS.

SG 2.13 Earthworks

2.13.1 All earthworks operations up to subgrade level shall comply with the requirements detailed in Main Roads Standard Specification MRS11.04 "General Earthworks".

SG 2.14 Trim and Compact Subgrade

2.14.1 The subgrade material is defined as the top 300mm of earthworks profiled and compacted upon which pavement materials are to be placed. The subgrade material shall be compacted in accordance with the requirements detailed in Main Roads Standard Specification MRS11.04 "General Earthworks", with the testing frequency and requirements are detailed herein.

2.14.2 The subgrade material shall be compacted to provide a relative compaction determined by AS1289 for a standard compactive effort as follows:

2.14.2.1 Minimum Dry Density Ratio (Cohesive soils) - 98%

2.14.2.2 Minimum Density Index (Cohesion less soils) - 80%

2.14.3 Testing frequency not less than one (1) test per 1000m^2 with a minimum number of three (3) tests per sample area being tested.

2.14.4 At least one (1) sample area shall be tested for type of subgrade material evident on site.

2.14.5 The subgrade material shall not include any "Unsuitable Material" as defined in Main Roads Standard Specification MRS 11.04 "General Earthworks" and shall be trimmed to the profile required to conform with the Project Drawings and the tolerances specified herein.

2.14.6 Where unsuitable material is encountered in the subgrade, a suitable "Subgrade Replacement Material" in accordance with the requirements of this specification shall be incorporated in the works.

2.14.7 In this instance, the unsuitable material shall be excavated to a level sufficient to obtain a sound foundation for the pavement. The compaction requirements and testing frequency noted previously shall apply to all operations involving any subgrade replacement material required for the works.

2.14.8 The tolerances appropriate to the construction of subgrade and to subgrade replacement material shall comply with the following:

2.14.8.1 Design Level Tolerance +15mm, - 30mm

2.14.8.2 Shape Tolerance of 25mm maximum deviation from a 3m straight edge laid in any direction.

2.14.9 Following completion of subgrade compaction, trimming, and satisfactory density testing, the whole of the subgrade area shall be inspected by proof rolling with a fully loaded single rear axle truck with a minimum axle loading of 8 tonne (or acceptable equivalent). Acceptable proof rolling shall be taken to be no visible signs of deformation or instability in the subgrade.

SG 2.15 Pavement Courses

2.15.1 The pavement course materials (Base Course and Sub-base Course) shall be transported from the material supplier to the spreading area without segregation and shall be placed at the correct moisture content.

2.15.2 The pavement course materials shall be spread in uniform loose layers on the prepared subgrade, subgrade replacement, or sub-base course and compacted to conform with the grades, profiles and cross sections as indicated on the Project Drawings and to the tolerances and compaction standards specified herein.

2.15.3 The thickness of any loose layers shall be such that after compaction it shall not be less than 100mm nor more than 200mm thick. Appropriate compaction equipment shall immediately follow the spreading and shaping of the loose materials and under no circumstances shall the materials be allowed to dry out before compaction.

2.15.4 After compaction of each pavement course, the whole of the surface shall be watered and rolled with a steel drum roller to give a hard, dense, tightly packed surface free of lenses, compaction planes and caking, in accordance with the tolerances specified herein.

2.15.5 No placement of base course material on the sub-base shall commence until the compaction standards and tolerances for construction of the lower layer have been inspected and confirmed satisfactory. [Hold Point].

2.15.6 The pavement course material shall be compacted to provide a relative compaction determined by AS1289 for a standard compactive effort as follows:
2.15.6.1 Base Course - 100%
2.15.6.2 Sub-base Courses - 100%

2.15.7 Testing frequency not less than one test per 500m^2 with a minimum of four (4) tests per sample area being tested for sand replacement method and two tests per 500 m^2 with a minimum" of eight (8) tests per sample for nuclear test.

2.15.8 The tolerances for the construction of the pavement courses shall comply with Table S2.2.

Table S2.2 Construction Tolerances

Course	Design Level Tolerance	Layer Thickness Tolerance	Shape Tolerance
Sub-base	+20mm -20mm	+40mm -20mm	25mm in 3m maximum
Base	+10mm -10mm	+15mm -15mm	15mm in 3m maximum
Overall	+20mm -10mm	+20mm -10mm	

SG 2.17 Asphaltic Concrete Surfacing

2.17.1 For Asphaltic Concrete surfacing with a nominal depth 30mm, the construction requirements, method of construction works, and compliance testing requirements for Asphaltic Concrete surfacing, shall be in accordance with Austroads

2.17.2 For Asphaltic Concrete surfacing with a nominal depth greater than 30mm, the construction requirements, method of construction works, and compliance testing requirements for Asphaltic Concrete surfacing, shall be in accordance with Main Roads Specification MRS 11.30 "Dense Graded Asphalt Pavements".

2.17.3 All roads greater than 10% gradient shall have a 10mm primer seal or applied to the base course prior to the placement of the Asphaltic Concrete. Alternate methods where approved by Council shall be as noted on the approved Project Drawings.

2.17.4 The tolerances appropriate to Asphaltic Concrete surfacing shall comply with the following:
2.17.4.1 Design Level Tolerance - +10mm, - 10mm
2.17.4.2 Layer Thickness Tolerance - +15mm, - 0mm
2.17.4.3 Shape Tolerance - 7mm in 3m Maximum (Any direction).

SG 2.18 Sprayed Bitumen Surfacing

2.18.1 The construction requirements, method of construction works, and compliance testing requirements for Hot Sprayed Bitumen surfacing, shall be in accordance with the following Queensland Department of Main Roads Specifications:

- 2.18.1.1 Main Roads Specification MRS 11.11 "Sprayed Bitumen Surfacing (Excluding Emulsions)"
- 2.18.1.2 Main Roads Specification MRS 11.17 " Bitumen"
- 2.18.1.3 Main Roads Specification MRS 11.19 " Bitumen Cutter and Flux Oils"
- 2.18.1.4 Main Roads Specification MRS 11.20 " Cutback Bitumen"
- 2.18.1.5 Main Roads Specification MRS 11.22 "Supply of Cover Aggregate"

SG 2.19 Concrete Segmental Pavers

2.19.1 Concrete interlocking pavers shall be constructed in accordance with the requirements of Specification S3 SEGMENTAL PAVING.

SG 2.20 Kerbing and Channelling

2.20.1 Concrete kerb, kerb and channel shall be constructed by a continuous slip form extrusion machine true to line and grade and to the profile for each kerb type in accordance with the Council's Standard Drawing.

2.20.2 Kerbing shall be constructed on sub base material compacted to 100% standard compaction as determined in accordance with the relevant Test Methods contained in AS 1289.

2.20.3 The finished kerbing shall be well compacted and shall have exposed surfaces free from voids and honeycombing.

2.20.4 Contraction joints shall be made at regular intervals not exceeding 3m. The joints shall be made by forming grooves 40mm deep and not more than 6mm wide in all exposed surfaces of the kerb and kerb and channel. All grooves shall be normal to the top surfaces and square to the alignments of the kerb and kerb and channel.

2.20.5 The horizontal and vertical alignments of the kerb and kerb and channel shall not vary from the design level by more than + 10mm, provided that:

- 2.20.5.1 The difference between the deviations from correct levels at any two points 30m apart shall not exceed 30mm
- 2.20.5.2 The deviation from a straight edge laid parallel to the centreline shall not exceed 10mm in 3m.

2.20.6 The invert of all channels shall be finished true to grade and alignment and no channelling in which water is found to pond will be accepted.

2.20.7 Any kerb or kerb and channel not true to line or with noticeable kinks, bends or other faults, or not of the required dimensions (considering the tolerances

specified herein), may be condemned and shall be broken out and removed from site.

SG 2.21 Subsoil Drainage

2.21.1 Unless otherwise detailed on the Project Drawings subsoil drainage shall be constructed beneath the kerbing on an alignment as shown on Council's Standard Drawing.

2.21.2 Subsoil drainage trenches, drainage pipe, backfill material, geotextile shall be constructed in accordance with the requirements of Main Roads Standard Specification MRS 11.03 "Drainage, Retaining Structures and Protective Treatments".

2.21.3 Subsoil Drainage cleanouts shall be constructed in accordance with the requirements of Council's Standard Drawing and shall preferably, be located with the upstream flushing point internally within a stormwater gully pit or manhole.

SG 2.22 Trim Verges and Batters

2.22.1 Following completion of all earthworks operations associated with roadworks construction, all verges and fill batters shall be graded and trimmed to the line and level indicated on the Project Drawings. Allowance shall be made in the final trimming operations for topsoiling and grassing activities.

2.22.2 Cut batters shall be lightly tined to a depth of 25 - 50mm prior to respreading of topsoil material.

SG2.23 Road Furniture and Pavement Marking

2.23.1 The construction of all Road Signs and associated Road Furniture shall comply with the requirements of the following:

- 2.23.1.1 Main Roads Standard Specification MRS 11.14 "Road Furniture"
- 2.23.1.2 Main Roads "Manual of Uniform Traffic Control Devices"
- 2.23.1.3 Council's Standard Drawing for Street Name Signs.
- 2.23.1.4 Council's Standard Drawing for Traffic Control Devices.

2.23.2 All Pavement Marking shall comply with the requirements of Main Roads Standard Specification MRS 11.45 "Pavement Marking".

SG 3 – Segmental Paving

General

SG 3.1 Scope

3.1.1 This specification details all matters pertaining to the construction of both clay and concrete segmental paving for road pavements, medians, traffic islands, driveways, cycle ways, footpaths and other pedestrian areas.

3.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

SG 3.2 Reference Documents

3.2.1 Australian Standards
- 3.2.1.1 AS1012 Method of Testing Concrete
- 3.2.1.2 AS1141.1 Particle Size Distribution of Dry Sieving
- 3.2.1.3 AS/NZS4455 Masonry Units and Segmental Pavers
- 3.2.1.4 AS/NZS4456 Masonry Units and Segmental Pavers – Methods of Test – General Introduction and list of Methods

3.2.2 Concrete Masonry Association of Australia Specifications
- 3.2.2.1 T44 Concrete Segmental Pavements - Guide to Specifying
- 3.2.2.2 T45 Concrete Segmental Pavements – Design Guide for Residential Access Ways and Roads
- 3.2.2.3 T46 Concrete Segmental Pavements – Detailing Guide

Materials

SG 3.3 Concrete Segmental Pavers

3.3.1 Concrete segmental pavers are units of not more than 0.10 square metres in gross plan area, manufactured from concrete, with plain or dentated sides, with top and bottom faces parallel and with or without chamfered edges.

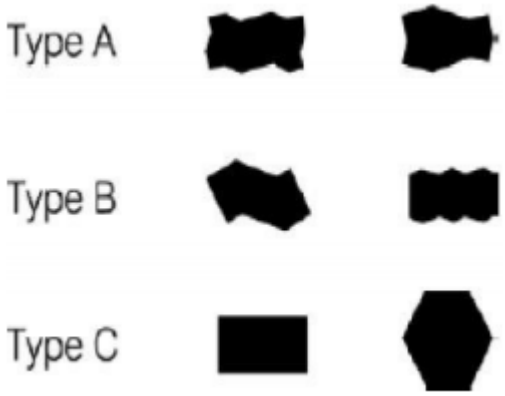
3.3.2 Concrete pavers are identified by shape as being one of the following types:
- 3.3.2.1 Shape Type A: Dentated chamfered units which key into each other on four sides, are capable of being laid in herringbone bond, and by their plan geometry, when interlocked, resist the spread of joints parallel to both the longitudinal and transverse axes of the units.
- 3.3.2.2 Shape Type B Dentated units which key into each other on two sides, are not (usually) laid in herringbone bond, and by their plan geometry,

when keyed together, resist the spread of joints parallel to the longitudinal axes of the units and rely on their dimensional accuracy and accuracy of laying to interlock on the other faces.

3.3.2.3 Shape Type C Units which do not key together and which rely on their dimensional accuracy and accuracy of laying to develop interlock.

3.3.3 Figure S3.1 shows examples of some of the more common shapes.

Figure S3.1 Paver Shapes



3.3.4 Concrete segmental pavers shall comply with the requirements of T44, T45, T46, and AS/NZS 4455 for each area of application.

3.3.5 The material requirements for concrete pavers for each application, derived from T44, are shown in Table S3.1.

3.3.6 The pavers shall meet the requirements for the relevant application given in Table S3.1 when tested in accordance with the test methods outlined in AS/NZS 4456.

Table S3.1 Material Requirement for Concrete Segmental Pavers

Application	Characteristic breaking load[2] (kN)	Characteristic flexural strength[2] (MPa)	Minimum Thickness (mm)	Shape[3]	Dimensional deviations (Cat AS455)	Abrasion Resistance (mean abrasion]
Residential Driveways **Light Traffic** **Medium Traffic[1]**	3 5	2 3	No Limit No Limit	Any Any	DPA1 or DPB1 DPA1 or DPB1	7 7
Public Footpaths **Low Volume** **High Volume and**	5 5	3 3	No Limit No Limit	Any Any	DPB2 DPB2	5 3.5

Pedestrian Malls[1]						
Roads[3] All Roads	5	3	80	A	DPB2	5

Notes:

1. **Capable of taking occasional 8.2-t axle loads**
2. **At 28 days**
3. **Interlocking shapes offer superior performance in road applications**

SG 3.5 Bedding Sand

3.5.1 The bedding sand shall be well graded sand, consisting of clean, hard, uncoated grains uniform in quality, generally passing a 4.75mm sieve and shall conform with the grading limits specified in Table S3.2.

Table S3.2 Bedding Sand Grading Limits

AS Metric Sieve (mm)	% Passing
9.52	100
4.75	95-100
2.36	80-100
1.18	50-85
0.600	25-60
0.300	10-30
0.150	5-15
0.075	0-10

3.5.2 The sand shall be of uniform moisture content when spread. It shall be covered when stored on site to protect it from rain penetration.

3.5.3 The bedding sand shall be free of deleterious soluble salts or other contaminants, which may cause, or contribute to, efflorescence.

SG 3.6 Joint Filling Sand

3.6.1 The joint filling sand shall be well graded passing a 2.36mm sieve, and shall conform with the grading limits specified in Table S3.3.

Table S3.3 Joint Filling Sand Grading Limits

AS Metric Sieve (mm)	% Passing
2.36	100
1.18	90-100
0.600	60-90
0.300	30-60

0.150	15-30
0.075	5-10

3.6.2 The sand shall be dry when spread. It shall be covered when stored on site to protect it from rain penetration.

3.6.3 The sand shall be free of deleterious soluble salts or other contaminants, which may cause, or contribute to, efflorescence.

3.6.4 Sand used for bedding is not suitable for joint filling

SG 3.7 Concrete for Edge Restraints

3.7.1 Concrete supplied and placed for the construction of edge strips shall comply with the Specification for SG 7 CONCRETE WORKS.

3.7.2 Unless otherwise indicated on the Project Drawings, or where the edge restraint is provided by kerb and / or channel, the concrete used for edge restraints shall have a minimum 28-day characteristic compressive strength of 25MPa for edge restraints to pavers on road pavements and 20MPa for edge restraints to pavers on footpaths, bikeways, and medians.

Construction

SG 3.8 Paver Type, Shape, Class and Laying Pattern

3.8.1 The choice of concrete pavers shape type, shape name, colour, thickness and laying pattern shall be as shown on the Project Drawings for each area of application.

3.8.2 Council will require a minimum stock quantity for future replacements.

SG 3.9 Subgrade Preparation

3.9.1 For road pavements and areas subject to vehicle loads, the subgrade shall be trimmed and compacted to the required depth below finished surface level as shown on the approved Project Drawings and in accordance with Specification SG 2 ROAD PAVEMENTS.

3.9.2 Following completion of subgrade compaction and trimming, the whole of the subgrade area shall be inspected by proof rolling with a fully loaded single rear axle truck with a minimum axle load of 8 tonnes (or acceptable equivalent). Acceptable proof rolling shall be taken to be no visible signs of deformation or instability in the subgrade. [Hold Point]

3.9.3 For pedestrian and light traffic areas (i.e. footpaths, bikeways and medians) all soft, yielding or other unsuitable material shall be replaced with sound material and the subgrade shall be compacted to provide a minimum of 95 per cent standard compaction as determined by AS 1289.5.4.1 for standard compactive effort. The subgrade shall be trimmed to be ± 30mm of the design subgrade level.

SG 3.10 Subbase/Base

3.10.1 Base course for pedestrian and light traffic areas (i.e. footpaths, bikeways, medians) shall be as shown on the Project Drawings, where not otherwise specified the base course shall be a 125mm thick compacted to 95 per cent standard compaction as determined by AS 1289.5.4.1 for standard compactive effort. Base course material shall be minimum of Type 2.3 Pavement Material in accordance with the Specification for SG 2 ROAD PAVEMENTS.

3.10.2 For road pavements and areas subject to vehicle loads the subbase and base shall be constructed to the specified thickness and depth below finished surface level, and to the design grade and crossfalls of the finished surface, as shown on the approved Project Drawings in accordance with Specification SG 2 ROAD PAVEMENTS.

3.10.3 The base course shall extend in width to at least the rear face of all new edge restraints.

3.10.4 Notwithstanding the finished level tolerances contained within Specification SG 2 ROAD PAVEMENTS for base of ± 10mm of design levels, the level on the finished surface of the base course for road pavements to be overlain with segmental paving shall be trimmed to within + 10mm or - 0mm of design levels. The deviation from a 3m long straight edge placed anywhere and laid in any direction on the top surface of the base course for all segmental paving shall not exceed 10mm. Sand bedding material shall not be used as a levelling material to compensate for base finishing outside the above tolerances.

3.10.5 The finished surface of the base shall drain freely without ponding.

SG 3.11 Edge Restraints

3.11.1 Edge restraints in the form of kerb and / or channel or edge strips shall be constructed along the perimeter of all segmental paving as shown on the approved Project Drawings. Concrete kerb and / or channel and edge strips shall be constructed in accordance with specifications SG 2- ROAD PAVEMENTS and SG 7 CONCRETE WORKS

3.11.2 Faces of edge restraints abutting pavers shall be vertical.

3.11.3 Edge restraints shall be supported on compacted base and / or subbase of the thickness as shown on the approved Project Drawings. Where not otherwise specified or indicated, the minimum thickness of compacted base beneath the

edge restraints shall be 100mm adjacent to road pavements and medians, and 50mm adjacent to footpaths, bikeways and driveways.

3.11.4 Unless otherwise shown on the Project Drawings, expansion and contraction joints shall be provided in accordance with Specification SG 7 CONCRETE WORKS.

3.11.5 After the concrete has hardened and not earlier than three days after placing, the spaces at the back of the edge restraint shall be backfilled with earth, compacted in layers not greater than 150mm thick, then topsoiled to meet surrounding of design levels.

3.11.6 Hidden edge restraints may be used as an alternative for pedestrian and light traffic areas and shall be as detailed on the approved Project Drawings.

SG 3.12 Sand Bedding Course

3.12.1 The sand bedding course shall be spread in a single uniform layer and screeded in a loose condition to the nominated design profile and levels plus that necessary to achieve a uniformly thick nominal 25-35mm layer following final compaction of the segmental paving.

3.12.2 Any depressions in the screeding sand exceeding 5mm shall be loosened, raked and rescreeded before laying pavers.

3.12.3 Screeded sand left overnight if subject to rain shall be checked for level and rescreeded where necessary before pavers are placed. The sand shall not be screeded more than two metres in advance of the laying face at the completion of work on any day.

3.12.4 Drainage of the bedding course shall be as detailed on the approved Project Drawings.

SG 3.13 LAYING PAVERS

3.13.1 Unless otherwise specified, concrete pavers for road pavements shall be placed in herringbone laying pattern.

3.13.2 Pavers shall be uniformly placed on the screeded sand bedding to the nominated laying pattern. Pavers shall be placed so that they are not in direct contact with each other and shall have uniform 3mm nominal joint widths.

3.13.3 The first row shall be located next to an edge restraint or an established straight line, and laid at a suitable angle to achieve the required orientation of pavers in the completed pavement.

3.13.4 In each row, full units shall be laid first. Edge or closer units shall be neatly cut using a paver scour, or mechanical or hydraulic guillotine, and fitted subsequently. Cut pieces of pavers which are smaller in size than one quarter of a full block shall not be used.

3.13.5 Manholes, drainage gullies and similar penetrations through the pavement shall be finished against the paving with a concrete surround or apron designed to suit and fit the laying pattern, otherwise complying with the requirements for edge restraints.

3.13.6 Any foot or barrow traffic shall use boards overlaying paving to prevent disturbance of units prior to compaction. No other construction traffic shall be allowed on the pavement prior to compaction and provision of joint filling sand.

3.13.7 On completion of subsequent bedding compaction and joint filling operations, no more than 10 per cent of joints along any 10 metre line along a major axis of the laying pattern shall have widths outside the range of 2 - 4mm.

SG 3.14 Bedding Compaction

3.14.1 After laying the pavers, the sand bedding shall be fully compacted and the surface brought to design levels and surface profiles by not less than two passes of a high frequency low amplitude plate compactor, which covers at least 12 units. Compaction shall continue until lipping between adjoining units has been eliminated.

3.14.2 Any units which are structurally damaged during bedding compaction shall be removed and replaced. The pavement shall then be recompacted for at least one metre surrounding each replacement unit.

3.14.3 The paving operations shall be arranged so that the use of the plate compactor proceeds progressively behind the laying face without undue delay, and such that compaction is completed prior to cessation of construction activity on any day. Compaction shall not be attempted within one metre of the laying face except on completion of the pavement against an edge restraint.

3.14.4 The finished surface level shall not vary from the design level at any point laid in any direction, by more than 6mm for all road pavements and 8mm for all other areas of segmental paving. Notwithstanding this, the finished surface of the segmental paving, including where the paving abuts an edge restraint other than a drainage inlet, shall not deviate from the bottom of a 3m straight edge laid in any direction, except at grade changes, by more than 6mm for road pavements and 8mm for all other areas of segmental paving.

3.14.5 The abutting edges of two adjacent pavers should match, but in no circumstances should they differ by more than 2mm.

3.14.6 The surface level of pavers immediately adjacent to surface drainage channels shall finish not less than 5mm nor more than 10mm above the channel edge.

3.14.7 All compaction shall be complete and the pavement shall be brought to design profiles before spreading or placing sand filling in the joints.

SG 3.15 Filling Joints

3.15.1 As soon as practicable after bedding compaction, and in any case prior to termination of work on any day, dry sand for joint filling shall be spread over the pavement and the joints filled by brooming.

3.15.2 To ensure complete filling of the joints, both the filling sand and pavers shall be as dry as practicable when sand is spread and broomed into the joints.

3.15.3 The pavement shall then receive one or more passes of a plate compactor and the joints then refilled with sand, with the process then repeated sufficiently to ensure that the joints are completely filled.

SG 3.16 Protection of Work

3.16.1 Other than wheeled trolleys, forklifts and cluster-clamp vehicles, construction and other traffic shall not use the pavement until bedding compaction and joint filling operations have been completed.

SG 3.17 Opening to Traffic

3.17.1 As soon as practicable after the filling of joints, construction vehicles may use the pavement, and should be encouraged to traverse the greatest possible area of pavement to assist in the development of 'lock-up'.
3.17.2 Excess joint filling sand shall be removed prior to opening to traffic.
3.17.3 The pavement shall then be inspected by the Contractor at regular intervals up until the expiration of the Defects Liability Period to ensure that all joints remain completely filled.

SG 3.18 Tolerances

3.18.1 Where tolerances for individual components and associated dimensions are not specified on the Project Drawings, deviations from established lines, grades and dimensions in the completed work shall not exceed the values stated herein.
3.18.2 The dimensional tolerances as shown in Table S3.4

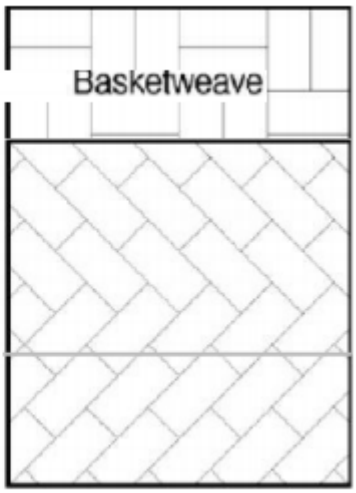
Table S3.4 Summary of Limits and Tolerances

Description	Limits/Tolerances
Base	Finished level of base for pavements to be within +10mm or -0mm of design levels.
	Finished level of base other than for road pavements, to be within +/10mm of design levels.
	Finished level of base other than for road pavements, to be within +/10mm of design levels
Segmental Paving Units (Joint Widths)	No more than 10% of joints along any 10 metre line of joints along a

	major axis of the laying pattern shall have widths outside the range 2 – 4mm.
Segmental Paving Units (Surface Level)	Finished surface level of pavers shall not vary from design levels by more than +/- 6mm for road pavements and +/- 8mm for other than road pavements.
	Finished surface of pavers shall not deviate from a 3m straight edge, laid in any direction, by more than 6mm for road pavements and 8mm for other road pavements.
	The abutting edges of two adjacent pavers shall not differ by more than 2mm.
	Finished surface level of pavers adjacent to surface drainage channels shall be no less than 5mm and no more than 10mm above the level of adjacent channel edge.

SG 3.19 Paver Laying Patterns

Stretcher



Zig Zag Running Bond

SG 4 Stormwater Drainage

General

SG 4.1 Scope

4.1.1 The specification details are all the requirements pertaining to the construction of stormwater drainage works.

4.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

SG 4.2 Reference Documents

4.2.1 Australian Standards

- 4.2.1.1 AS1597 Precast Reinforced Concrete Box Culverts
- 4.2.1.2 AS1650 Hot-Dipped Galvanised Coatings on Ferrous Articles
- 4.2.1.3 AS1761 Helical Lock-Seam Corrugated Steel Pipes
- 4.2.1.4 AS2338 Preferred Dimensions of Wrought Metal Products
- 4.2.1.5 AS2423 Galvanised Wire Fencing Products
- 4.2.1.6 AS3725 Loads on Buried Concrete Pipes
- 4.2.1.7 AS4058 Precast Concrete Pipes (pressure and non-pressure)
- 4.2.1.8 AS4159 Fibre-Reinforced Concrete Pipes and Fittings
- 4.2.1.9 AS5065 Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications

4.2.2 All Australian Standards referenced in this specification shall be the current edition.

4.2.3 Department of Main Roads

- 4.2.3.1 MRS 11.03 Drainage, Retaining Structures and Protective Treatments

Materials

SG 4.3 Steel Reinforced Concrete Pipes (RCP)

4.3.1 Pipes shall conform in all respect to AS 4058.

4.3.2 Pipes up to and including 600mm diameter can be rubber ring jointed or flush with manufacturer’s external bands; pipes larger than 600mm diameter shall be flush jointed with manufacturer’s external bands.

4.3.3 In locations where the pipes are to be laid in a subgrade of sand or influenced by saltwater, rubber ringed joints shall be used.

4.3.4 Pipes laid in areas influenced by saltwater intrusion or acid sulphate soils, or where any part of the pipe is below the Highest Astronomical Tide the pipe will have cover to reinforcement in accordance with the exposure classification requirements of AS 3600.

4.3.5 The class of pipe shall be as specified or shown on the drawings. Minimum of Class "2".

SG 4.4 Fibre Reinforced Concrete Pipes (FRC)

4.4.1 Pipes shall conform to the AS 4139. Pipes of the same diameter and class can be used in lieu of Steel Reinforced Concrete Pipes.

4.4.2 In locations where the pipes are to be laid in a subgrade of sand or influenced by saltwater, rubber ringed joints shall be used.

4.4.3 Where rubber ring joints are specified the "V" section rubber ring shall be used and are to be jointed using the manufacturer's lubricant.

SG 4.5 Reinforced Concrete Box Culverts (RCBC)

4.5.1 Box culverts shall be of the "Inverted U" type unless specified otherwise and shall conform in all respects to the current edition of AS 1597.

4.5.2 Box culverts laid in areas influenced by saltwater intrusion or acid sulphate soils, or where any part of the pipe is below the Highest Astronomical Tide the box culvert will have cover to reinforcement in accordance with the exposure classification requirements of AS 3600.

SG 4.7 Polypropylene Pipes

4.7.1 Pipes shall conform to the AS 5065. Pipes shall only be used within allotments with the prior approval of Council. “As Constructed” drawings shall clearly indicate location of polypropylene pipes. Polypropylene pipes shall not be used within road reserves.

SG 4.8 Bedding Materials

4.8.1 Concrete and Fibre Reinforced Concrete Pipes:

4.8.1.1 Bedding shall consist of clean coarse sand with 100% passing the 19mm AS Sieve and not more than 15% passing the 0.075mm AS Sieve.

4.8.2 Reinforced Concrete Box Culverts:

4.8.2.1 The bedding material to be used in conjunction with box culverts should conform to the grading specified in the Main Roads Standard Specification MRS11.03.

SG 4.9 Steel Wire Gabion and Mattress Protection Works

4.9.1 Steel wire gabions and mattresses shall be proprietary products manufactured from heavily galvanised hexagonally woven steel-wire mesh and filled with rock conforming to the material requirement specified in Main Roads Specification MRS 11.03.

SG 4.10 Concrete

4.10.1 The concrete and reinforcement used in the construction of gully pits, manholes, headwalls and aprons etc shall comply with Specification SG 7 CONCRETE WORKS.

SG 4.11 Manhole Covers and Frames

4.11.1 Cast iron covers and frames are to be supplied for all stormwater manholes and shall be manufactured and tested in accordance with AS 3996.

4.11.2 All openings shall conform to the details on Council's Standard Drawing

4.11.3 All covers shall have a raised stud pattern with the letters SW (65mm high) cast into the centre of the lid and "gatic" type lifting holes.

4.11.4 Minimum classes of manhole covers shall be as follows:

4.11.4.1 Within Residential Properties and Parks - Class B

4.11.4.2 Residential Road Reserves:

4.11.4.2.1 Up to collector street status - Class C

4.11.4.2.2 Trunk Collector or higher - Class D

4.11.4.3 Industrial, Commercial Road Reserves - Class D

SG 4.12 Grates and Frames

4.12.1 Grates and frames of gully pits are to be fabricated from grade 250 steel and shall comply with the requirements of AS 3996 They shall be constructed to the dimensions and details supplied on the Council's Standard Drawing and shall be Hot Dipped Galvanised to the requirements of AS 1650.

4.12.2 Grates for structures other than gully pits shall be bicycle safe, and of a classification applicable to its location in accordance with AS 3996.

SG 4.13 Floodgates

4.13.1 Floodgates shall be a proprietary product manufactured from non-corrosive material of a type specified on the approved Project Drawings.

SG 4.14 Backfill Material

4.14.1 Backfill material shall generally be selected fill material, not markedly different in character from the surrounding soil, free from large stones, lumps of clay, topsoil, tree roots and other rubbish. It shall have an even grading free of lumps retained on a 75mm sieve and free of stones retained on a 25mm sieve.

4.14.2 Stabilised Backfill material may need to be required when utilising Corrugated Aluminium Alloy Pipes. Where such materials are required, only approved mixes in accordance with the manufacturers recommendations shall be accepted.

Construction

SG 4.15 Setout

4.15.1 The alignment of the stormwater pipes and position of the gully pits, manholes and headwalls shall be as stated in the approved Project Drawings and set out from a datum line established by a Registered Surveyor. The datum line may be either the road centreline, property boundary, a pegged chainage offset line, or any alternative datum suitable for the purposes of accurately setting out the works.

4.15.2 The invert levels of the pipes shall be maintained in strict accordance with site bench marks and only approved and tested equipment shall be used to establish and maintain these levels.

SG 4.16 Clearing & Grubbing

4.16.1 All clearing and grubbing works shall be in accordance with Specification SG 1 EARTHWORKS.

4.16.2 Where stormwater lines pass through allotments any trees or obstructions not on the line of the pipes shall be preserved.

SG 4.17 Trenching

4.17.1 All trenching and foundation works necessary for the installation of stormwater drainage works, shall be in accordance with Specification SG 1 EARTHWORKS.

4.17.2 Trench or foundation excavation for stormwater drainage works shall be undertaken to the planned level for the bottom of the specified bedding or foundation level. All loose material shall be removed from the bottom of the trench.

4.17.3 The width of trenching excavation shall be in accordance with the Council Standard Drawings, the trench base and comply with all regulations of Workplace Health and Safety Act.

4.17.4 In undertaking trench excavation, the Contractor shall provide any shoring, sheet piling or other stabilisation of the sides necessary to comply with statutory requirements.

4.17.5 Where public utilities exist in the vicinity of stormwater drainage works the Contractor shall obtain the approval of the relevant authority / corporation to the method of excavation before commencing excavation.

SG 4.18 Diverting Water and Dewatering

4.18.1 During construction all care should be taken to ensure any water, which may interfere with the progress of the works, be diverted to keep the trenches and excavations free from water so as to prevent any damage to the works due to flooding or other causes.

4.18.2 The necessary pumping items shall be kept on hand to ensure the excavation is constantly dewatered during the progress of the works.

4.18.3 Discharge for dewatering pumps shall be directed to location approved by and to the satisfaction of Council.

4.18.4 Care shall be taken to ensure that discharge flows do not cause any flooding, erosion or environmental harm, where necessary appropriate measure shall be put in place to trap and dispose of entrained sediments.

4.18.5 In areas where acid sulphate soils are present, discharge flows shall be disposed of and/or treated in accordance with an approved acid sulphates soils management plan.

SG 4.19 Bedding

General

4.19.1 Pipe support and bedding shall be in accordance with AS 3725 for pipe support types shown on the approved Project Drawings. Where the pipe support type is not shown on the Drawings, the minimum pipe support type shall be HS2 within road reserves and H1 elsewhere.

4.19.2 The bedding and haunch zone material shall be placed and compacted in accordance with AS 3725, with care be taken around the Haunch zone area to avoid disturbing the position of the pipe. The surface of every pipe should have full and even contact with the bedding material.

4.19.3 In trenches with bad ground water conditions and/or unsuitable material the trench should be over excavated to allow a foundation layer of crushed rock material (min. depth 250mm) to be placed to provide an adequate foundation. A geofabric to engineering design should be placed for the full width of the trench and overlapped 450mm prior to placing the bedding material and laying the pipes in this instance.

Box Culverts

4.19.4 Bedding for precast and cast insitu base slabs shall be selected backfill to a compacted depth of 150mm laid to the line and level of the underside of the base slab. The bedding shall be finished to a smooth surface with a tolerance of ± 10mm in level and ± 50mm in line.

SG 4.20 Lay and Joint Pipes

Concrete and Fibre Reinforced Concrete Pipes

4.20.1 Pipe laying shall begin at the downstream end of the line with the socket or grooved end of the pipe facing upstream. When the pipes are laid, the barrel of each pipe shall be in contact with the bedding material throughout its full length.

4.20.2 When elliptical pipes with circular reinforcement or circular pipes with elliptical reinforcement are used, the pipes shall be laid in such a position that the manufacturer's marks, designating the "Top" or "Bottom" of the pipe shall not be more than 5 degrees from a vertical plane through the longitudinal axis of the pipe.

4.20.3 External joints shall be taped with the manufacturers supplied tape or rubber external sand bands upon final bedding and alignment.

4.20.4 Lifting holes in pipes shall be plugged with mortar, precast tapered concrete / plastic plugs, or other approved means prior to backfill material being placed.

4.20.5 Joints shall not be made under water. The trench must be de-watered to facilitate joint making and inspection. Precautions must be taken to prevent erosion of joint material by moving currents of water.

4.20.6 Drainage lines shall be constructed with a tolerance of ± 15mm in line or level over any section 30m in length (providing each pipe unit has a fall in the direction of flow) from the alignment and levels shown on the approved Project Drawings.

Reinforced Concrete Box Culverts

4.20.7 The base of the box culvert shall be laid true to line and grade before the crown units of the box culvert segments are laid.

4.20.8 All construction methods, tolerances and requirements for box culverts shall conform to the requirements detailed in Main Roads Standard Specification MRS 11.03.

SG 4.21 Backfill

Concrete & Reinforced Pipes

4.21.1 Compaction standards for backfill material shall conform to Table S4.1.

Table S4.1 Backfill Compaction

Location	Minimum Dry Density (Cohesive soils)	Minimum Density Index (Cohensionless soils)
Under Road embankments: **>0.3m below pavement subgrade** **<0.3m below pavement subgrade**	 95% Standard 98% Standard	 65% 80%
Elsewhere	95% Standard	65%

Note: Compaction requirements are with reference to the relevant Test Methods Contained in AS 1289.

4.21.2 For trench installations, mechanical compacters shall be used. Where impact tampers are used caution must be exercised not to allow a direct blow on the pipe. The material should be compacted at near optimum moisture content and should be brought up evenly in layers not exceeding 150mm on both sides of

the pipe up to 150mm over the pipe. It should not be bulldozed into the trench nor dropped directly on the pipe.

4.21.3 Heavy mechanical equipment must not be used for tamping of backfill or be permitted to run over pipelines at shallow depths except at prepared crossing places and where approved.

4.21.4 For trenches not contained within the road reserve the trench shall be refilled to natural surface level with fill material placed evenly in 150mm to 300mm layers, tamped thoroughly.

4.21.5 The backfilling should be completed as soon as possible after pipe laying, and before the pipeline is charged with water. This will avoid the risk of pipes floating if the trench becomes flooded.

SG 4.22 Drainage Structures

4.22.1 Gullies, manholes and field inlets shall be constructed to the form and dimensions shown on the plans and in accordance with Council's Standard Drawings. Where the ground is solid, back forms need not be used in the construction of drainage structures, the concrete being poured against the earth. Where this is done, the thickness of the wall of such gully or manhole shall be increased to a minimum of 50mm greater than the dimension shown on the plan.

4.22.2 The joints between drainage structures and pipes shall be made watertight using cement mortar. The mortar shall be used within one hour of mixing and shall not be retempered. The joints shall be finished to provide smooth surfaces, uniform with the inner surfaces of the structure.

4.22.3 Concrete benching shall be shaped as specified and shall have smooth, even surfaces and neat edges. Step irons shall be installed horizontal, vertically in line, and shall project uniformly from the walls, where the depth of the structure is greater than 1.5m.

4.22.4 Where step irons are not cast-in-place, they shall be epoxy mortared into drilled holes. The joints between the step irons and the walls shall be completely filled so that the step irons are held rigid and the joints are watertight.

4.22.5 Concrete top slabs in Manholes shall be joined to the walls using cement mortar or epoxy mortar. The opening in the top slab shall be closed with temporary covers, after which excavations shall be backfilled. Cast in situ concrete surrounds shall be constructed on the top slabs to encase the frames. Alternatively, precast concrete surrounds may be employed, using epoxy mortared joints. Only approved covers in accordance with this Specification shall be installed in the frames.

4.22.6 Temporary covers to Gullies and Manholes may remain in position and installation of the frames and surrounds deferred until pavement construction has reached a stage where the frames and surrounds can be positioned accurately. Where construction is in a staged format, the joint between each pour shall be suitably roughened to ensure an adequate bind and seal is achieved between the successive concrete pours.

4.22.7 Compaction of material surrounding drainage structures shall be in accordance with Table S4.1.

SG 4.23 Steel Wire Gabions and Mattress Protection

4.23.1 These proprietary products shall be assembled and installed in accordance with the Main Roads Standard Specification MRS 11.03.

SG 4.24 Headwalls, Wingwalls and Aprons

Cast Insitu

4.24.1 Where necessary, localised excavations shall be carried out to allow construction of cast insitu end structures.

4.24.2 Cast insitu endwalls, wingwalls and aprons, shall be constructed to the dimensions and other requirements shown on the approved Project Drawings and in accordance with Council's Standard Drawings.

4.24.3 Concrete work shall comply with Specification SG 7 CONCRETE WORKS. Construction of endwalls and wingwalls shall include the construction of integral cut-off walls, where required.

Precast

4.24.4 Where necessary, localised excavations shall be carried out to allow installation of precast concrete end structures.

4.24.5 End structures shall be laid on foundation bedding, which provides continuous even support to the structures. Foundation bedding material shall be compacted to the relevant standard specified below:

4.24.5.1 Cohesive material - to not less than 95% Standard Compaction. □ Non-cohesive material - to a density index of not less than 65.

4.24.5.2 The joints between end structures and culverts shall be filled with cement mortar. The joint areas shall be thoroughly cleaned and wetted just prior to filling. All points shall be finished smooth and uniform with the surfaces of the end structures.

4.24.6 Any holes and recesses provided in end structures to assist installation shall be neatly plugged or filled with cement mortar.

4.24.7 Mortared joints and filled holes and recesses shall be cured for a period of not less than 48 hours. Backfill operations against end structures shall not be carried out during this curing period.

SG 4.25 Floodgates

4.25.1 Floodgates can be sleeved over the end of the pipe, secured with stainless steel bands or fixed to with a flange to headwalls. Installation shall be in accordance with the manufacturers recommendations.

SG 4.26 Tolerances

4.26.1 Tolerances for the construction of Stormwater Drainage Works shall comply with Table S4.2.

Table 4.2 Construction Tolerances

Location	Tolerance
Invert Levels	+10mm -10mm
Surface Levels	+50mm - 50mm in Allotments +10mm - 10mm in Roadways
Structure Locations	Within 100mm of design in Allotments or Park Within 50mm of design longitudinally along roadway Within 10mm of design at right angles to road
Crest of Spillway and Detention Basins	Trimmed to +25mm - 10mm

SG 5 – Water Reticulation

General

SG 5.1 Scope

5.1.1 This specification details all matters pertaining to Water Supply Reticulation Construction.

5.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

5.1.3 Aspects of modification or clarification of the Water Supply Code of Australia WSA 03 – 2002 are detailed in Appendix A of Design Guideline – D6.

5.1.4 Aspects of modification or clarification of the Water Supply Code of Australia WSA 03 – 2002 – Water Supply Code of Australia – Standard Drawings are detailed in Appendix A of this document.

SG 5.2 Reference Documents

5.2.1 Australian Standards:

- 5.2.1.1 AS1289 Methods of Testing Soils for Engineering Purposes
- 5.2.1.2 AS1432 Copper Tubes for Plumbing, Gasfitting and Drainage Applications
- 5.2.1.3 AS/NZS1477 PVC Pipes and Fittings for Pressure Applications
- 5.2.1.4 AS1646 Elastomatic Seals for Waterworks Purposed
- 5.2.1.5 AS/NZS1906 Retroreflective Material and Devices for Road Traffic Control Purposes
- 5.2.1.6 AS2032 Code of Practice for Installation of PVC Pipe Systems
- 5.2.1.7 AS2033 Installation of Polyethylene Pipe Systems
- 5.2.1.8 AS2129 Flanges for Pipes, Valves and Fittings
- 5.2.1.9 AS/NZS2280 Ductile Iron Pressure Pipes and Fittings
- 5.2.1.10 AS2638 Sluice Values for Waterworks Purposes
- 5.2.1.11 AS3500 National Plumbing and Drainage Code
- 5.2.1.12 AS3952 Water Supply – DN80 Spring Hydrant Valve for General Purposes
- 5.2.1.13 AS/NZS4129 Fittings for Plyethylene (PE) Pipes for Pressure Applications
- 5.2.1.14 AS/NZS4130 Polyethylene (PE) Pipes for Pressure Applications
- 5.2.1.15 AS4441 Oriented PVC (PVC-O) Pipes for Pressure Applications
- 5.2.1.16 AS/NZS4765 Modified PVC (PVC-M) Pipe for Pressure Applications

5.2.2 Department of Main Roads

- 5.2.2.1 MRS 11.45 Pavement Marking

5.2.3 Water Services Association of Australia

5.2.4 WSA 03 – Water Supply Code of Australia

Materials

SG 5.3 Pipes General

5.3.1 All pipes used for water main reticulation shall be constructed from the following materials:
- 5.3.1.1 Polyvinylchloride (PVC)
- 5.3.1.2 Polyethylene (PE); or
- 5.3.1.3 Ductile Iron.

SG 5.4 Unplacticised PVC (PVC-U)

5.4.1 Unplasticised PVC (PVC-U) pipes shall be manufactured in accordance with AS/NZS 1477 by an Australian Standards quality endorsed company.

5.4.2 Modified PVC (PVC-M) pipes manufactured in accordance with AS/NZS 4765 by an Australian Standards quality endorsed company may be used as an alternative to PVC-U.

5.4.3 Oriented PVC (PVC-O) pipes manufactured in accordance with AS 4441 by an Australian Standards quality endorsed company may be used as an alternative to PVC-U

5.4.4 PVC pipes 100mm diameter and greater to be Class 16 rubber ring jointed (Ductile iron O.D compatible).

5.4.5 Rubber Rings shall be manufactured and tested in accordance with AS 1646. Jointing lubricant in accordance with the manufacturers' specification should be used to facilitate jointing.

SG 5.5 Polyethylene Pipe

5.5.1 Polyethylene pipe shall be manufactured in accordance with AS/NZS 4130 by an Australian Standards quality endorsed company.

5.5.2 PE pipes up to 50mm inside diameter to be Class 16

5.5.3 Fittings shall comply with AS/NZS 4129.

SG 5.6 Ductile Iron

5.6.1 Ductile Iron pipes shall be manufactured and cement lined in accordance with AS/NZS 2280 by an Australian Standards quality endorsed company.

5.6.2 Socketed pipes to be Class K9 suitable for the patented "Tyton" type rubber ring joint. Flanged pipes to be Class K12.

5.6.3 Flanges shall comply with AS 2129 Table C. Bolts and nuts for flanged joints shall be in accordance with AS 2129.

5.6.4 All pipes and fittings shall be wrapped in a loose polyethylene sleeving 0.25mm thick. Wrapping and taping shall be carried out in accordance with the pipe manufactures recommendations.

SG 5.7 Bedding Material

5.7.1 Bedding Material shall consist of a clean coarse sand free from organic matter, clay, shells and deleterious material with 100% passing the 6.7mm AS sieve and not more than 5% passing a 0.150mm AS sieve.

SG 5.8 Valves

5.8.1 All Valves shall be manufactured in accordance with AS 2638 by an Australian Standards quality endorsed company.

5.8.2 Valves of 80mm diameter and larger, are to be coated with a thermosetting epoxy powder to AS 2638 and AS 3952.

5.8.3 All 50mm diameter valves shall be DR brass construction with appropriate pressure rating or approved equivalent and certified by QAS to Standards Mark or Water Mark. All valves shall be fitted with bronze tee handles.

5.8.4 All valves 80mm and greater to be anti clockwise to close.

SG 5.9 Hydrants

5.9.1 Hydrants shall be the spring hydrant "Maxi Flow" 2000 type (DN80) manufactured in accordance with AS 3952 by an Australian Standards quality endorsed company. Hydrants are to be coated with a thermosetting epoxy powder to AS 2638 and AS 3952.

SG 5.10 Bends and Tees

5.10.1 All bends for mains of 80mm diameter or larger and all other associated fittings shall be constructed in accordance with AS/NZS 2280, and have flanged or spigot and socket type joints as specified on the approved Project Drawings. Where flanges are used, bolts shall be matched sets and conform to the following criteria:

5.10.2 In above ground uses, bolts shall be Hot Dipped Galvanised In below ground uses, bolts shall be Grade 316 Stainless Steel with nuts and washers Grade 304 stainless steel.

5.10.3 All bends, tees and miscellaneous fittings shall be factory nylon powder coated unless otherwise specified.

SG 5.11 Pavement Marking

5.11.1 The manufacture, supply and material requirements appropriate to the specification of pavement marking shall be in accordance with Main Roads Standard Specification "MRS11.45 Pavement Marking".

SG 5.12 Raised Retro Reflective Marking

5.12.1 Raised retroreflective pavement markers used to locate hydrants shall be blue bi directional markers.

5.12.2 The material requirements of the raised retroreflective pavement markers shall be in accordance with Main Roads Standard Specification "MRS11.45 Pavement Marking".

SG 5.13 Setout

5.13.1 The location and sizes of the mains and position of valves and hydrants shall be as stated on the approved Project Drawings.

5.13.2 Bends shall be positioned such that the correct alignment is maintained and remains within the allotted service corridor.

5.13.3 Where levels are nominated on the approved Project Drawings the Contractor shall ensure the main is laid within the given tolerances and the equipment used to level the main is approved and tested.

5.13.4 Alignment of the water main shall be 2.500m off the property boundary, with horizontal centreline deviations permissible provided the main remains entirely within the 450 mm wide footpath allocation.

5.13.5 Deflection of water mains is not allowed. Bends are to be used for change of direction.

5.13.6 Where a hydrant is placed at the end of a water main which will not be extended in the future, e.g., in cul-de-sac; the hydrant shall be installed with a hydrant bend located adjacent to the boundary of the last property serviced.

5.13.7 In cases where the main may be extended in the future, a hydrant tee and dead end shall be used, located as near as practicable (<0.5m) to the development boundary or nearest RP boundary.

5.13.8 The maximum spacing of hydrants shall be 80m with hydrants located at all crests, sags and ends of lines in cul-de-sacs.

5.13.9 Spring hydrants are to be oriented with bolts parallel to the water main.

SG 5.14 Clearing and Grubbing

5.14.1 All trenching and foundation works necessary for the installation of the pipeline or thrust blocks, shall be in accordance with Specification SG 1 EARTHWORKS.

5.14.2 The width of trenching excavation shall be in accordance with the Council's Standard Drawing at the trench base and comply with all regulations of Workplace Health and Safety Act.

5.14.3 In undertaking trench excavation, the Contractor shall provide any shoring, sheet piling or other stabilisation of the sides necessary to comply with statutory requirements.

5.14.4 Where public utilities exist in the vicinity of water main drainage works the Contractor shall obtain the approval of the relevant authority / corporation to the method of excavation before commencing excavation.

5.14.5 The safety of the public shall be considered at all times. Where necessary, fenced walkways and controlled vehicular crossways shall be provided across trenches to maintain access from carriageway to individual properties or within individual properties. All such installations shall be of adequate size and strength and satisfactorily illuminated.

5.14.6 In the event of any trenching being left open for longer than one week, the Contractor shall provide erosion control measures to ensure minimal soil disturbance and material loss off the site. Some or all of these measures shall be provided immediately upon the onset of rain with an open trench.

5.14.7 The Contractor shall leave a clear space of 600mm minimum between the edge of any excavation and the inner toe of spoil banks. No excavated materials shall be stacked against the walls of any building or fence without the written permission of the owner of such building or fence. Topsoil from excavations shall be kept separate and utilised to make good the surface after backfilling.

SG 5.15 Trenching

5.15.1 All trenching and foundation works necessary for the installation of the pipeline or thrust blocks, shall be in accordance with Specification SG 1 EARTHWORKS.

5.15.2 The width of trenching excavation shall be in accordance with the Council's Standard Drawing at the trench base and comply with all regulations of Workplace Health and Safety Act.

5.15.3 In undertaking trench excavation, the Contractor shall provide any shoring, sheet piling or other stabilisation of the sides necessary to comply with statutory requirements.

5.15.4 Where public utilities exist in the vicinity of water main drainage works the Contractor shall obtain the approval of the relevant authority / corporation to the method of excavation before commencing excavation.

5.15.5 The safety of the public shall be considered at all times. Where necessary, fenced walkways and controlled vehicular crossways shall be provided across trenches to maintain access from carriageway to individual properties or within individual properties. All such installations shall be of adequate size and strength and satisfactorily illuminated.

5.15.6 In the event of any trenching being left open for longer than one week, the Contractor shall provide erosion control measures to ensure minimal soil disturbance and material loss off the site. Some or all of these measures shall be provided immediately upon the onset of rain with an open trench.

5.15.7 The Contractor shall leave a clear space of 600mm minimum between the edge of any excavation and the inner toe of spoil banks. No excavated materials shall be stacked against the walls of any building or fence without the written permission of the owner of such building or fence. Topsoil from excavations shall be kept separate and utilised to make good the surface after backfilling.

SG 5.16 Cover

5.16.1 Unless noted otherwise on the approved Project Drawings the minimum depth of cover to be provided for mains shall be as follows:

5.16.1.1 For mains of 100mm and 150mm diameter: minimum 600mm - maximum 750mm, in a verge or roadway; measured from the top of pipe to the adjacent top of kerb.

5.16.1.2 For 225mm and 300mm diameter: minimum 700mm, maximum 850mm

5.16.1.3 For mains greater that 225 mm diameter, individual assessment dependent upon valve height shall be determined by the Engineer.

5.16.1.4 Where normal cover for mains is unable to be maintained due to the presence of existing services or other restricting factors ductile iron pipe, may be used, subject to the approval of the Engineer.

5.16.1.5 Main shall not be laid under stormwater, sewerage pipes or electricity conduits unless approved by the Engineer.

SG 5.17 Crossings

Major Road Crossings

5.17.1 Written approval from the Queensland Department of Transport is required if a main is to be constructed underneath or along a declared Main Road.

5.17.2 All road crossings shall have an enveloper pipe and the main shall be grouted in the enveloper pipe.

5.17.3 The design and construction of the enveloping conduit must be in accordance with Queensland Department of Transport's "Installation of Underground Conduits within the Boundaries of Declared Roads".

Crossings of Other Existing Roads and Streets

5.17.4 Unless otherwise approved in writing, all crossings of existing roads and streets shall be bored or jacked with no disturbance to the pavement, shoulders or kerb.

5.17.5 The Engineer may permit open trenching to streets below Collector, determined by the location, traffic conditions and age of the existing pavement.

5.17.6 The details of the crossing, pipe materials and grouting shall be submitted to Council for approval.

5.17.7 Crossings of other carriageways shall be trenched unless the Engineer specifies otherwise.

Railway Crossings

5.17.8 Written approval from the Queensland Rail is required if a main is to be constructed underneath a railway line. In such cases the crossing shall generally be designed and constructed in accordance with the requirements of Queensland Rail.

SG 5.18 Bedding

5.18.1 All pipes shall be uniformly bedded in order to ensure solid and uniform support for the full length of the barrel with bell holes formed to accommodate the sockets to ensure a minimum clearance of 20mm.

5.18.2 The depth of bedding shall be as detailed on Council's Standard Drawing with the bedding material complying with the "Bedding Material" section of this Specification.

SG 5.19 Laying and Jointing of Pipes

5.19.1 All contractors shall have undertaken a manufacturers pipe laying accreditation course.

5.19.2 All pipe lines shall be laid to such lines, offset, gradients and levels as shown on approved Project Drawings.

5.19.3 Care shall be taken to preserve uniform gradients and correct alignments. Bends shall be used to effect horizontal and vertical changes of direction.

5.19.4 The manufacturers' recommendations for maximum deflection at each joint shall be strictly adhered to, if approval is granted by Council to use deflections.

5.19.5 Jointing of pipes, valves and fittings is to be carried out to the manufactures recommendations and in accordance with Australian Standards where applicable.

5.19.6 For pipes with rubber ring joints, only the lubricant specified in writing by the manufacturer shall be applied in making the joint. When the joint is made, the witness mark shall at no point be more than 1mm from the end of the socket.

5.19.7 Before being laid, all pipes, fittings, valves, etc shall be cleaned and examined by the Contractor.

5.19.8 Approved plugs shall be used to prevent foreign matter entering sections of pipeline, which are left uncompleted overnight.

5.19.9 The Contractor shall take all necessary precautions to prevent flotation of pipes during laying, backfilling and initial testing. Any temporary supports shall be removed prior to completion of backfilling.

5.19.10 Pipes shall be cut as needed to suit closing lengths, to remove damaged pipe or fittings or to remove sockets if necessary when jointing a socketed fitting.

5.19.11 For field cuts, only an approved mechanical pipe cutter shall be used, except that uPVC pipes may be cut using a power saw or a fine toothed hand saw and mitre box.

5.19.12 Any pipes cut in the field shall have their ends prepared in accordance with the manufacturer's written instructions.

5.19.13 Where pipes are cut in the field, a witness mark shall be made on the pipe at the length specified by the manufacturer from the end of the pipe. Scoring of uPVC pipes shall not be permitted.

SG 5.20 Connection to Existing Mains

5.20.1 Ready tap, or equivalent, connection points shall be laid with the main within 300 mm of the side property boundaries.

5.20.2 The Ready tap connection point is to be installed with a valve on one side and a bung on the other.

SG 5.21 Fittings

5.21.1 The laying and jointing of mains shall include the fixing in position of all valves of any description, fire hydrants and all other fittings, which are necessary for the completion of the mains.

5.21.2 Joints to secure fittings to pipes shall be approved under Australian Standard AS1646.

5.21.3 All sluice valves, gate valves, air valves and hydrants shall be carefully placed in the final position so as to be the correct distance from the surface and installed in accordance with Council’s Standard Drawings. With air valves and hydrants, risers shall be installed where necessary and if required, trenches

shall be deepened and graded in the vicinity of all valves and hydrants in order to secure the correct depth below the surface.

5.21.4 Valves, hydrants and specials shall be thoroughly cleaned out prior to installation in main.

5.21.5 The spring hydrants shall be bolted to the flange of the hydrant junction so that the bolts of the hydrants are in line with the main, and the hydrant cover box fitted with its long axis along the centre line of the main. Hydrants must be protected during backfilling in such a manner as will prevent earth or grit from damaging the seating. Refer to Council's standard drawing.

5.21.6 Hydrants and valves shall be fully protected during laying and backfilling, on completion all glands shall be well screwed down, and all valves shall operate freely.

SG 5.22 Valve/Hydrant Markers

5.22.1 The position of all stop valve, scour valve, air valve and hydrants shall be indicated by a kerb marker plate, painted kerb marker or marker post and raised reflective pavement markers. The type of marker to be installed shall be as stated on the approved Project Drawings.

5.22.2 Painted symbols used to indicated hydrants shall be in accordance with Council's Standard Drawing.

5.22.3 Kerb marker plates used to indicate valve and hydrant locations shall be fixed to the kerb face it shall be in accordance with Council's Standard Drawing.

5.22.4 Kerb and channel shall be stamped or engraved, and posts with marker notice plates are to be located adjacent to each valve, hydrant, air valve and scour valve. The posts are to be located 0.3m on the kerbside of the property alignment unless otherwise directed by the Engineer.

5.22.5 Kerb stamping or engraving, and marker plates shall be marked "V", "H", "AV" and "S" indicating sluice valve, hydrant, air valve and scour valve respectively shall be installed on the posts.

5.22.6 In addition to painted kerb markers / marker posts, all hydrants shall have a road pavement marker to indicate the location of the hydrant. The road pavement marker shall be either a painted teardrop or blue bi directional raised retro reflective pavement marker as stated on the approved Project Drawings.

5.22.7 Where a painted teardrop is specified the teardrop shall be painted with a solid yellow enamel paint and be 630mm overall length with 200mm radius base and a 25mm radius tip. The teardrop shall be painted across the centreline of a two-lane road or in the middle of the near side lane of a multi laned road. The tapered end of the teardrop shall point towards the relevant hydrant

5.22.8 Where a blue bi-directional raised retro reflective pavement marker is specified it shall be fixed securely to the road pavement opposite the hydrant. On two lane roads, the marker is to be positioned on the road centreline. For multi-lane roads, it is to be positioned on the lane line between the first and second lane.

5.22.9 The installation requirements of and pavement makings and raised retroreflective pavement markers shall be in accordance with Main Roads Standard Specification "MRS11.45 Pavement Marking".

SG 5.23 Anchor Blocks

5.23.1 Where a main is installed at a grade of 1 in 6 or steeper, concrete anchor blocks shall be provided in accordance with Council's Standard Drawing
5.23.2 Concrete works shall comply with Specification SG 7 CONCRETE WORKS.

SG 5.24 THRUST BLOCKS

5.24.1 For vertical bends with an upward thrust additional concrete shall be placed so that the mass of concrete is greater than the thrust on the filling. Sufficient steel reinforcement shall be included to bend the weight of the block below the pipe centreline to the upper part of the block. These thrust blocks shall be designed to manufacturer's specifications.
5.24.2 Thrust blocks, sized in accordance with the requirements of the Manufactures specifications.
5.24.3 Concrete works shall comply with Specification SG 7 CONCRETE WORKS

SG 5.25 Water Service Connections

5.25.1 Connection points shall be laid within 300 mm of the side property boundaries and a maximum of 300mm inside the property boundary.
5.25.2 The connection point is to be installed in accordance with Council's Standard Drawings.
5.25.3 All services shall be turned on during the testing process.
5.25.4 Water service pipe riser material must be Copper (Northern Region) & Stainless Steel (Southern Region).

SG 5.26 Backfilling and Compaction

5.26.1 Material for the side support and overlay of the pipe shall comply with the pipe bedding material specification. The material shall be compacted in layers of not more than 150mm to 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289.
5.26.2 The remainder of the excavation shall be backfilled with excavated material. The backfill shall be compacted in layers of not more than 150mm thick to 95 per cent of the standard. maximum dry density of the material used when

determined in accordance with AS1289. Flooding of cohesive material shall not be permitted as a means of compacting backfill.

5.26.3 Backfilling and compaction shall be carried out without damaging the pipe or its external coating or wrapping or producing any movement of the pipe.

5.26.4 The edges of the trench shall be cut with a clean, straight line prior to excavation. The trench above the approved filling shall be backfilled with approved subgrade replacement material conforming to Table D3.2 Minimum Pavement Design Criteria, to a level 280 mm below the level of the existing pavement surface, 150 mm and 100 mm separate layers of 1.5% and 3.0% cement stabilised road base Type 2.1 and Type 2.3 shall be compacted over the excavated fill layer, both compacted to 95% relative dry density as determined by Test 5.1.1 of AS 1289 (Standard Compaction), and 30 mm of asphaltic concrete shall be used to compete the trench backfilling. The road shall be restored to a minimum standard stated above or equal to the original standard which ever is greater.

5.26.5 Backfill material down to a depth of 300mm below the underside of the pavement material shall be compacted to 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289, and backfill material below such depth shall be compacted to not less than 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289.

5.26.6 In cases other than those covered by the above clause backfilling above the level of 300mm above the top of the pipes in open trenches may be carried out by dumping from mechanical plant into the trench providing that no rock is placed in the trench until the pipes are covered by at least 300mm of soil backfill.

5.26.7 Compaction testing shall be carried out at a rate of 1 test for each 150 metres of trench backfilled or in the case where trenches are constructed under road pavements and road shoulders, 1 test for each 25 metres of trench backfilled.

SG 5.27 Restoration of Surfaces

5.27.1 Pavements, lawns and other improved areas shall be cleaned and left in the same order as they were at the commencement of the works. Lawns shall be restored with turf cut and set aside from the original surface and / or with imported turf.

5.27.2 All restored surfaces shall be maintained in the condition to which they are restored until the expiry of the Defects Liability Period applicable to those surfaces. Pavements shall be maintained with crushed metal, gravel or other suitable material allowing for consolidation and shall then be restored to a condition equivalent to that of the original pavement.

5.27.3 Immediately the backfilling of a trench excavated through a pavement has been completed, the pavement shall be temporarily restored. Where the trench crosses bitumen or concrete pavement, a pre-mixed asphaltic material shall be

used for such temporary restoration. Temporary restoration works shall be maintained by the Contractor until final restoration is carried out.

5.27.4 Final restoration of the pavement shall be carried out to restore the pavement and its subbase to no less than the original condition. Unless noted otherwise on the approved Project Drawings all trenches excavated through bitumen or concrete pavement shall be sawcut each side to facilitate a neat finish to the final restoration. Final restoration may include, if required, the removal of temporary restoration.

5.27.5 Backfill shall be placed sufficiently high to compensate for expected settlement and further backfilling shall be carried out or the original backfill trimmed at the end of the Defects Liability Period in order that the surface of the completed trench may then conform to the adjacent surface. Surplus material shall be removed and disposed of to areas arranged by the Contractor.

5.27.6 In locations where surplus material left in the vicinity of the trench would not be objectionable, the surplus material may be disposed by spreading neatly in the vicinity of the trench in such a way as to minimise future erosion of the backfill and adjacent ground surfaces. The Contractor shall maintain the backfill and adjacent ground until the end of the Defects Liability Period.

5.27.7 Where, within public or private property, the reasonable convenience of persons will require such, trenches to be levelled off at the time of backfilling. Any subsequent settlement shall be made good by the Contractor, as required by placing additional fill.

5.27.8 All tunnels shall be completely backfilled. The space between the outer surface of the pipes, internal lining and the fact of the tunnel excavation shall be backfilled with sand which shall be compacted by flooding. Sand used for backfilling shall comply with the grading requirements for bedding sand as hereinbefore specified.

5.27.9 The Superintendent may direct the Contractor to backfill the tunnel with Grade N20 concrete in lieu of sand.

SG 5.28 Testing of Lines

5.28.1 Hydrostatic pressure testing of all water mains shall be carried out prior to the acceptance of the works and witnessed by the consulting Engineer and a council officer.

5.28.2 The contractor shall have carried out a successful test prior to arranging a Council witness test.

5.28.3 Pressure testing shall not be carried out during wet weather unless otherwise approved by Council.

5.28.4 Before testing a pipeline section, it shall be cleaned and filled slowly with water, taking care that all air is expelled.

5.28.5 The minimum test pressure acceptable shall be 1200 KPa unless advised otherwise by the relevant Local Authority and shall be considered to be satisfactory if:

5.28.5.1 There is no failure of any thrust block, anchor block, pipe, fitting, valve, joint or any other pipeline component;
5.28.5.2 There is no visible leakage; and
5.28.5.3 There is no loss of pressure in the 24 hour test period outside of the parameters allowed for under AS2566.2, Constant Pressure Method.

5.28.6 The specified test pressure shall be maintained as long as required, while the whole section is examined, and in any case not less than 24 hours.

5.28.7 Any failure, defect, and / or visible leakage, which is detected during the pressure testing of the pipeline or during the Defects Liability Period shall be made good by the contractor and re-tested.

SG 5.29 Flushing

5.29.1 Upon completion of pressure testing, lines shall be adequately flushed and water samples taken for testing by a Council approved testing authority to the requirements of the National Health and Medical Research Council (NHMRC).

SG 5.30 Tolerances

5.24.1 Tolerances for the construction of water reticulation works shall comply with Table S5.1.

Table S5.1 Construction Tolerances

Description of Works	Tolerance
Alignment	On the allocated alignment (2500m off property boundary)
Hydrants, fittings	Within 0.3m of design relative to side property boundary
Water service connections / conduits	Extend 300mm behind back of kerb, be laid 100mm below pavement subgrade
Valves	Opposite the nearest RP boundary, spaced at 300m apart

SG 6 – Sewerage Reticulation

General

SG 6.1 Scope

6.1.1 This specification details all matters pertaining to Sewerage Reticulation Construction.

6.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

6.1.3 Aspects of modification or clarification of the codes are detailed in Appendix A of Design Guideline – D7

6.1.4 The requirements of this Manual will take precedence over the Water Services Association of Australia Codes

6.1.5 Aspects of medication or clarification of the codes Standard Drawings are detailed in Appendix H and Appendix I.

SG 6.2 Reference Documents

6.2.1 Australian Standards:

- 6.2.2 AS/NZS 1260 Unplasticised PVC (UPVC) Pipes and Fittings for Sewerage Applications
- 6.2.3 AS1289 Methods of Testing Soils for Engineering Purposes
- 6.2.4 AS1432 Copper Tubes for Plumbing, Gasfitting and Drainage Applications
- 6.2.5 AS/NZS1477 PVC Pipes and Fittings for Pressure Applications
- 6.2.6 AS1646 Elastomatic Seals for Waterworks Purposed
- 6.2.7 AS2032 Code of Practice for Installation of PVC Pipe Systems
- 6.2.8 AS2129 Flanges for Pipes, Valves and Fittings
- 6.2.9 AS/NZS2280 Ductile Iron Pressure Pipes and Fittings
- 6.2.10 AS3500 National Plumbing and Drainage Code
- 6.2.11 AS3996 Metal Access Covers, Road Grates and Frames
- 6.2.12 AS4198 Precast Concrete Access Chambers for Sewerage Applications
- 6.2.13 AS4441 Oriented PVC (PVC-O) Pipes for Pressure Applications
- 6.2.14 AS/NZS4765 Modified PVC (PVC-M) Pipe for Pressure Applications
- 6.2.15 AS5065 Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications.

6.2.2 QLD Government Legislation:

- 6.2.2.1 Sewerage and Water Supply Act

6.2.3 Water Services Association of Australia:
- 6.2.3.1 WSA 02 – Sewerage Code of Australia
- 6.2.3.2 WSA 04 – Sewerage Pumping Station Code of Australia

Materials

SG 6.3 Pipes General

6.3.1 All pipes used for sewer reticulation shall be constructed from the following materials:
- 6.3.1.1 Polyvinylchloride (PVC)
- 6.3.1.2 Ductile Iron.

SG 6.4 Unplasticised PVC (PVC-U)

6.4.1 Unplasticised PVC (PVC-U) pipes and fittings for gravity systems shall be manufactured in accordance with AS1260 suitable for rubber ring joints. Pipe classes shall be in accordance with the manufacturers' recommendation and shall be as shown on the approved Project Drawings.

6.4.2 Unplasticised PVC (PVC-U) pipes and fittings for rising mains and suction pipes shall be manufactured in accordance with AS/NZS 1477 minimum Class 12 suitable for rubber ring joints with a mauve coloured pigment.

6.4.3 Modified PVC (PVC-M) pipes manufactured in accordance with AS/NZS 4765 by an Australian Standards quality endorsed company may be used as an alternative to PVC-U.

6.4.4 Oriented PVC (PVC-O) pipes manufactured in accordance with AS 4441 by an Australian Standards quality endorsed company may be used as an alternative to PVC-U.

6.4.5 Rubber Rings shall be manufactured and tested in accordance with AS 1646. They shall be of natural rubber and only those impregnated with a Root Inhibitor shall be used.

6.4.6 All pressure mains 100m diameter and greater shall be D.I.O.D compatible.

SG 6.5 Ductile Iron

6.5.1 Ductile Iron pipes shall be manufactured and cement lined in accordance with AS 2280 by an Australian Standards quality endorsed company.

6.5.2 Socketed Pipes to be Class K9 suitable for the patented "Tyton" type rubber ring joint. Flanged Pipes to be Class K12.

6.5.3 Flanges shall comply with AS 2129 Table C. Bolts and nuts for flanged joints shall be in accordance with AS 2129

6.5.4 All pipes and fittings shall be wrapped in a mauve coloured loose polyethylene sleeving 0.25mm thick. Wrapping and taping shall be carried out in accordance with the pipe manufactures recommendations.

6.5.5 All bends for mains of 100mm diameter or larger and all other associated fittings shall be constructed in accordance with AS2280, and have flange or spigot and socket type joints as specified on the approved Project Drawings. Where flanges are used, bolts shall be matched sets and conform to the following criteria:

6.5.5.1 In above ground uses, bolts shall be Hot Dipped Galvanised

6.5.5.2 In below ground uses, bolts shall be Grade 316 Stainless Steel with nuts and washers Grade 304 stainless steel.

SG 6.6 Polypropylene Pipes

6.6.1 Pipes shall conform to the AS 5065. Pipes shall only be used with the prior approval of Council. “As Constructed” drawings shall clearly indicate location of polypropylene pipes.

SG 6.7 Bedding Materials

6.7.1 After the excavation has been completed, inspected and approved by the Superintendent, the foundation layer of bedding concrete or approved bedding material shall be placed. The minimum bedding depth shall be 100mm of approved material. Refer to Council’s standard drawings

6.7.2 Where directed, pipes shall be bedded on Grade N20 concrete cradle or encased in Grade N20 concrete surround or otherwise bedded in accordance with the drawings or such instructions as may be given by the Superintendent in writing.

6.7.3 Unless shown otherwise on the drawings, no pipes encased in concrete shall extend more than 150mm beyond the face of that concrete. Short pipes laid in sewers shall not exceed 600mm in length and short pipes laid in house connections shall not exceed 300mm in length.

6.7.4 Both approved bedding and approved filling or blanket course to 100mm above the crown of the pipe shall be compacted to 95% of the maximum density as determined by the Standard Compaction Test Department of Transport Q110A 1993.

6.7.5 The material used for bedding, surround and cover for pipes shall be sieved sand, 5mm pea gravel, or 5mm crushed rock free from dust and foreign material.

6.7.6 All junction pipes in a line of sewer shall be concrete bedded and encased with a minimum 150mm cover of Grade N20 concrete unless directed otherwise by the Superintendent.

6.7.7 Concrete blocks in Grade N20 concrete shall be built across the trenches where directed by the Superintendent.

6.7.8 Where passing through concrete, brickwork or masonry, pipes shall be cleaned and washed over with fresh cement grout and bedded on and surrounded with cement mortar at least 12mm clear thickness.

SG 6.8 Concrete

6.8.1 The concrete and reinforcement used in the construction of cast insitu manholes shall comply with Specification SG 7 CONCRETE WORKS.

SG 6.9 Precast Manholes

6.9.1 Precast manhole components shall comply with AS 4198.

SG 6.10 Manhole Covers

6.10.1 Manhole covers and frames shall be supplied for all sewer manholes shall be Cast Iron sealed (gastight) covers manufactured in accordance with AS 3996.

6.10.2 All openings shall conform to the details on Council's Standard Drawing

6.10.3 All covers shall have a raised stud pattern with the letters SEWER (65mm high) cast into the centre of the lid and "gatic" type lifting holes.

6.10.4 Unless noted otherwise on the approved Project Drawings the minimum class of manhole covers shall be Class C or D.

Construction

SG 6.11 Setout

6.11.1 The alignment and grade of sewer lines and position of manholes shall be stated on the approved Project Drawings.

6.11.2 The position of the centre of each manhole shall be pegged on the ground by a Registered Surveyor prior to the commencement of work.

6.11.3 Offset pegs shall be established prior to commencing construction of any line, at a convenient distance to remain clear of all works and remain intact for the duration of the work.

6.11.4 The levels of the sewers shall be maintained in strict accordance with bench marks and only approved and tested equipment shall be used to establish and maintain these levels in accordance with the design documents.

SG 6.12 Clearing & Grubbing

6.12.1 All clearing and grubbing works shall be in accordance with Specification SG 1 EARTHWORKS.

6.12.2 Where sewer lines pass through allotments any trees or obstructions not on the line of the pipes shall be preserved, Clearing and grubbing shall be carried out in accordance with Specification No. 3.1- Earthworks.

6.12.3 The Contractor shall be responsible for all damage to grass, cultivation, fences, building or stock, by fire, falling timber or other causes arising from his operations.

SG 6.13 Trenching

6.13.1 All trenching and foundation works necessary for the installation of the pipeline or thrust blocks, shall be in accordance with Specification SG 1 EARTHWORKS.

6.13.2 The width of trenching excavation shall be in accordance with the Council's Standard Drawing at the trench base and comply with all regulations of Workplace Health and Safety Act.

6.13.3 In undertaking trench excavation, the Contractor shall provide any shoring, sheet piling or other stabilisation of the sides necessary to comply with statutory requirements.

6.13.4 Where public utilities exist in the vicinity of sewer reticulation works the Contractor shall obtain the approval of the relevant authority / corporation to the method of excavation before commencing excavation.

6.13.5 In the event of any trenching being left open for longer than one week, the Contractor shall provide erosion control measures to ensure minimal soil disturbance and material loss off the site. Some or all of these measures shall be provided immediately upon the onset of rain with an open trench.

6.13.6 The Contractor shall leave a clear space of 600mm minimum between the edge of any excavation and the inner toe of spoil banks. No excavated materials shall be stacked against the walls of any building or fence without the written permission of the owner of such building or fence. Topsoil from excavations shall be kept separate and utilised to make good the surface after backfilling.

6.13.7 Where necessary the Contractor must arrange suitable traffic and pedestrian management.

SG 6.14 Crossings

6.14.1 Where a sewer main crosses a State Controlled Road, Railway line or creek, the affected work shall be carried out in accordance with the requirements of

the relevant Authority / Corporation. It shall be the Contractor's responsibility to complete written notification to the Authority / Corporation of the intention to carry out the work.

6.14.2 Where a sewer main crosses an existing road, the affected work shall be carried out in accordance with the requirements of Council. It shall be the Contractor's responsibility to notify Council of the intention to carry out the work.

6.14.3 Unless otherwise approved in writing, all crossing or existing roads and streets shall be bored or jacked with no disruption to the pavement, shoulder or kerb.

SG 6.15 Bedding

6.10.1 Bedding types shall be as detailed on Council's Standard Drawing with the bedding materials complying with the "Bedding Material" section of this Specification.

Type 1 Bedding

6.10.2 The bedding material shall be as specified and shall be placed and compacted for the full width of the trench to the level of the underside of the pipe.

6.10.3 An area of bedding adjacent to the position of the pipe collar should be removed to provide a minimum 20mm clearance to the collar while the remainder of the pipe is bedded evenly on the bedding material.

6.10.4 The remainder of the bedding material is then placed and carefully tamped to avoid disturbing the position of the pipe thus ensuring that the surface of every pipe is in full and even contact with the bedding material.

6.10.5 All bell holes shall be rammed prior to completion of the bedding operation. The bedding material shall be uniformly compacted so as to achieve the following standards:

6.10.5.1 Minimum dry density ratio 95% Standard (cohesive soils).

6.10.5.2 Minimum density index 65% (cohesionless soils)

6.10.6 Compaction requirements are with reference to the relevant Test Methods contained in AS1289.

Type 2 Bedding

6.10.7 Used in wet conditions particularly where the trench bottom requires stabilising the trench invert shall be over excavated to accommodate a "Crushed Rock Foundation" with a geotextile surround.

6.10.8 Water is to be removed from the excavation as work proceeds to allow for placement of the geotextile crushed rock layer. The crushed rock layer shall be laid in 100mm layers and compacted as required.

6.10.9 The geotextile shall surround the crushed rock layer and be overlapped minimum of 500mm.

6.10.10 The pipe bedding material shall placed and compacted over the crushed rock foundation as specified for Bedding Type 1.

Type 3 Bedding

6.10.11 Type 3 bedding incorporating designed piles that are driven by air or electric hammer on a heavy dolly.

6.10.12 Piles shall be driven to give a set in accordance with the design requirements and spaced accordingly as stated on the approved Project Drawings.

6.10.13 A 150 x 50 hardwood sleeper is placed on top of the pile with 150 x 50 hardwood planks spanning the sleepers.

6.10.14 A concrete cradle as detailed on the approved Project Drawings shall then be poured on the planks to support the pipes.

SG 6.16 Laying and Jointing of Pipes

6.16.1 All contractors shall have undertaken a manufacturers pipe laying accreditation course.

6.16.2 All pipelines shall be constructed of pipes of such sizes and laid true to such levels and grades as shown on the approved Project Drawings.

6.16.3 The lines, levels and grades of all lines shall be checked and all pipes found incorrect shall be removed and re-laid.

6.16.4 Trenches shall be kept free of water during pipe laying, and until completion of backfill.

6.16.5 Jointing of pipes, valves and fittings is to be carried out to the manufactures recommendations and in accordance with Australian Standards where applicable.

6.16.6 For pipes with rubber ring joints, only the lubricant specified in writing by the manufacturer shall be applied in making the joint. When the joint is made, the witness mark shall at no point be more than 1mm from the end of the socket.

6.16.7 Before being laid, all pipes, fittings, valves, etc shall be cleaned and examined by the Contractor.

6.16.8 Approved plugs shall be used to prevent foreign matter entering sections of pipeline, which are left uncompleted overnight.

6.16.9 The Contractor shall take all necessary precautions to prevent flotation of pipes during laying, backfilling and initial testing. Any temporary supports shall be removed prior to completion of backfilling.

6.16.10 Pipes may be cut as needed to suit closing lengths, to remove damaged pipe or fittings or to remove sockets if necessary when jointing a socketed fitting.

6.16.11 For field cuts, only an approved mechanical pipe cutter shall be used, except that uPVC pipes may be cut using a power saw or a fine toothed hand saw and mitre box.

6.16.12 Any pipes cut in the field shall have their ends prepared in accordance with the manufacturer's written instructions.

6.16.13 Where pipes are cut in the field, a witness mark shall be made on the pipe at the length specified by the manufacturer from the end of the pipe. Scoring of uPVC pipes shall not be permitted.

6.16.14 Gravity lines shall be constructed to the tolerances specified hereafter:
6.16.14.1 The maximum horizontal deviations to either side from the design axis of a pipeline shall be 100mm for all sizes of pipes.
6.16.14.2 The maximum vertical deviations from the design grade of pipelines of any diameter and grade, shall be + 5mm.
6.16.15 During the progress of the works the Contractor shall have at least two (2) days supply of tested and approved pipes, including junctions on the ground in advance of quantity fixed in position.

SG 6.17 Connections to Manholes

6.17.1 Pipelines shall be connected to manholes, structures or embedded concrete by means of 600mm long pipes such that two flexible joints are provided, the first joint being at the face of the structure. Refer to Council's Standard drawing
6.17.2 The position of the access chamber shall be as shown on the approved Project Drawings. The Contractor shall check the alignment prior to commencing construction and advice the design engineer of any obstructions (Structure, Flora, Services etc)
6.17.3 Allowable lateral deviations from the final design position of access chambers shall be in accordance with the tolerances for horizontal deviations of pipelines as specified. Longitudinal deviations from that position shall not exceed 300mm.

SG 6.18 Connection to Existing Infrastructure

6.18.1 Connection to existing live sewer mains and manholes shall be carried out in accordance with the requirements of Council. It shall be the Contractor's responsibility to notify Council of the intention to carry out and arrange for the timing of such works.
6.18.2 The upstream side of the existing manhole is to be plugged until all new sewer mains have been approved, tested and cleaned.

SG 6.19 Anchor Blocks

6.19.1 Concrete anchor blocks shall be provided in accordance with Council's Standard Drawing for 150 dia. lines laid at a grade of 1 in 6 or steeper and 225 dia. lines laid at 1 in 10 or steeper.
6.19.2 Concrete works shall comply with Specification SG 7 CONCRETE WORKS.

SG 6.20 House Connection Branches

6.20.1 House Connection Branches (HCB) to all properties shall be constructed in accordance with Council's Standard Drawing and to the types, locations, levels and dimensions stated on the approved Project Drawings.

6.20.2 Concrete surrounds shall be provided to all HCB's. All concrete works shall comply with Specification SG 7 CONCRETE WORKS.

6.20.3 Backfill around risers shall be sand compacted to the top of the socket or coupling, for the full width of trench and for a minimum distance of 500mm upstream and downstream of the riser.

6.20.4 The position of each riser, junction or end of a sideline shall be clearly marked by the Contractor on completion of backfilling, with a approved 13mm orange electrical conduit tied to the end of HCB and held in a vertical position during backfilling. The top end of the tape shall be left flush with ground level.

SG 6.21 Rising Mains

6.21.1 All works necessary for the installation of the rising mains including installation of thrust block and anchor blocks, shall be in accordance with Specification SG 5 WATER RETICULATION.

6.21.2 Air release valves and scour valves shall be installed where shown on the approved Project Drawings.

6.21.3 Unless otherwise noted on the approved Project Drawings, pipes for rising mains shall be laid on continuously rising grades from scour valve to air release valve, notwithstanding any minor irregularities in the ground surface.

6.21.4 Marking plates bearing the letters "AV" for air valves, "SV" for scour valves and "RM" at changes of direction and at such chainages that the location of the main is marked at least once each 200 metres.

6.21.5 Sewer rising main connections to discharge manholes are to be constructed in accordance with Council's Standard Drawings.

SG 6.22 Manholes

6.22.1 All concrete work associated with the construction of manholes shall comply with Specification SG 7 CONCRETE WORKS.

6.22.2 Manholes shall be constructed in accordance with Council's Standard Drawing, and to the types, locations, levels and dimensions stated on the approved Project Drawings.

6.22.3 Rendering of this invert and benching shall be in accordance with the Council's Standard Drawing.

6.22.4 Precast manholes are an acceptable alternative with precast base units for Inlet Type A manholes in accordance with Council's standard procedure for pre cast manholes.

6.22.5 Precast Manhole risers are acceptable for use with cast insitu manhole bases.

6.22.6 Precast riser units shall be jointed in accordance with the manufacturers' specifications utilising the recommended method and materials. Inlets into precast units shall be constructed in accordance with the details illustrated on Council's Standard Drawing.

6.22.7 The installation of all precast manhole components shall be in accordance with the manufacturers' recommended procedures, requirements and Council's standard installation procedure.

SG 6.23 Covers and Surrounds

6.23.1 Manhole covers shall be finished flush with the surface in roadways, footpaths and paved surfaces. Elsewhere, unless noted otherwise on the approved Project Drawings, covers shall be finished 50mm above the surface of the surrounding ground, in a manner designed to avoid as far as possible, the entry of surface water.

6.23.2 Manhole covers are to be located such that the position of the access opening is directly over the outlet pipe.

6.23.3 The installation of all precast manhole covers shall be in accordance with the manufacturers' recommended procedures and requirements.

SG 6.24 Backfill and Compaction

6.24.1 Material for the side support and overlay of the pipe shall comply with the pipe bedding material specification. The material shall be compacted in layers of not more than 150mm to 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289 Flooding of non-cohesive material shall be considered as an acceptable method of compacting bedding material.

6.24.2 The remainder of the excavation shall be backfilled with excavated material. The backfill shall be compacted in layers of not more than 150mm thick to 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289. Flooding of cohesive material shall not be permitted as a means of compacting backfill.

6.24.3 Backfilling and compaction shall be carried out without damaging the pipe or its external coating or wrapping or producing any movement of the pipe.

6.24.4 Where trenches are under constructed pavements or in other situations where required, the material used for backfilling shall be approved excavated material with linear shrinkage of the fines passing a 2.36mm sieve of not greater than 6 per cent. The Contractor may elect to use imported, select fill or sand for this purpose. The backfill shall be spread in layers not exceeding 300mm in loose depth at or near optimum moisture content and compacted using mechanical vibration equipment.

6.24.5 Backfill material down to a depth of 300mm below the underside of the pavement material shall be compacted to 95 per cent of the standard maximum dry density of the material used when determined in accordance with AS1289, and backfill material below such depth shall be compacted to not less than 95 percent of the standard maximum dry density of the material used when determined in accordance with AS1289.

6.24.6 In cases other than those covered by the above clause backfilling above the level of 300mm above the top of the pipes in open trenches may be carried out by dumping from mechanical plant into the trench providing that no rock is placed in the trench until the pipes are covered by at least 300mm of soil backfill.

6.24.7 Compaction testing shall be carried out at a rate of 1 test for each 150 metres of trench backfilled or in the cast where trenches are constructed under road pavements and road shoulders, 1 test for each 25 metres of trench backfilled.

SG 6.25 Cleaning Sewers

6.25.1 Before the sewers, manholes and house drains are accepted they shall be cleaned to remove all clay, sand and other materials.

6.25.2 All water plus materials used in the flushing of the reticulation system shall under no circumstances be discharged into existing sewers downstream of construction. All lines shall be inspected after flushing and will not be accepted until they present a clear barrel, free from any obstruction.

SG 6.26 Test of Manholes

6.26.1 All manholes shall be subjected to hydrostatic or vacuum tests to prove their water tightness unless directed otherwise by the Local Authority.

6.26.2 For hydrostatic tests, all pipe openings out of the manhole shall be plugged and the manhole filled with water to the lowest point on the top of the manhole cover surround. The plugs shall be positioned in the pipes as near as practicable to the internal face of the access chamber. After allowing an interval for absorption, the manhole shall be refilled.

6.26.3 The test on the manhole will be considered satisfactory provided the level does not drop more than 25mm in twenty four (24) hours. The plug of the outlet shall be fitted with a suitable release for emptying the manhole on satisfactory completion of the test.

6.26.4 Manholes failing the test shall be repaired and the test repeated. The process of testing, repair of defects and retesting shall continue until a satisfactory test is obtained.

6.26.5 Where the ground water level is high, an infiltration test may also be required. This shall not take place until ten (10) days after the placing of concrete.

SG 6.27 Testing of Lines

6.27.1 All gravity lines shall be subject to air testing to prove their water tightness unless directed otherwise by the Local Authority.

6.27.2 Testing may be done progressively, a minimum of 24 hours notice shall be provided to Council before commencement of testing. Ensure that pipes are clean before any test is performed.

6.27.3 If any of the tests proved to be unsatisfactory, the contractor shall be required to detect and repair the fault and then re-test. The contractor shall continue to repair and re-test until a satisfactory test is obtained. Even if testing produces satisfactory test results, the contractor shall repair any pipeline or conduit in which there is a visible or detectable leak or blockage.

6.27.4 The contractor shall carry out a visual inspection to ensure that all sewer lines present a full clean bore.

Air Testing General

6.27.5 Air testing shall be either pressure testing or vacuum testing, as directed by the Local Authority. The tests shall include the house connection branches and inspection tee.

6.27.6 Air Testing (Pressure) - The sewer line to be tested shall be pressurised to the "Initial Pressure" shown in the Table S6.2 for a minimum of 3 minutes to stabilise the temperature.

Table S6.2 Pressure Air Testing – Initial Pressures

	Sewer depth range (metres)				
	0-1.5	1.5-3.0	3.0-4.5	4.5-6.0	Over 6.0
Initial Pressure (KPa)	30	35	40	45	50
Test start pressure (KPa)	25	30	35	40	45

6.27.7 After the 3 minute stabilisation period the pressure shall be dropped to the "Test Start Pressure" shown in the above table and the pressure gauge monitored for 5 minutes.

6.27.8 The sewer line under test shall be considered to have passed the test when the pressure does not fall by more than 5 KPa during the 5 minute period.

6.27.9 Air testing (Vacuum) - The sewer to be tested shall be drawn to a vacuum of 28 KPa and the vacuum gauge monitored for 5 minutes. The sewer under test shall be considered to have passed the test when the vacuum does not fall by more then 5 KPa during the 5 minute period.

Ovality Testing

6.27.10 All gravity sewer pipes shall be tested to determine any excessive pipe defection (Ovality) by using a proving tool.

6.27.11 Testing for ovality shall be carried out in accordance with Appendix G of WSA 02-2002 Sewerage Code of Australia

6.27.12 The proving tool shall be:
- 6.27.12.1 Fabricated from steel or aluminium alloy with pulling rings at each end and marked to indicate the nominal pipe size and the provers' outside diameter.
- 6.27.12.2 Rigid, non-adjustable, have an odd-number of legs (min 9) and an effective length of not less than its nominal diameter. The minimum diameter at any point along the length shall be as shown in Table G1 of WSA 02-2002 Sewerage Code of Australia.
- 6.27.12.3 The shape of the proving tool must be approved.

6.27.13 Sewer pipes that exhibit excessive ovality, by failing the maximum allowable deflection as shown above, shall be replaced and the re-laid section retested for ovality.

SG 6.28 Testing of Rising Mains

6.28.1 Hydrostatic pressure testing of all sewer rising mains shall be carried out prior to the acceptance of the works.

6.28.2 The contractor shall have carried out a successful test prior to arranging a Council witness test.

6.28.3 Pressure testing shall not be carried out during wet weather unless otherwise approved by Council.

6.28.4 Before testing a pipeline section, it shall be cleaned and filled slowly with water, taking care that all air is expelled. Purging of air from rising mains shall be promoted by opening air valves.

6.28.5 The hydrostatic test pressure which shall be applied to each section of the pipeline shall be such that at each point of the section the test head shall be equal to or greater than the design head specified or shown on the approved Project Drawings, but shall not exceed same by more than 20 per cent.

6.28.6 The pressure testing of a section shall be considered to be satisfactory if:
- 6.28.6.1 There is no failure of any thrust block, anchor block, pipe, fitting, valve, joint or any other pipeline component;
- 6.28.6.2 There is no visible leakage; and
- 6.28.6.3 There is no loss of pressure in the 15 minute test period

6.28.7 The specified test pressure shall be maintained as long as required, while the whole section is examined, and in any case not less than 15 minutes.

6.28.8 Any failure, defect, and / or visible leakage, which is detected during the pressure testing of the pipeline or during the Defects Liability Period shall be made good by the contractor.

SG 6.29 Restoration of Surfaces

6.29.1 Pavements, lawns and other improved areas shall be cleaned and left in the same order as they were at the commencement of the works. Lawns shall be

restored with turf cut and set aside from the original surface and / or with imported turf.

6.29.2 All restored surfaces shall be maintained in the condition to which they are restored until the expiry of the Defects Liability Period applicable to those surfaces. Pavements shall be maintained with crushed metal, gravel or other suitable material allowing for consolidation and shall then be restored to a condition equivalent to that of the original pavement.

6.29.3 Immediately the backfilling of a trench excavated through a pavement has been completed, the pavement shall be temporarily restored. Where the trench crosses bitumen or concrete pavement, a pre-mixed asphaltic material shall be used for such temporary restoration. Temporary restoration works shall be maintained by the Contractor until final restoration is carried out.

6.29.4 Final restoration of the pavement shall be carried out to restore the pavement and its subbase to no less than the original condition. Unless noted otherwise on the approved Project Drawings all trenches excavated through bitumen or concrete pavement shall be sawcut each side to facilitate a neat finish to the final restoration. Final restoration may include, if required, the removal of temporary restoration.

6.29.5 Backfill shall be placed sufficiently high to compensate for expected settlement and further backfilling shall be carried out or the original backfill trimmed at the end of the Defects Liability Period in order that the surface of the completed trench may then conform to the adjacent surface. Surplus material shall be removed and disposed of to areas arranged by the Contractor.

6.29.6 In locations where surplus material left in the vicinity of the trench would not be objectionable, the surplus material may be disposed by spreading neatly in the vicinity of the trench in such a way as to minimise future erosion of the backfill and adjacent ground surfaces. The Contractor shall maintain the backfill and adjacent ground until the end of the Defects Liability Period.

6.29.7 Where, within public or private property, the reasonable convenience of persons will require such, trenches to be levelled off at the time of backfilling. Any subsequent settlement shall be made good by the Contractor, as required by placing additional fill.

6.29.8 Where shown on the approved Project Drawings or where the Contractor elects to tunnel under paving, kerb and channel or other improved surfaces in lieu of trenching, backfilling shall be so carried out as to restore full support to those surfaces. The Contractor shall remain responsible for the repair of the improved surfaces, if subsequently damaged due to subsidence of the backfill, until the end of the Defects Liability Period.

SG 6.30 Tolerances

6.30.1 Tolerances for the construction of sewer reticulation works shall comply with Table S6.4.

Table S6.4 Construction Tolerances

Location	Tolerance
Invert Levels	+25mm - -25mm
Location of alignment and structures	Lateral deviation from line + 100mm Longitudinally along line + 300mm
Grade on pipe	Design grade not compromised

SG 7 – Concrete Works

General

SG 7.1 Scope

7.1.1 This specification details all matters pertaining to the supply, placement, compaction and finishing of Concrete Works.

7.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

SG 7.2 Reference Documents

7.2.1 Australian Standards

7.2.1.1 AS1012 Methods of Testing Concrete

7.2.1.2 AS1379 The Specification and Manufacture of Concrete

7.2.1.3 AS1478 Chemical Admixtures for Concrete

7.2.1.4 AS1553.1 Low Carbon Steel Electrodes for Manual Arc Welding of Carbon Steels and Carbon-Manganese Steels

7.2.1.5 AS1554.3 Welding of Reinforcing Steel
7.2.1.6 AS2203 Cored Steel Electrodes for Arc Welding
7.2.1.7 AS2717.1 Ferritic Steel Electrodes
7.2.1.8 AS3600 Concrete Structures
7.2.1.9 AS3610 Formwork for Concrete
7.2.1.10 AS3735 Concrete Structures for Retaining Liquids
7.2.1.11 AS3799 Liquid Membrane-forming Curing Compounds for Concrete
7.2.1.12 AS/NZS4671.2 Steel Reinforcing Bars for Concrete
7.2.1.13 AS/NZS4671.3 Steel Reinforcing Wire for Concrete
7.2.1.14 AS/NZS4671.4 Welding Wire Reinforcing Fabric for Concrete.

Materials

SG 7.3 Concrete – General

7.3.1 All concrete to be incorporated in the works shall be sourced from a Quality Assured Concrete supplier.
7.3.2 The production and delivery of ready-mixed concrete shall be in accordance with the requirements of AS 1379.
7.3.3 The quantity of concrete delivered in any truck shall not exceed the rated capacity of its agitator drum. The timing of deliveries shall be such as to ensure an essentially continuous placing operation.
7.3.4 Ready-mixed concrete shall be placed and compacted within 1 hour of charging the mixer for concrete temperatures up to 32°c and within 45 minutes of charging the mixer for concrete temperatures exceeding 32°c.
7.3.5 The Consulting Engineer's discretion where approved set-retarding admixtures are used. In this instance approved admixtures shall conform with the requirements of AS 1478 and shall be used in accordance with AS 1379. Calcium Chloride shall not be used as an admixture in concrete works.
7.3.6 A Manufacturer's Certificate in the form of a delivery docket in accordance with AS 1379 shall be supplied for each batch and shall be retained by the Contractor. Such certificates shall be held and maintained in the Contractors Quality records for the project. Further, the Contractor shall obtain a statement from the manufacturer qualifying the quality standard of the concrete in accordance with the requirements as specified herein.
7.3.7 The consistency and workability of concrete shall be such that it can be handled and transported without segregation and can be placed, worked and compacted into all corners, angles and narrow sections of forms, and around all reinforcement.
7.3.8 Concrete class shall be classed as Nx where x is the minimum 28-day compressive strength in megapascals.
7.3.9 For construction elements involving structural concrete construction activities, (eg. bridge slabs, bridge abutment footings etc.) the concrete class and slump shall be as detailed in the Project Documentation. The material quality

compliance testing in this instance shall involve on-site sampling and testing in accordance with Australian Standard AS 1012. The testing of the 200mm x 100mm diameter test cylinders shall be at a frequency not exceeding one sample of 2 cylinders for each 15m3 or part thereof placed in an essentially continuous manner with a minimum of two samples of 2 cylinders for each casting day.

7.3.10 All testing shall be undertaken by a NATA registered testing authority. 11.The class of concrete relative to each construction element shall be as shown in Table S7.1.

Table S7.1 Concrete Classes

Construction Element	Class[1]
Kerb/Kerb & Channel	N 25
Manholes (Sewer & Stormwater)[2]	N25 or N32 as shown on Standard Drawings
Gully Pits / Field Inlets[2]	N25 or N32 as shown on Standard Drawings
Headwalls/Wingwalls & Apron Slabs[2]	N 25
Pathways / Bikeways	N 25
Access Driveways	N 25
Edge Restraints for Segmental Pavers (On Road Pavements)	N 25
Edge Restraints for Segmental Pavers (On footpaths, bikeways and medians)	N 20
Stamped Concrete (where used in road pavement)	N 32
Stamped Concrete (where used as parking bay behind kerb or not subject to regular street traffic loadings)	N 25
Thrust Blocks	N 20
Concrete Surrounds for Sewerage House Connection Branches	N 20
Concrete Cradle for Sewer Bedding Type 3	N 15
General Concrete Works (Sign Post Bases, Bases for Post and Rail Fences etc.)	N 20
Notes: 1. **Tested in accordance with the relevant sections of AS 1012.** 2. **Where any part of the structure is located below RL 1.800 AHD,**	

	concrete to be in accordance with the appropriate exposure condition in AS3600

SG 7.4 No Fines Concrete

7.4.1 No fines concrete shall consist of cement, water and coarse aggregate. The quantity of cement used shall be as specified below. The nominal size of the aggregate for no-fines concrete shall conform with the grading limits specified in Table S7.2.

7.4.2 The water / cement ratio shall be within the range 0.5 to 0.6 by mass.

Table S7.2 No Fines Concrete – Grading Limits

AS Metric Sieve (mm)	Percentage Passing By Mass	
	Nom. Size 20mm	Nom. Size 10mm
26.5	100	-
19.0	85-100	-
13.2	0-10	100
9.5	0-5	85-100
4.75	0	0-10
2.36	0	0-2
Minimum Cement Content (kg/m^3)	210	250

SG 7.5 Lean Mix Concrete

7.5.1 Lean mix concrete shall consist of a graded sand and gravel aggregate of 40mm maximum size with the addition of 5% by mass of Portland Cement or 1 part Portland Cement to 19 parts of graded aggregate and sufficient water to ensure a slump of less than 12mm.

SG 7.6 Reinforcing Steel

7.6.1 All reinforcement shall comply with the following requirements where applicable:

7.6.1.1 Steel Reinforcing Bar - AS/NZS4671.2 Steel Reinforcing Bars for Concrete

7.6.1.2 Hard-draw Steel Reinforcing Bar - AS/NZS4671.3 Steel Reinforcing Wire for Concrete

7.6.1.3 Reinforcing Wire Fabric - AS/NZS4671.4 Welding Wire Reinforcing Fabric for Concrete

7.6.2 All reinforcement shall be sourced from and Quality Assured manufacturer of such products and the Contractor shall obtain a statement from the manufacturer qualifying the Quality Standard of the reinforcing steel in accordance with the above noted standards.

Construction

SG 7.7 Temperature Limits for Concrete Placement

7.7.1 No concrete shall be placed in the Works if:

7.7.1.1 The temperature of the concrete is less than 5°C or exceeds 30°C;

7.7.1.2 The ambient air temperature is likely to be greater than 45°C during placement or within two (2) hours subsequent to placement.

7.7.2 If the ambient air temperature measured at the point of placement is likely to exceed 30°C during placing and finishing operations, the Contractor shall take practical precautions, to ensure that the temperature of the concrete does not exceed the permitted maximum so that the concrete can be placed and finished without defects, otherwise it shall be rejected. Typical precautions include those listed below:

7.7.3 At the concrete manufacturing plan:

7.7.3.1 Shading aggregate stockpiles;

7.7.3.2 Painting water tanks white;

7.7.3.3 Insulating or burying delivery lines;

7.7.3.4 Adding crushed ice to replace mixing water (in part) or chilling the water;

7.7.3.5 Injection of liquid nitrogen into the mixer.

7.7.4 At the site:

7.7.5 Cooling the formwork by dampening with water sprays;

7.7.6 Shading the work areas;

7.7.7 Erecting wind breaks;

7.7.8 Minimising the time for placing and finishing;

7.7.9 Use of evaporation retarding curing oil.

7.7.5 Special attention shall be paid to providing early curing for hot weather concreting operations.

SG 7.8 Foundations

7.8.1 Foundations for concrete structures shall be prepared as specified on the Project Drawings.

7.8.2 Rock foundations shall be neatly excavated to form a bed for the concrete, and shall be thoroughly scraped and cleaned.
7.8.3 Soil foundation shall, as far as possible, be excavated neatly from the solid material to coincide with the under-surface of the concrete, or of the subbase material (where specified).
7.8.4 All soft, yielding or other unsuitable material shall be replaced with sound material and the subgrade shall be compacted to provide a minimum of 95 per cent standard compaction as determined by AS 1289.5.4.1 for standard compactive effort. If the subgrade is dry it shall be sprinkled with as much water as it will readily absorb, before the concrete is placed.
7.8.5 The surface shall then be checked for uniformity, line and level, and all irregularities shall be made good.

SG 7.9 Formwork and Falsework

7.9.1 All Formwork and Falsework shall conform to AS 3610 unless otherwise required by the specific Project Documentation.
7.9.2 All forms shall be built mortar tight and of sufficient rigidity to prevent distortion by the pressure of the concrete and other loads incident to the construction operations. Forms shall be constructed and maintained to prevent warping and the opening of joints due to shrinkage of the timber. The forms shall be substantial and unyielding and shall be so designed and set that the finished concrete will conform to the proper dimensions and within the tolerances specified herein. The design of the forms shall take into account the effect of vibration of the concrete as it is placed.
7.9.3 When forms are re-used, their original shape, strength, rigidity, mortar tightness and surface smoothness shall be maintained at all times. Material previously used in formwork must be cleaned off and oiled before re-use. Warped timber shall not be used.
7.9.4 Forms, which are unsatisfactory in any respect, shall not be re-used.
7.9.5 All timber shall be free from knotholes, loose knots, cracks, splits, warps and other defects, which would affect the strength of the structure or the appearance of exposed surfaces.
7.9.6 For narrow walls and columns where the bottom of the form is otherwise inaccessible, openings shall be provided so that they may be cleaned before placing the concrete, and for purposes of compaction and inspection.
7.9.7 All forms shall be treated with the lightest practical coating of release agent before the reinforcement is placed. Release agent shall not be placed on reinforcement or construction joints.
7.9.8 All forms shall be set and maintained to the line and level designated. Forms shall remain in place for periods, which shall be determined as specified herein. When forms appear to be unsatisfactory in any way, either before or during the placing of concrete, the work shall not proceed until the defects have been corrected.

7.9.9 Metal form ties shall be of an approved type, and if cast in, shall be of a type which permits removal of the end fittings to a depth of at least 30mm below the finished surface of the concrete. Ordinary wire ties shall not be used.

7.9.10 Form ties shall be located in a uniform symmetrical pattern relative to the finished surface. The cavities left when the end fittings of embedded ties are removed shall be as small as possible and shall be filled with cement mortar at the earliest possible time. The surface of such filled cavities shall be left smooth and uniform in colour.

7.9.11 Forms for plain exposed surfaces shall consist of plastic-coated plywood, waterproof plywood, timber lined with tempered hard-board or close-fitting unwarped metal forms. Unless otherwise specified, joints in the form sheeting for plain exposed concrete surfaces shall be either vertical or horizontal and spaced with a regular pattern.

7.9.12 Forms for surfaces not exposed to general view may consist of modular timber or metal panels. Timber forms shall be constructed and maintained in such a manner as to prevent warping and opening of joints due to shrinkage of the timber. The timber shall be free of any defects, which will affect the structure.

7.9.13 Forms shall be removed with care and without unnecessary hammering or wedging, and so as not to injure the concrete or disturb the remaining supports. Methods of form removal likely to cause overstressing of the concrete shall not be used.

SG 7.10 Reinforcing Steel

7.10.1 Reinforcement shall be free of kinks or other unwanted deformations, and shall be cut to length, and bent in accordance with the Project Drawings. Fabric reinforcement shipped in rolls shall be straightened into flat sheets before use.

7.10.2 The surface condition of reinforcement shall comply with the following requirements:

7.10.2.1 At the time concrete is placed reinforcement shall be free from mud, oil, grease and other non-metallic coatings and loose rust which would reduce the bond between the concrete and the reinforcement.

7.10.2.2 For the purpose of this Specification, rust shall not be deemed to be loose if on rubbing with the thumb it leaves only a stain thereon.

7.10.2.3 Nevertheless, a deformed bar complying with AS 1302, or a welded wire fabric complying with AS 1304, and having mill scale or rust or both shall be deemed to comply with this Specification if, after wire-brushing the cross-sectional dimensions, including height of deformations; and mass, are not less than the dimensions and mass required by the applicable Australian Standard.

7.10.2.4 Any reinforcement projecting from a previous concreting operation shall be cleaned free of adhering concrete or loose slurry prior to any further embedment.

7.10.2.5 Any reinforcement placed within 1km of the coastline shall be thoroughly washed with a high pressure fresh water jet immediately

prior to pouring concrete to remove any salts deposited during storage and placement.

7.10.2.6 Reinforcement which has been submerged by tidal or flood waters shall also be cleaned with a high pressure fresh water jet prior to pouring concrete.

7.10.3 Reinforcement shall be placed in position as shown on the Project Drawings. In the case of bar reinforcement, the bars shall be tied together by wiring each intersection using annealed wire not less than 1.25mm in diameter or by such other fastening devices as may be approved by the Designer, provided that, where the bar spacing is 300 mm or less, alternate intersections only need to be tied.

7.10.4 Clearance from forms shall be maintained by use of approved chairs. The shape of the chair shall be such that minimum obstruction is offered to the formation of the homogeneous concrete both within and around the chair. Tubular or cylindrical types shall not be used. Some bar chairs are suitable for soffit use only and should not be used against side forms. Bar chairs shall be sufficient structural strength to support the weight of reinforcement and workmen at temperatures experienced on site.

7.10.5 Metal chairs shall not be approved for any locations.

7.10.6 Precast mortar blocks shall not be used unless the blocks are manufactured from vibrated concrete of strength equivalent to that of the main concrete, and to a size and shape so as not to interfere with the structural integrity of the works. Such blocks shall have suitable fixing wires cast-in.

7.10.7 Layers of bars shall be separated by means of approved bar spacers. Stirrups and ligatures shall pass around the main reinforcement and shall be securely tied thereto.

7.10.8 Reinforcement shall be spliced by lapping or where permitted, by welding or by approved mechanical splices. Fabric reinforcement shall be lap spliced only.

7.10.9 The system of fixing shall be such as to form a rigid cage which maintains dimensional tolerances under loads experienced during placement of concrete. Welding of reinforcement to form a rigid cage shall comply with the following requirements:

7.10.9.1 Welding shall be in accordance with AS 1554.3. In particular tack welds shall not substantially reduce the cross-section of the reinforcing steel nor adversely affect its strength and shall have:

7.10.9.1.1 A throat thickness not less than 4 mm;

7.10.9.1.2 A length not less than the diameter of the smaller bar.

7.10.9.2 Welding shall not be carried out within 75 mm of any portion of a bar which has been bent or will be bent.

7.10.9.3 No more than one-third of the main reinforcement at any cross-section shall be so welded.

7.10.9.4 Hard drawn wire and fabric reinforcement shall not be welded or heated unless approved by the Engineer.

7.10.9.5 Welding electrodes that are to be used complying with AS 1553.1 or AS 2203 or AS 2717.1.

7.10.9.6 Splices shall be made by butt or by fillet welding. Butt welds shall be qualified complete penetration butt joints in accordance with AS 1554.3.

7.10.9.7 Suitability experienced and competent welding personnel shall be engaged to complete the works.

7.10.10 Splicing of reinforcement shall occur only in the locations shown on the Project Drawings. Where practical, splices in bar reinforcement shall be staggered.

7.10.11 The length of lap splices in bar reinforcement shall be as shown on the Project Drawings. All reinforcement shall be spliced in such a manner as to maintain specified clear cover to the surface of the concrete. Splicing of fabric reinforcement shall be achieved so that the two outermost transverse wires of one sheet of fabric overlap the outermost transverse wire of the sheet being lapped.

SG 7.11 Concrete Placement – General

7.11.1 The Contractor shall be solely responsible for placing and compacting the concrete in the forms to comply with this Specification and for achieving dense, sound concrete without voids and to the lines and levels shown on the Project Drawings.

7.11.2 When rain threatens or seepage exists in excavations, the Contractor shall have on site sufficient dewatering equipment and covers as applicable to prevent any additional water entering the concrete.

7.11.3 Concrete shall be placed in an essentially continuous manner between approved construction joints so as to avoid being placed against partially set concrete.

7.11.4 Any troughs and chutes used as aids in placing concrete shall be metal or metal lined and shall be arranged and used in a manner that does not cause segregation. The use of water to facilitate the movement of concrete along troughs or chutes is expressly prohibited, but all troughs and chutes shall be kept clean and free of coating of hardened concrete by flushing thoroughly with water, which shall be discharged well clear of concrete in place.

7.11.5 Troughs and chutes shall discharge into vertical downpipes at least 1 metre in length. Where steep slopes are required, the chutes shall be equipped with baffles or be in short lengths that reverse the direction of movement so that the concrete slides without segregation.

7.11.6 Pneumatic placers and concrete pump may be permitted for use subject to such equipment being arranged so that no vibrations will damage freshly placed concrete. The delivery end of the pipe shall terminate in a fitting of approved design, which shall prevent segregation of the concrete. After the completion of any concreting operations the equipment shall be thoroughly cleaned before re-use.

7.11.7 Concrete shall not be dropped from a height or in such a manner as will cause segregation or loss of material on the reinforcing steel or forms. When placing operations would involve dropping the concrete more than 2 metres it shall be

deposited through a sheet metal or other approve downpipe in such a way that the concrete does not segregate. As far as practicable, the pipes shall be kept full of concrete during placing and their lower ends shall be kept buried in the newly placed concrete. The depositing of a large quantity of concrete at any point with the intention of moving it along the forms, will not be permitted.

7.11.8 After initial set of the concrete, the forms shall not be jarred and no strain shall be placed on the ends of reinforcing bars which project.

SG 7.12 Concrete Placement – Under Water

7.12.1 Concrete shall not be placed under water unless specifically approved. The slump of the concrete to be placed underwater shall be between 150mm and 200mm.

7.12.2 Concrete shall not be placed in running water. Any pumping must cease and the water level must be constant where placement commences. The concrete shall be placed carefully in position by a tremie, a closed bottom-dump bucket or by other approved means. Concrete seals shall be placed in one continuous operation, the concrete shall not be disturbed after being deposited and the placing shall be regulated to continually maintain an approximately horizontal surface.

7.12.3 When a tremie is used it shall consist of a watertight tube and at no time shall concrete in the tube come in contact with water when it is being filled. The means of supporting the tremie shall be such as to permit free movement of the discharge end and to permit its being lowered rapidly when necessary to choke off or retard the flow of concrete. No water shall enter the tremie tube. The discharge end shall be completely submerged in concrete at all times and the tremie tube shall always be filled to a height to overcome the head of water.

7.12.4 When concrete is placed with a bottom-dump bucket, the bucket shall be lowered gradually and carefully until it rests upon the prepared foundation or upon concrete already placed. It shall then be raised slowly during the discharge travel so as to maintain as far as is practicable still water at the point of discharge and to avoid agitating the mixture. The concrete so placed shall not be disturbed.

SG 7.13 Compaction in Concrete Forms

7.13.1 Concrete during and immediately after depositing shall be thoroughly compacted. Concrete other than no fines concrete shall be compacted with high frequency internal vibrations as follows:

7.13.1.1 The vibrators shall be of an approved type and shall be capable of transmitting vibrations at a frequency not less than 150 Hz with an intensity which will visibly affect the concrete at a radius of 300mm.

7.13.1.2 The number of vibrators to be used by the Contractor shall be not less than one for each $4m^3$ of concrete placed per hour, with a minimum of 2 vibrators to be provided at any time.

7.13.2 Vibrators shall be inserted vertically at successive positions not more than 450mm apart and in a manner, which ensures compaction of the concrete around the reinforcing steel and any other embedded fixtures, and into all parts of the forms.

7.13.3 Vibration shall continue at each position until air bubbles cease to emerge from the concrete. The vibrators shall then be withdrawn slowly so as to avoid leaving a "pocket". The vibration shall be of sufficient duration to thoroughly compact the concrete, but shall not be continued so as to cause segregation.

7.13.4 Care shall be taken to ensure that newly deposited concrete is vibrated into any fresh concrete adjacent to it to provide a homogeneous concrete mass.

7.13.5 Vibration shall not be applied either directly or through the reinforcement to any concrete, which has taken its initial set.

SG 7.14 Removal of Forms and Falsework

7.14.1 Unless otherwise specified, forms and falsework shall remain in position until the times stated below have elapsed after completion of concreting:

7.14.1.1 Non structural concrete - Until such time as the concrete has reached 50% of the characteristic 28-day strength or a period of 3 days, whichever is the lesser.

7.14.1.2 Structural Concrete - Soffits of slabs, headstock and diaphragms - Until such time as the concrete has reached 70% of the characteristic 28-day strength or 7 days, whichever is the lesser. For side forms on structural concrete - 3 days minimum.

7.14.2 Where the timing for the removal of forms is based on concrete strength as specified herein, the strength shall be proven by testing in accordance with AS 1012.

7.14.3 Forms shall be removed with care, without hammering and wedging, and in a manner, which will not injure the concrete or disturb the remaining supports. Centre Forms shall be lowered gradually and uniformly in such a manner as to avoid injurious stress in any part of the structure.

7.14.4 Hole formers such as pipes and bars shall be removed as soon as the concrete has hardened sufficiently for this to be done without damage to the concrete.

SG 7.15 Finishing of Exposed Surfaces

7.15.1 Unless otherwise specified in the Project Documentation, all surfaces of concrete exposed to view in the completed structure shall be finished in accordance with the following:

7.15.1.1 Kerb and channel, invert crossings, vehicle crossings and industrial crossings shall be finished with an approved steel finishing tool.

7.15.1.2 Footpaths, bikeways and pram ramps shall be finished with a wooden float and broomed.

7.15.1.3 Where a sample panel is supplied or specified associated with a particular project. The concrete finish shall be in accordance with the specified requirement.

7.15.2 All concrete surfaces shall be true and even, free from stone pockets, depressions or projections beyond the surface. All arises shall be sharp and true, and mouldings shall be evenly mitred or rounded. Care shall be exercised in removing forms to ensure this result.

7.15.3 Immediately after removal of forms from mass or reinforced concrete work, all rough places, holes and porous spots shall be repaired by removing defective work and filling with stiff cement mortar having the same proportions of cement and fine aggregate as used in the concrete, and shall be brought to an even surface with a wooden float.

7.15.4 Any tie wires or other fitments extending to outside surfaces, shall be cut back after removal of forms, to a depth of at least 40mm with sharp chisels or cutters. All cavities caused by removal of fitments or tie wires shall be wetted and carefully packed with cement mortar, as above.

7.15.5 The surfaces of bolt cavities, tie wire holes, and all defects in concrete shall be coated prior to the placing of mortar, grout, or fresh concrete, with an approved bonding agent, in lieu of wetting with water. The method of application of such agent and the conditions in which it is to be used shall generally be as laid down by the manufacturer.

SG 7.16 Weepholes

7.16.1 Drainage adjacent to weepholes shall be provided by either a layer of broken stone or river gravel consisting of clean, hard, durable particles graded from 50mm to 10mm such that:

7.16.1.1 The maximum particle dimension shall not exceed 50mm

7.16.1.2 No more than 5 per cent by mass shall pass the 9.5mm A.S. sieve. 2. The broken stone or river gravel, enclosed in a filter fabric suitable for drainage without scour, shall be continuous in the line of the weepholes, extend at least 300mm horizontally into the fill and extend at least 450mm vertically above the level of the weepholes.

7.16.2 Alternatively the Contractor may provide a synthetic membrane of equivalent drainage characteristics. It shall be stored and installed in accordance with Manufacturer's instructions.

SG 7.17 Joints

7.17.1 Where horizontal construction joints are found to be necessary in walls, or cast-in-situ drainage structures the joints may be made at the base of walls and at other locations in the walls where approved by the Consulting Engineer. In order to provide for bond between the new concrete and the concrete which has already set, the surface on which the new concrete is to be placed shall be thoroughly cleaned of loose material, foreign matter and laitance. The surface shall be roughened or keyed and saturated with water. After any excess water has been removed, the surface shall be thinly coated with a neat cement grout.

7.17.2 Where vertical expansion joints are shown on the approved Project Drawings in retaining walls or other walls and structures the expansion joints shall consist of jointing material of approved quality, and of thickness stated on the drawings, and a depth sufficient to fill the joint. The jointing material shall be neatly cut to fit the surface of the concrete.

7.17.3 Extruded or cast in place kerbing, shall have narrow transverse vertical grooves, 40mm deep and not more than 6mm wide, formed neatly in the surface of the freshly placed concrete to produce contraction joints for the control of cracking. The contraction joints shall be at intervals not exceeding 3 metres.

7.17.4 In footpaths, median toppings and driveways, unless otherwise shown on the approved Project Drawings, expansion joints, 10mm in width for the full depth of paving, shall be constructed at intervals not exceeding 16m and where the pavement abuts against gutters, pits and structures. Expansion joints shall have an approved preformed jointing material. In addition, narrow vertical grooves 20mm deep and not more than 6mm wide shall be formed at internals not exceeding 2m to induce contraction joints for the control of cracking.

7.17.5 All unreinforced paving shall be provided with narrow vertical grooves, 20mm deep and not more than 6mm wide to induce contraction joints for the control of cracking. The joints shall be formed in the freshly placed concrete in a neat regular pattern to form "slabs" no bigger than $2m^2$. The ratio of the longest side to the shortest side shall not exceed 1.6.

SG 7.18 Curing

7.18.1 The curing of unformed surfaces of concrete shall commence as soon as finishing operations are complete.

7.18.2 If forms are removed in less than 7 days, curing of the formed surface shall commence within two hours of stripping.

7.18.3 Curing shall continue for a period after placing the concrete of not less than:

7.18.3.1 Top surface of slabs - 14 days;

7.18.3.2 Other surfaces - 7 days.

7.18.4 Curing shall be effected by either Water or Membrane Curing.

7.18.5 Water curing shall comprise surfaces being kept moist for the period specified by continuous spraying, ponding, wet hessian or wet sand blankets.

7.18.6 Membrane curing shall be effected by application of a sprayed curing compound or by covering with polythene sheet.

7.18.7 Sprayed curing compounds shall be of a paraffin wax emulsion type formulated and tested by the manufacturer to conform to AS 3799. The compound shall be mixed if necessary and applied at the rate recommended by the manufacturer.

7.18.8 Resin and PVA based compounds shall not be used.

7.18.9 Polythene sheet shall be of sufficient strength to withstand wind and any imposed foot traffic. Torn or punctured sheeting shall not be used. Laps should be 300mm minimum and edges and laps shall be sealed by tape or held down by boards or reinforcing bars. Water shall be sprayed under the sheeting at edges and at laps on the day after placing concrete and at regular intervals to maintain moist conditions.

SG 7.19 Backfilling

7.19.1 Backfilling at barriers, paving, etc, and minor concrete works shall not commence until after the concrete has hardened and not earlier than three days after placing.

7.19.2 No filling shall be placed against retaining walls, headwalls or wingwalls within 21 days after placing of the concrete, unless the walls are effectively supported by struts or when the Contractor can demonstrate that 85 per cent of the design strength of the concrete has been achieved.

7.19.3 Selected backfill shall be placed against retaining walls and cast-in-place box culverts for a horizontal distance equal to one-third of the height of the wall. It shall consist of granular material, free from clay and stone larger than 50mm gauge. The Plasticity Index of this selected backfill material shall not be less than 2 or more than 12 when tested in accordance with AS 12893.3.1. The material shall be placed in layers not exceeding 150mm and shall be compacted to provide a relative compaction of not less than 98 per cent as determined by AS 1289.5.4.1 for standard compactive effort.

SG 7.20 Sprayed Concrete

7.20.1 The minimum depth of sprayed concrete to be applied shall be 75mm.

7.20.2 Sprayed concrete shall have a minimum 28-day compressive strength of 25 MPa.

7.20.3 Earth surfaces shall be graded, trimmed and compacted and shall be dampened prior to applying the sprayed concrete. The Contractor shall take any precautions necessary to prevent erosion when the sprayed concrete is applied.

7.20.4 Rock surfaces shall be cleaned of loose material, mud and other foreign matter that might prevent bonding of the sprayed concrete onto the rock surface. The rock surface shall be dampened prior to applying the sprayed concrete.

7.20.5 The Contractor shall remove free water and prevent the flow of water, which could adversely affect the quality of the sprayed concrete.

7.20.6 Application shall begin at the bottom of the area being sprayed and shall be built up making several passes of the nozzle over the working area. The nozzle shall be held so that the stream of material shall impinge as nearly as possible perpendicular to the surface being coated. The velocity of discharge from the nozzle, the distance of the nozzle from the surface and the amount of water in the mix shall be regulated so as to produce a dense coating with minimum rebound of the material and no sagging. Rebound material shall be removed after the initial set by air jet or other suitable means from the surface as work proceeds and disposed of.

7.20.7 Spraying shall be discontinued if wind causes separation of the nozzle stream.

7.20.8 Concrete shall not be sprayed in air temperatures less than 5°C.

7.20.9 Construction joints shall be kept to a minimum. A joint shall be formed by placing or trimming the sprayed concrete to an angle between 30° and 45° surface. The joint edge shall be cleaned and wetted by air-water jet before recommencing concrete spraying.

7.20.10 When spraying around reinforcement, concrete is to be sprayed behind the reinforcement before concrete is allowed to accumulate on the face of the reinforcement.

7.20.11 Adjoining surfaces not requiring sprayed concrete shall be protected from splash and spray rebound. Splash or rebound material on these adjoining surfaces shall be removed by air-water jet or other suitable means as work proceeds.

7.20.12 Curing shall commence within one hour of the application of sprayed concrete and may be by water or by colourless wax emulsion curing compound complying with AS 3799 and applied in accordance with manufacturer's specifications.

7.20.13 In water curing, the surface of the sprayed concrete shall be kept continuously wet for at least seven days.

SG 7.21 No Fines Concrete

7.21.1 Where no fines concrete is incorporated in the works it shall be rodded sufficiently only to ensure the form is completely filled. It shall be screeded to the required surface level without tamping or vibrating. No fines concrete shall be moist cured for at least four (4) days by covering with wet hessian, polythene sheet or other similar materials. The use of wet sand or any other material, which can enter the voids, will not be permitted for curing purposes.

SG 7.22 Tolerances

7.22.1 Where tolerances for individual components and associated dimensions are not specified on the Project Drawings, deviations from established lines, grades and dimensions in the completed work shall not exceed the values stated herein.

7.22.2 The dimensional tolerances as shown in Table S7.3 are to cover strength, durability and fit of prefabricated elements and cast-in-situ elements.

Table S7.3 Dimensional Tolerances

Description	Tolerance (mm)
Cross-sectional dimension of members and thickness of slabs	+ 10, - 3
Length of members, length and width of slabs: **- Up to 18m dimension** **- 18m or over dimension**	 ± 6 1mm for every 3m in length
Clear cover to reinforcement	+ 6, - 3
Fitments for prefabricated elements – girder anchorages (including dimensions between anchorages on adjacent piers), cored holes, handrail anchorages and other embedded items	± 5 max. 1mm for every 1m in length

7.22.3 Positional tolerances, as shown in Table S7.4 refer to the departure of any point, plane or component of a structure from its correct position within the layout of the structure as shown on the Project Drawings.

Table S7.4 Positional Tolerances

Description	Tolerance (mm)
Level of Footings	± 20
Level other than footings	± 5
Horizontal location, where tolerances on fit is not acceptable	± 25

7.22.4 Relative tolerances refer to departures from linearity or planarity in any part of the structure. Tolerances are measured as the departure of any point in a line or surface from the remainder of that line or surface.

7.22.5 Departure may be sudden (e.g. misfit at joint in formwork) or gradual (e.g. a wobble in the surface). Tolerance on gradual departure is the value calculated by multiplying the overall length of the line or surface under consideration by the factor given below in Table S7.5.

Table S7.5 Relative Tolerances

Description	Tolerance (mm)
Exposed edge – gradual departure	0.001
Exposed surface – gradual departure	0.004 (10mm max.)
Exposed surface – sudden departure	3 mm max

SG 8 Landscaping

General

SG 8.1 Scope

8.1.1 This specification details all requirements pertaining to Tree Planting, Grassing, Turfing, Hydromulching and Irrigation works associated with permanent and temporary revegetation works.

8.1.2 Where there is any conflict determined between the requirements specified herein and the requirements of any referenced Australian Standard, Statutory Authority Standards or otherwise, the requirements specified herein shall apply.

SG 8.2 Reference Documents

8.2.1 Australian Standards:
- 8.2.1.1 AS1432 Copper Tubes for Plumbing, Gasfitting and Drainage Applications
- 8.2.1.2 S/NZS1477 PVC Pipes and Fittings for Pressure Applications
- 8.2.1.3 AS2032 Code of Practice for Installation of PVC Pipe Systems
- 8.2.1.4 AS2507 The storage and Handling of Pesticides
- 8.2.1.5 AS2845 Water Supply – Back Flow Prevention Devices
- 8.2.1.6 AS3785 Solvent Cements and Priming Fluids for Use with UPVC Pipes and Fittings
- 8.2.1.7 AS4419 Soils for Landscaping and Garden Use
- 8.2.1.8 S4454 Composts, Soil Conditioners and Mulches

8.2.2 Queensland Legislation:
- 8.2.2.1 Queensland Land Protection Act (2002)

8.2.3 Whitsunday Regional Council:
- 8.2.3.1 Biosecurity Plan 2016-2020

Materials

SG 8.3 Grass Seeding

8.3.1 The grass seeding species mix shall consist of the following:
- 8.3.2 30% Cynodon Dactylon (green couch) – hulled
- 8.3.3 30% Cynodon Dactylon (green couch) - unhulled
- 8.3.4 30% Axonpus Affinis (carpet grass)
- 8.3.5 10% Tetila Rye (in dry season) or Japanese Millet (in wet season)

8.3.6 The accepted final mix shall be dependent upon local conditions, soil properties, and method of works.

SG 8.4 Turfing

8.4.1 Turf shall consist of 25mm depth of dense, well rooted, vigorous grass growth with 25mm depth of topsoil. It should be free from any material toxic to plant growth, declared weeds, seeds or roots including nut grass and oxalis. The soil attached to the turf shall be free from rubbish, sticks and other deleterious material.

8.4.2 The turf shall be supplied as rolls in long lengths of uniform width, not less than 300mm, and shall be in sound unbroken condition.

8.4.3 The moisture level in the cut turf should be kept relatively consistent so that it is not saturated or severely dried out when laying. Both of these situations can cause turf to fall apart during laying.

8.4.4 The type of grass turf to be used shall as stated on the approved Project Drawings, where not stated broad leaf buffalo shall be used for un-irrigated areas and couch for irrigated areas.

8.4.5 Acceptable species for this region are as follows:

- 8.4.5.1 Axonopus compresus (Broad leaf buffalo)
- 8.4.5.2 Digitaria didactyia (Blue Couch)
- 8.4.5.3 Cynodon dactylon (Bermuda Couch / Green Couch).

SG 8.5 Hydromulch

8.5.1 The hydromulching mixture shall consist of the following:

- 8.5.1.1 Mulch - Pulped Paper / Bagasse or Cane fibre
- 8.5.1.2 Fertiliser - Broad spectrum type CK55 or equivalent.
- 8.5.1.3 Seed - 33% Cynodon Dactylon (Green Couch) - hulled 33% Cynodon Dactylon (Green Couch) - unhulled 33% Axonopus Affinis (Carpet Grass)
- 8.5.1.4 Water - Water used to establish and maintain the grassing shall have a pH of between 5.0 and 8.0, a total soluble salts concentration less than 1000mg/l and contain no chemicals or compounds toxic to growth.
- 8.5.1.5 Binder/Tackifier - Binder is to be non-toxic, inert, water soluble and non-flammable, e.g. Curasol or equivalent. Tackifier is be a non-toxic and biodegradable e.g. Envirotack or equivalent.

SG 8.6 Plant Stock

8.6.1 All plant species shall be as detailed on the approved Project Drawings. There shall be no substitution of any species without Council approval.

8.6.2 All palms, trees, shrubs and groundcovers shall be true to name. The root system of each plant shall be conducive to successful transplantation, all specimens shall be free from pests and disease, especially Phytopthera, palm beetle, sooty mould and scale, and all containers shall be free from pernicious weeds.

8.6.3 All plants shall be grown in containers and shall comply with the following minimum size requirements:

- 8.6.3.1 Trees - 25 litre container for street tree planting,
- 8.6.3.2 Trees - 45 litre container for medians, tree guards, traffic islands and roundabouts,
- 8.6.3.3 Single stemmed palms - 45 litre container,
- 8.6.3.4 Clumping Palms - 45 litre container Shrubs - 200mm container,
- 8.6.3.5 Groundcovers – 140mm container.

8.6.4 Plants shall be watered before transportation to the planting site, and shall be delivered to the site in a covered container. During loading and unloading damage in handling shall be avoided.

8.6.5 Species identified in the following are prohibited from use:

- 8.6.5.1 Land Protection (Pest and Stock Route Management) Act 2002,
- 8.6.5.2 Land Protection (Pest and Stock Route Management) Regulation 2003
- 8.6.5.3 Species identified in the Local governments Pest Management Plans, and
- 8.6.5.4 Publication “Agricultural and Environmental Weeds – Far North Queensland” (Wet Tropics Management Authority and Department of Natural Resources and Mines & Energy)

SG 8.7 Soil Mix

8.7.1 A good quality landscaping soil mix shall be imported from an approved source to the planting site for backfilling the planting pits.

8.7.2 Specification for the landscaping soil mix are as follows:

- 8.7.2.1 It shall contain approximately 70% sandy loam and 30% composted or mature organic matter;
- 8.7.2.2 It shall be friable and not contain any clay;
- 8.7.2.3 The pH shall be between 5.5 and 7.0;
- 8.7.2.4 It shall be free from contaminants such as the seed of declared weeds, rocks sticks and salts;
- 8.7.2.5 It shall not contain any chemical fertilisers.

SG 8.8 Fertiliser

8.5.1 Fertiliser shall confirm to the requirements stated in Table S8.01.

Table 8.01 Fertiliser Types

Location	Chemical Type	Type of Application	NPK Analysis
Grass Seeding (Complete lawn fertiliser)	Inorganic	Surface broadcast	N 15 to 24 P 6 to 9
Turfing (Complete lawn fertiliser)	Inorganic	Surface broadcast	N 15 to 24 P 6 to 9
Tree Planting (Controlled release fertiliser)	Organic or inorganic	Fertiliser Tables (2 per tree)	N 15 to 25 P 3 to 9
Planting Beds (Controlled release fertiliser)	Organic or inorganic	Granular	N 18 to 25 P 3 to 7 K 9 to 18

SG 8.9 Irrigation Pipework

8.9.1 All below ground pipework shall be unplasticised Poly-vinyl Chloride (uPVC) unless otherwise approved. All pipes shall be Class 12 minimum with Class 18 fittings.

8.9.2 All above ground pipe work shall be copper tube (hard drawn) Type D manufactured in accordance with AS 1432 by an Australian Standards quality endorsed company.

Construction

SG 8.10 Grass Seeding

8.10.1 Prior to grass seeding all weeds shall be killed by spraying a suitable herbicide. Sprayed areas shall remain undisturbed for two weeks.

8.10.2 Prior to grass seeding the ground surface shall be lightly tyned to a depth of 100mm below finished surface levels (where slopes are less than 10%). All large stones, rubbish and other materials that may hinder germination shall be removed before topsoiling.

8.10.3 Parks may require additional topsoil to a depth of not less than 75mm and shall be lightly compacted and grassed if Council considers the in-situ topsoil of poor quality and is too rocky.

8.10.4 Grass seeding applied by drill seeding at the minimum rate of 50kg per hectare using the species mix specified.

8.10.5 Fertiliser should be applied following seeding at a minimum rate of 350kg per hectare, subject to specific site conditions, soil analysis and desired outcomes.

8.10.6 Seed and fertiliser should be applied at an even rate using a calibrated disc drill seeder followed by a chain and roller.

8.10.7 Disc's should cut approximately 12mm and create enough friable material for chains to cover the seed.

8.10.8 Where one pass fails to develop enough friable material a second pass should be made in a transverse direction.

8.10.9 Watering is the application of 10mm of water to the total area in not less than one hour and shall include any natural rainfall. The frequency of watering shall comply with the following minimum requirements:-

Table 8.02 Grass Seeding Water Requirements

Periods after Grassing	Watering(s)
Immediately	Once
Week 1	Twice / day during hot, dry or windy periods Once / day during cool / overcast periods
Week 2	Once / day
Weeks 3 & 4	Once every second day
Week 5 until necessary	Twice a week or as necessary to ensure 80% minimum strike rate

8.10.10 Acceptance shall be the achievement of a minimum vegetative cover of 80% of both the annual and perennial grass cover over the whole area. Grassed areas shall exhibit signs of healthy growth and shall be free of weeds, stones, sticks and other deleterious material. Maximum deviation from finished ground levels 50mm in any 2 metres.

SG 8.11 Turfing

8.11.1 Prior to turfing all weeds shall be killed by spraying a suitable herbicide. Sprayed areas shall remain undisturbed for two weeks.

8.11.2 Topsoil shall be uniformly applied to provide an average thickness of 50mm with a minimum compacted thickness of 25mm at any location and graded to even-running contours, so that no ponding or waterlogging occurs across the surface of the grassed area.

8.11.3 The prepared surface shall be watered within twenty four (24) hours prior to turfing at an application rate of 10mm of water in not less than 1 hour. Watering is to be carried out in such a way as not to cause any scouring or erosion.

8.11.4 After watering an approved lawn pesticide shall be applied at the rate specified by the supplier and in accordance with the Agricultural Chemicals Distribution Contract Act and Regulations.

8.11.5 Fertiliser should be applied prior to laying turf at a minimum rate of 350kg per hectare, subject to specific site conditions, soil analysis and desired outcomes.

8.11.6 Topsoil shall be raked before turf is laid. Turf shall be laid in straight lines with staggered cross joints on the general line of the contour of the slope. The gaps between adjacent sections of turf should not exceed 5mm.

8.11.7 A light top dressing shall be worked into the open joints between the turf and then the turf lightly rolled with one pass of a roller weighing about 80kg on a 1m width of roller. Alternative methods to rolling shall be used where slopes exceed 10%.

8.11.8 On steep slopes (exceeding 10%) turf may be held in position by softwood pegs or stakes, located at each end of the turf sections.

8.11.9 Watering is the application of 10mm of water to the total area in not less than one hour and shall include any natural rainfall. The frequency of watering shall comply with the requirements in table 8.03:-

Table 8.03 Turfed Watering Requirements

Periods after Grassing	Watering(s)
Immediately	Once
Week 1	Once every second day
Week 2, 3 & 4	Three times each week
Weeks 5 - 12	Twice a week

8.11.10 Acceptance shall be the achievement of an even green colour with a dense continuous sward over the whole area. Turf shall exhibit signs of healthy growth and shall be free of weeds, stones, sticks and other deleterious material. Maximum deviation from finished ground levels 50mm in any 2 metres.

SG 8.12 Hydromulching

8.12.1 Prior to hydromulching all weeds shall be killed by spraying a suitable herbicide. Sprayed areas shall remain undisturbed for two weeks.

8.12.2 Batter slopes less than 20% shall then be lightly tyned to a depth of 50mm to produce a loose surface and all large stones, rubbish and other materials that may hinder germination shall be removed before topsoiling.

8.12.3 Where batters have been stepped, the steps shall be loosely filled with topsoil. Elsewhere, topsoil shall be uniformly applied to provide an average thickness of 75mm with a minimum compacted thickness of 40mm at any location.

8.12.4 Dry surfaces shall be watered by a fine spray before the application of the hydromulch.

8.12.5 The slurry mixture of mulch, binder, fertiliser and seed is to be kept in a homogenously mixed state throughout the mulching operation.

8.12.6 During preparation of the hydromulch, a liquid form pesticide may be added to the storage tank, to facilitate surface application. Application rate should be in accordance with the manufacturer's recommendation.

8.12.7 Additional protective treatments (e.g. fibre matting, anionic bitumen emulsion etc) shall be as specified on the approved Project Drawings.

8.12.8 Hydromulch shall not be applied under the following weather conditions at the site:

8.12.8.1 when temperature is higher than 35°C

8.12.8.2 when winds exceed 15 km/hr;

8.12.8.3 where the surface is too wet or

8.12.8.4 during rain periods or when rain appears imminent.

8.12.9 The rate at which the mulch is applied is dependent on slope shall be in accordance with Table S8.02.

Table S8.02 Hydromulching Material and Application Rates (per 1000m)

Slope	<5%	5% - 12%	12% - 20%	20% - 50%	>50%
Pulped Paper	200kg	120kg	120kg	140kg	200kg
Bagasse (wet weight)	200kg	400kg	500kg	700kg	800kg
Cane Fibre (alternative to bagasse)	200kg	200kg	300kg	400kg	500kg
Fertiliser	50kg	50kg	50kg	50kg	50kg
Seed	5kg	5kg	5kg	5kg	5kg
Water	8000 litres	8000 litres	10,000 litres	12,000 litres	18,000 litres
Binder Curasol Envirotack	5 litres 3kg	5 litres 2kg	7.5 Litres 7.6 3kg	15 litres 5 kg	30 litres 5kg
Mulch Thickness	1-2mm	2-3mm	2-4mm	2-4mm	4-6mm

8.12.10 Watering is the application of 10mm of water to the total area in not less than one hour and shall include any natural rainfall. The frequency of watering shall comply with the following minimum requirements:-

Periods after Grassing	Watering(s)
Immediately	Once
Week 1	Twice / day during hot, dry or windy periods Once / day during cool / overcast periods

Week 2	Once / day
Weeks 3 & 4	Once every second day
Week 5 until necessary	Twice a week or as necessary to ensure 80% minimum strike rate

8.12.11 A follow up fertiliser treatment is to be applied to 4 – 6 weeks after germination has occurred. Fertilisation should be with a product that provides for the following elements: Nitrogen (N) 13%, Phosphorus (P) 4% and Potassium (K) 12%.

8.12.12 Acceptance shall be subject to the achievement of a minimum vegetative cover of 80% of both the annual and perennial grass cover over the whole area. Hydromulched areas shall exhibit signs of healthy growth and shall be free of weeds, stones, sticks and other deleterious material.

SG 8.13 Planting

8.13.1 Planting shall be carried out as soon after delivery to the site as possible. All containers, unless fully biodegradable, shall be removed at the latest point before planting.

8.13.2 All plants shall be obtained from a nursery located in an area having a similar climate to the site of the Works.

8.13.3 Shrub and ground cover planting to verges and traffic islands etc. shall be as detailed on the approved Project Drawings.

8.13.4 Prior to planting all weeds shall be killed by spraying a suitable herbicide. Sprayed areas shall remain undisturbed for two weeks.

8.13.5 Street trees shall be planted at the locations as shown on the approved Project Drawings.

8.13.6 During backfilling around the plants the soil shall be lightly firmed to ensure intimate contact with the roots, but with large material successive layers of soil will need to be firmed as backfilling proceeds.

8.13.7 Ensure the plants are held securely by the soil but not so that moisture penetration of the soil is restricted. After planting, damaged, dead, diseased or crossing branches shall be removed by pruning.

8.13.8 Plants should be watered directly after planting prior to spreading of mulch. The mulch shall be left just clear of the plant stem.

8.13.9 All trees shall be staked with three (3) 38 x 38 x 2400mm hardwood stake, extending into the ground to a depth of 500mm. Do not allow the stake to penetrate the root ball. Secure the tree to the stake with plastic multi-purpose chain ties. Refer Council's Standard Drawings.

8.13.10 Mulch shall be aged hardwood woodchip, stockpiled for a minimum of 6 weeks, or other mulch approved by Council, free from rocks, non-biodegradable and toxic material. In paved footpath planters it shall be installed to a depth of 75mm, in tree guards, traffic islands and mulched, mass planted garden beds within parkland and reserves to a depth of 150mm depth.

8.13.11 Peanut shell or forest litter mulch may be used in "natural" planting areas only, such as buffer planting or parkland planting. It should be installed to a minimum 150mm compacted depth, free from rocks, nut grass, and any other invasive weed.

8.13.12 Tea-tree mulch is prone to combustion and shall not be used unless permission is obtained from Council.

8.13.13 All plants shall be watered, immediately upon planting, and at the rate of 10 litres per plant every third day for the first twelve weeks.

8.13.14 Weed and grass growth in mulched areas shall be killed by treatment with herbicide in accordance with the manufacturer's instructions at monthly intervals during the construction period and contract maintenance period. Contact of the herbicide with the new plants shall be avoided and any damage repaired, or damaged plant material replaced.

8.13.15 Acceptance shall be subject to achieving the following criteria:

8.13.15.1 Plants, which do not meet the acceptance criteria, shall be replaced.

8.13.15.2 Replacement plants shall be of similar size and quality and of identical species and variety to the plant being replaced.

8.13.15.3 Plants shall exhibit signs of healthy growth,

8.13.15.4 Plants shall be well formed,

8.13.15.5 Plants shall be free from disease or insect pests,

8.13.15.6 Plants shall be free of physiological disease symptoms (yellowing, wilting etc),

8.13.15.7 Mulch shall be free from weeds, sticks, rubbish and other deleterious material.

Irrigation

SG 8.14 General

8.14.1 Application shall be made to Council for connection of irrigation systems to the water main. The Contractor shall arrange with the Council for the timing of the work. All works shall be carried out by the relevant Local Authority at the applicants cost.

8.14.2 The Applicant will be responsible for the payment of all water used during construction, testing, establishment and maintenance of the irrigation system and landscape works.

SG 8.15 Excavation

8.15.1 Do not excavate by machine within 500mm of existing underground services.
8.15.2 The standard width of trench for pipes shall be 150mm.
8.15.3 Unless noted otherwise on the approved Project Drawings or directed by Council all pipe work is to be installed with a minimum cover of 350mm.

SG 8.16 Laying of Pipes

8.16.1 All pipe work to be bedded in clean fill sand with a minimum cover of 50mm all round.
8.16.2 Special precautions are to be taken to exclude dirt, sand, grit or gravel from entering pipelines.
8.16.3 The open ends of pipes shall be plugged at the end of the day's work to prevent entry of water or mud.

SG 8.17 Pressure Testing

8.17.1 All work shall satisfy a test pressure of the nominated working pressure for a period of two (2) hours. The test shall be carried out during the coolest part of the day. The point at which the test pressure is measured shall be at the lowest point in the profile of that section of main under test.
8.17.2 All tests shall be carried out under the supervision and in the presence of the Council Inspector.
8.17.3 Any defects that arise during the tests shall be repaired in an approved manner. Any leak however small will be classed as a defect. All such repair work shall be similarly tested and approved before acceptance.
8.17.4 The Contractor shall give 48 hours notice to Council so that arrangements can be made for supervision of the testing.
8.17.5 The Contractor shall accept all risks and expenses incurred during testing and shall provide all labour together with all pumps, engines, pipes, temporary valve plugs, flanges and all other equipment as may be necessary to undertake testing

SG 8.18 Flushing

8.18.1 After pressure testing has been carried out the new pipework shall be flushed as thoroughly as possible with the available water pressure.

SG 8.19 Controllers

8.19.1 All Council landscaped areas, which require irrigation systems shall be controlled by electrically, operated solid state controller.

SG 8.20 Filtration

8.20.1 All irrigation systems shall be fitted with an approved flow strainer installed in a secure enclosure.

SG 8.21 Valves

8.21.1 Electrically actuated solenoid valves shall have flow control, manual bleed screw, 24 VAC solenoid, Buna N diaphragm, and be constructed of PVC and stainless steel. They shall be suitable for direct burial and have 150 psi maximum working pressure. They shall be pressure regulating solenoid valves.

8.21.2 Isolation valves shall be of bronze construction and of the BSP screwed gate type as approved by the engineer. They shall be installed on the supply side at every solenoid valve to enable isolating.

8.21.3 Protective valve boxes are to be provided for each solenoid valve. They shall be constructed of green high density polyethylene, be 450 x 300 x 300mm in dimension, and have a lockable lid with the word "Irrigation" clearly marked on it.

8.21.4 The wiring from the solenoid to the controller shall be laid in conduit and shall be of 250 volt grade and shall be installed to approved standards. The wiring shall be located with all pipework.

8.21.5 All solenoid valves shall be connected to controller by 0.05mm solid core wire and to have seven insulated cores within a common plastic protective shield. It shall be similar in all respects to RIS multi-core 7/0.5mm electrical control wire and shall be continuous between valve and controller, and valve to valve. An additional one metre length of cable shall be provided at each wire termination. Cable shall be sized for voltage drop not exceeding four (4) volts over total route length.

SG 8.22 Backflow Prevention Devices

8.22.1 All Council landscaped areas, which require irrigation systems, shall have a backflow prevention device installed. This device should comprise of a stand constructed fully from hard drawn copper pipe (Type D) and should have an inline strainer both before and after the backflow preventer. This should comply with AS 2845.

SG 8.23 Performance Test

8.23.1 On completion of the installation the system shall be tested in the presence of a Council Inspector.

8.23.2 The system shall be operated to demonstrate that all components function as required by the design.

8.23.3 The Contractor is responsible for making all necessary alterations to the system so that the performance is in accordance with the design specifications.

SG 8.24 Backfilling of Trenches

8.24.1 Trenches shall be backfilled with the excavated material. If the excavated material is considered unsuitable for backfilling by the Council Inspector, it shall be removed from the site and replaced with clean approved backfill material.

8.24.2 All trenches so backfilled shall be compacted and lightly raked to ensure that surface levels marry with adjacent surface levels, are free draining and free from mounds or depressions. All rocks or evidence or excavated subgrade shall be raked up and removed.

Form 1 - Statement of Compliance Operational Works Design

This form duly completed and signed by an authorised agent of the designer shall be submitted with the operational works application to Council approval.

Name of Development:

Location of Development:

Applicant:

Designer:

it is hereby certified that the calculations, drawings, specifications and related documents submitted herewith have been prepared, checked and amended in accordance with the requirements of the Whitsunday Regional Council Development Manual and that the completed works comply with the requirements therein, except as noted below.

Compliance with the requirements of the Operational Works Design Guidelines	Non-compliance - refer to non-compliance report/drawing number
Plan presentation	
Geotechnical requirements	
Geometric road design	
Pavements	
Structures/bridges	
Subsurface drainage	
Stormwater drainage	
Site regrading	
Erosion control and stormwater management	
Pest plant management	
Cycleways/pathways	
Landscaping	
Water source and disinfection/treatment infrastructure	
Water reticulation pump stations	
Sewer reticulation and pump stations	
Electrical reticulation and street lighting	
Public transport	
Associated documentation/specification	
Priced schedule of quantities	
Referral agency conditions	
Supporting information (AP 1.08)	
Other	

Designer: RPEQ No.

Signature: Date:

Form 2 – Security Lodgement Form
This sheet must be completed prior to the acceptance of any bond by Council.

Development Name:	
Stage:	
File No.:	
Applicant:	
Consultant:	
Purpose of Bond:	

Uncompleted Works Bond Assessment:

Estimated time to complete bond works (not greater than 90 days)	days
Current contract completion date	
Anticipated completion date	
Consulting engineers estimated value of uncompleted works	
Bond value (apply factor 1.50)	

Construction/defects liability bond assessment :

Consulting engineer's estimated value of completed works	
Construction/maintenance bond value (apply factor 0.05) (min $500)	

Council shall retain any interest accrued on cash monies paid to Council and held in trust by Council.

Consulting Engineer:

Signature:

RPEQ No.

Date:

Form 3 – Inspection Certificate for Witness/Hold Point

This certificate registers evidence that the works as noted herein have been inspected by the Council officer noted below and were found to be satisfactory.

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Contractor:	

Works being inspected/Tested/Witnessed:

Defaults/Corrective Action Required:

Defaults Corrected?	Y	N	N/A

Council Inspector Signature:

Name of Inspector:

Date of Inspection:

Form 4 – Works Acceptance Inspection Checklist

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Contractor:	

Item	Verification (Yes/No/N/A)	Comment
ALLOTMENT DRAINAGE The works have been finally inspected and:		
60. Concrete catch drains constructed in approved location and to a satisfactory standard;		
61. Field inlets constructed in approved location and to a satisfactory standard;		
62. Overland flow path constructed to correct profile;		
63. Pipework has been visually inspected and is satisfactory in terms of: a. alignment and grade; b. free of debris and siltation; c. no visual sign of trench subsidence; and d. outlets are satisfactory.		
64. Lots not provided with allotment drainage can be drained to the kerb and channel.		
STORMWATER DRAINAGE SYSTEM The works have been finally inspected and:		
65. Pipe layout is as per plan or approved amendments with respect to pipe size, levels and location.		

66. Pipework has been visually inspected and is satisfactory in terms of: a. alignment and grade; b. free of debris and siltation; c. lifting plug holes sealed; d. no visible sign of trench subsidence; and e. no damaged pipes.		
67. Gully pits and manholes have been constructed to the correct standards i.e.: a. Correct type of grate or cover; b. Lintels; c. side entry slots; d. benching (no water ponding) e. grates are satisfactorily sealed in frames; f. we poles provided to bedding material; g. no damaged structures; h. converter slabs/sections mortar bedded; i. correct drops through gullies/manholes; and j. all lids/grates finished to match surface level.		
68. All density tests to backfill are available and satisfactory.		
69. Material gradings are available for bedding material and are satisfactory;		
70. Outlets/inlet structures are satisfactorily constructed and are free from scour or siltation.		
71. All manhole and gully pit pipe connections are mortared flush with the walls and no pipe reinforcement is exposed.		
72. Open cut channels have been finally inspected and a satisfactory i.e.: a. Cut to design profiles; and		

b. lining of channel is to the required thickness and reinforcement, with appropriate weep holes.		
73. Overland flow, the works have been finally inspected an appropriate flow paths are provided and clear of obstruction.		
74. Outlets and outfalls have been constructed to control discharge flow in accordance with the plans.		
75. Subsoil drainage discharges to gullies or other approved point of discharge.		
76. All grousing requirements to channels, swales, outlets, inlets etc have been completed.		
77. CCTV inspection of stormwater pipes completed.		
WATER QUALITY The Works have been finally inspected and:		
78. Water quality structures have been constructed in accordance with approved engineering drawings;		
79. Structures are free of debris and sediment.		
EROSION AND SEDIMENT CONTROL The works have been finally inspected and:		
80. Control structures required until the site is stabilised in accordance with the contractor's ESCP are in place.		
81. Structures are free of debris and sediment.		
EARTHWORKS		

The Works have been finally inspected and:		
82. Toe of batters not on Council Road reserve except as approved.		
83. Retaining walls clear of Road reserve except as approved.		
84. Retaining walls constructed in accordance with drawings.		
85. Batter slopes constructed in accordance with drawings.		
86. Batter slopes stabilised against erosion.		
87. Interim drainage constructed in accordance with drawings.		
88. All areas disturbed by the works have been rehabilitated.		
89. Allotment levels are as per the design plans.		
90. Verge levels are as per the design plans.		
SEWER RETICULATION The Works have been finally inspected and:		
91. Pipe layout is as per the plan or approved amendments with respect to pipe size, levels, and location.		
92. Pipework has been visually inspected and is considered satisfactory, i.e.: a. Pipework flush with internal walls of manhole; b. alignment and grade; c. flexible joints; d. line flushed and cleaned; e. no visible sign of trench subsidence; f. a density test of backfill is available and satisfactory;		

g. CCTV survey results submitted and satisfactory.		
93. Manholes and maintenance shafts have been constructed to the correct standards, i.e.: a. Cast in situ; b. Benching; c. curvature satisfactory; d. no ponding; e. profile satisfactory; f. no weeps (free of infiltration); g. concrete work; h. no honey combing; i. covers; j. covers checked to be gas tight; k. correct type; l. imprint in accordance with standards; m. depth of cover surround; n. depth of top slab; o. location; p. relative to allotment boundaries; and q. 50 to 75 mm proud of finished surface level.		
94. Material gradings for bedding material are available and satisfactory.		
95. Pressure test results are available and satisfactory.		
96. Manhole hydrostatic test all satisfactory.		
97. Sewerage connection Private Works fees paid.		
98. On-site sewer report provided (if applicable).		
99. PUMP STATION - refer separate PS checklist.		
WATER RETICULATION The works have been finally inspected and:		

100. Pipe layout and services fixtures (valves and hydrants) are as per the plan or approved amendments with respect to pipe size and location.		
101. Pipework has been pressure tested in accordance with Council's requirements and test results are available and satisfactory.		
102. Pipework has been chlorinated in accordance with Council's requirements.		
103. There are no visible signs of trench subsidence for leaks.		
104. Valves and hydrants have been inspected and a satisfactory, i.e.; a. Location; b. setts and surrounds correctly installed to prevent ingress of soil, etc; c. mortar packing to boxes correctly completed; d. depth to top of hydrant or valve stem within limits; e. dust caps to hydrants; f. colour of marker plate correct; g. direction of flow indicated; h. marking plates correctly installed; and i. size of plate correct.		
105. Material gradings for bedding material are available and satisfactory.		
106. Water supply connection Private Works fees paid.		
107. PUMP STATION - refer separate checklist.		
ROAD PAVEMENTS The works have been finally inspected and:		

108. Plan layout and geometry of Road system is in accordance with the drawings.		
109. Finish levels at Crown and channel are at design levels.		
110. Cross falls are to the approved plan.		
111. AC is satisfactory with regards to finish and thickness.		
112. Joints in the seal (especially where various development stages apply) are flush.		
113. The sealed surface is free of blemishes.		
114. All compaction test, material quality (CBR), material grading, AC core tests are satisfactory and available.		
115. Ponding of stormwater does not occur.		
SEGMENTAL PAVERS (Where Constructed) The Works have been finally inspected and:		
116. All pavers have been correctly laid to pattern, within allowable tolerance, compacted, and the joints filled;		
117. Bedding sand for pavers drains to subsoil drainage.		
118. Pavers adjacent to concrete kerb and channel, edge restraints etc have been cut and laid in accordance with all relevant requirements.		

Form 5 – Registered Engineer's Certification of "As Constructed" Works

This certificate registers evidence that the locations, surface and invert levels of all works and infrastructure presented on the drawings noted below and in the digital ADAC data have been surveyed and meet the accuracy standards as defined within the WRC Development Manual.

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Contractor:	
Surveyor Name:	
Surveyor Firm:	

Drawings & Documents pertaining to the above:

Signed:

Date:

Form 6 – Registered Surveyor's Certification of "As Constructed" Works

This certificate registers evidence that the "As Constructed" drawings submitted herewith have been prepare, checked and amended in accordance with the requirements of the WRC Development Manual and that the completed works comply with the requirements therein.

Development Name:	
Development Location:	
File No.:	
Consulting Engineer:	
Consulting Firm:	
Surveyor Name:	
Surveyor Firm:	

Certification by Registered Surveyor (Consulting) attached: Yes / No

(Note: Certification is to be in accordance with the Development Manual).

Compliance with the manual Design Intent and Function not compromised by the "As Constructed" Works	**Compliance Yes/No**	**Non-Compliance refer to attached redesign of works to ensure satisfactory performance**
Earthworks		
Roadworks		
Stormwater Drainage		
• Flow System and Structures		
• Major Flow System and Structures		
Water Reticulation		
Sewerage Reticulation		
"As Constructed" Documentation		

Signed:

RPEQ No.

Date:

Appendix A – Inspection and Test Requirements

Elements of Work	Consulting Engineer's Responsibility	Council's Responsibility
Clearing and Grubbing		
Location	HOLD POINT upon completion of survey, inspect defined limits of clearing	WITNESS POINT Joint inspection of defined limits and tree removal if considered warranted.
Allotment Filling		
Quality of Material	Examine and assess all test results.	Visit site for random audit inspections if considered warranted.
	Examine and assess all test results.	Visit site for random audit inspections if considered warranted.
		Visit site for random audit inspections if considered warranted.
Subgrade		
Compaction	Routinely visit site. HOLD POINT Attend Ensure Earthworks are being carried out in accordance with condition of approval	Visit site for random audit inspections.
CBR Tests (if ordered)	Examine and assess all test results	Assess all test results.
Horizontal and vertical alignments	Routinely visit site. Examine and assess all test results and cross-section geometry	Visit site for random audit inspections. Assess all test results and cross-section geometry.
Profile	Routinely visit site. HOLD POINT Attend at completion	Visit site for random audit inspections. HOLD POINT joint inspections at completion
Embankments	Routinely visit site. HOLD POINT Attend at completion	Visit site for random audit inspections. HOLD POINT joint inspections at completion
Subgrade Replacement		
Material Quality	HOLD POINT Make sufficient routine visits to assess quality of materials. HOLD POINT Examine and assess all test results.	WITNESS POINT Visit site for random audit inspections if considered warranted.

Compaction for: a) For on site Material; and b) For graded Material	HOLD POINT Make sufficient routine visits to assess that operations will achieve a sound compacted layer. HOLD POINT Examine and assess all test results.	WITNESS POINT Visit site for random audit inspections if considered warranted.
Profile and Depth	HOLD POINT Examine and assess all test results.	WITNESS POINT Visit site for random audit inspections if considered warranted.
Sub-Base Layer		
Material Quality	Routinely visit site. Examine and assess all test results.	WITNESS POINT Visit site for random inspections if considered warranted.
Compaction	Routinely visit site. HOLD POINT attend during proof rolling. Examine and assess all test results.	WITNESS POINT Visit site for random inspections if considered warranted.
Profile and Depth	Routinely visit site. HOLD POINT Attend at completion of final preparation. Examine and assess all rest results and cross section geometry.	HOLD POINT Joint inspection on completion of final preparation.
Base Layer		
Material Quality	Routinely visit site.	Visit site for random audit inspections.
Compaction	Routinely visit site. HOLD POINT Attend during proof rolling. Examine and assess all test results and cross section geometry.	Visit site for random audit inspections.
Horizontal and Vertical alignment	Routinely Visit Site	Visit site for random audit inspections.
a) With no Kerb & channelling	Examine and assess all test results and cross section geometry.	

b) With Kerb & Channelling profile	Examine and assess all test results and cross section geometry.	
Profile	Routinely visit site	Visit site for random audit inspections
	HOLD POINT Attend at completion of final preparation.	HOLD POINT Joint inspection on completion of final preparation.
Surfacing		
Material Quality		WITNESS POINT Visit site for random inspections if considered warranted.
Compaction & Thickness		WITNESS POINT Visit site for random inspections if considered warranted.
Horizontal & Vertical alignments		WITNESS POINT Visit site for random inspections if considered warranted.
Profile	HOLD POINT Undertake a Pre-seal Inspection.	HOLD POINT Undertake a Pre-seal Inspection.
Sub-Soil Drains		
Pipe	Routine inspection of Contractor's Performance and progress of works.	Visit site for random audit inspections if considered warranted.
Filler Material	Routine inspection of Contractor's Performance and progress of works.	Visit site for random audit inspections if considered warranted.
Cleaning Joints and Markers	Routine inspection of Contractor's Performance and progress of works.	Visit site for random audit inspections if considered warranted.
Geofabric	Routine inspection of Contractor's Performance and progress of works.	Visit site for random audit inspections if considered warranted.
Kerb & Channel		
Material Quality	HOLD POINT Inspect foundations prior to kerb placement.	HOLD POINT Visit site for Inspection
Horizontal & Vertical Alignments	Inspect Completed Kerb Water Test where appropriate	HOLD POINT Visit site for Inspection
Road Crossing Conduits		
Location	Routine inspections of Contractor's Performance and Progress of Works	Visit site for random audit inspections if considered warranted.
Markers	Ensure Council Approval of all building/structures	Visit site for random audit inspections if considered warranted.
Building/Structures		
All	Ensure Council Approval of all building/structures	

Stormwater Drainage		
Location of Structures	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	
SL & IL at Structures	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	
Material Quality (Bedding, concrete, Pipes)	HOLD POINT Sufficient visits to assess compliance and to view progress and works. HOLD POINT Visual inspection prior to placement of structure/s after bedding sand.	WITNESS POINT Visit site for inspection prior to laying of pipe and bedding.
Manholes	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	
Drain Lines	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	
Backfilling	HOLD POINT Sufficient visits to assess compliance and to view progress and works.	HOLD POINT Visit site for inspection prior to backfilling
"Cast Insitu" reinforced concrete work	HOLD POINT Inspect reinforcement and formwork prior to concrete pour.	HOLD POINT Inspect reinforcement and formwork prior to concrete pour.
Landscaping		
Grass Establishment	Routine inspections of Contractor's performance.	Visit site for check at defects liability inspection.
Tree Planting	Routine inspections of Contractor's performance. Confirm all affected areas are topsoiled, grassed and maintained.	
Irrigation a) Pipelines b) Pressure testing pipelines c) Performance Testing	WITNESS POINT Witness and approve pressure and performance test.	
Soil & Water Quality		
All	HOLD POINT Examine and approve contractors ESCP for compliance with ESCS. ESC Measures for works area are in place prior to works commencing on this section or stage.	WITNESS POINT Visit site for inspection if considered warranted.

	Randomly audit and inspect ESC measures for compliance with Contractor's ESCP.	
Sewerage Reticulation		
Location MH's & HC's	Routine inspections.	
IL at MH & HC's	Routine inspections and review of field information.	
Backfilling	Routine inspections of Contractor's performance.	WITNESS POINT Visual inspection after excavation prior to bedding.
SP Boundary Set Out	Routine inspections of Contractor's performance. Review of field measurements.	
Material Quality (Bedding, concrete pipes)	Assess all test results.	
Manholes, maintenance shafts & benching	Routine inspections.	
Hydrostatic testing of manholes	HOLD POINT Witness hydrostatic testing of manholes.	WITNES POINT Witness hydrostatic testing of manholes.
Pipelines	HOLD POINT Witness pressure test of lines	HOLD POINT Visual inspection after excavation prior to bedding.
Thrust/anchor blocks	HOLD POINT Visual site inspection of anchor/thrust blocks prior to concrete pour	WITNESS POINT Visual site inspection of anchor/thrust blocks prior to backfill.
Trunk infrastructure	HOLD POINT Pre-connection visual inspection of trunk lines.	HOLD POINT Pre-connection visual inspection of trunk lines.
Pump Stations & Valve Chambers		
Excavation	Routine inspections of Contractor's performance.	
Foundation inspection	WITNESS POINT Confirm water table level and founding condition. WITNESS POINT Inspection foundation prior to placing formwork/reinforcement.	WITNESS POINT Inspection foundation prior to placing formwork/reinforcement.
Base slab reinforcement, formwork and water stop.	HOLD POINT Inspect reinforcement prior to placing formwork/reinforcement	Visual inspection of reinforcement, water stop and formwork prior to concrete base pour.
Reinforcement and formwork	HOLD POINT Inspect reinforcement and formwork prior to concrete pour.	Visual inspections of reinforcement and formwork prior to concrete pour. WITNESS POINT Visual inspection of concrete prior to stripping of framework.

Materials Testing	Assess all test results	WITNESS POINT Review materials testing.
Hydrostatic Testing	HOLD POINT hydrostatic testing	HOLD POINT hydrostatic testing.
Electrical and SCADA equipment	WITNESS POINT Review switchboard test certification, Inspect installation.	WITNESS POINT Review certification of switchboards prior to delivery to site. WITNESS POINT Review certification of telemetry (SCADA) prior to delivery to site.
Lifting Chain	WITNESS POINT Review certification of lifting chain.	WITNESS POINT Review certification of lifting chain.
Pump testing and Station Commissioning	HOLD POINT Witness pressure and draw down testing of pumps. HOLD POINT Inspection against commissioning checklist.	HOLD POINT Witness pressure and draw down testing of pumps. HOLD POINT Inspection against commissioning checklist.
Water Reticulation		
Location	Routine inspections of Contractor's performance. Review of field measurements.	
SP Boundary Set Out	Routine inspections of Contractor's performance. Review of field measurements	
Valves, hydrants, scours, bends	Routine inspections of Contractor's performance. Review of field measurements	
Depth	Routine inspections of Contractor's performance. Review of field measurements	
Material Quality (bedding, concrete, pipes) Pipelines	Assess all test results. HOLD POINT Visual inspection after excavation prior to bedding. HOLD POINT Witness pressure test of lines. HOLD POINT Witness chlorine swabbing of lines – pre-amalgamation DSC area. WITNESS POINT Disinfection/flush of pipeline.	HOLD POINT Visual inspection after excavation prior to bedding. HOLD POINT Witness pressure test of lines. WITNESS POINT Disinfection/flush of pipeline.
Thurst/anchor blocks	HOLD POINT Visual site inspection of anchor/thurst blocks prior to concrete pour.	HOLD POINT Visual site inspection of anchor/thrust blocks prior to concrete pour.

Backfilling	Routine inspections of Contractor's performance. HOLD POINT Visual site inspection prior to backfill.	Visual inspection of lines prior to backfill. WITNESS POINT Visual site inspection prior to backfill.
Prior to acceptance of works for "Defects Liability Period"	Forward As Constructed submission to Council with Registered Surveyor's and Consulting Engineer's certification attached.	Council to accept and conduct Audit checks of As Constructed Drawings and advise any requirements.
	Finalise all other Documentation in accordance with Construction Procedures.	Council Inspector to accompany Consulting Engineer and Contractor and to advise any requirements.
	Complete "Defects Liability" Inspection Checklist prior to joint inspection with Council.	When completed advise in writing of acceptance of works for commencement of "Defects Liability Period".
During "Defects Liability Period"	Consulting Engineer to confirm all minor omissions and defects have received suitable attention and to examine and approve site prior or asking for "Final Acceptance of works" Inspection.	Council to advise Consulting Engineer of any defects.
Prior to Final Acceptance of works	Consulting Engineer to accompany Council Inspector and to note any requirements.	Council Inspector to accompany Consulting Engineer and Contractor and to advise any requirements.
		When completed advise in writing of final acceptance of works.

TEST REQUIREMENTS

Construction Activity	Verification Requirement		Minimum Test Frequency	Specification Requirement	Minimum No. of Tests
	Description	Test Required			
SEWER MAIN CONSTRUCTION					
Embedment	Compaction	WSA02-2014 19			
Trench Fill	Compaction	WSA02-2014 20.1			
Gravity Pipes	Air Pressure and Vacuum	Table S6.2, Operational Works Specification S6 “Sewerage Reticulation”, WRC Development Manual			
	Deflection	WSA02-2014 20.1.4			
	CCTV Inspection	WSA02-2014 22.7			
Manholes	Vacuum or Hydrostatic	Clause S6.26, Operational Works Specification S6 “Sewerage Reticulation”, WRC Development Manual			
SEWER PUMP STATION CONSTRUCTION					
Embedment	Compaction	WSA04-2005 36.3			
Backfilling	Compaction	WSA04-2005 36.3			
Switchboards	Electrical Testing	WSA04-2005 36.9			
WATER MAIN CONSTRUCTION					
Embedment	Compaction	WSA03-2011 16			
Trench Fill	Compaction	WSA03-2011 17.1			
Pipes	Pressure	Clause S5.28, Operational Works Specification S5 “Water Reticulation”, WRC Development Manual			
Disinfection	Bacteriological	WSA03-2011 20			
STORMWATER DRAINAGE CONSTRUCTION					
Excavation	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/50m²	95% SRDD	1
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD		n/a

Construction Activity	Verification Requirement			Minimum Test Frequency	Specification Requirement	Minimum No. of Tests
	Description	Test Required				
STORMWATER DRAINAGE CONSTRUCTION (cont'd)						
Bedding/Haunch (RCP, RCBC or similar)	Material Quality	Grading	Q103A or AS 1289.3.6.1	1/material type	Table 19.2.6, MTRS04	n/a
		Linear Shrinkage	Q106 or AS 1289.3.4.1			
	Compaction (Cohesive)	RDD	Q111A/B/C or AS 1289.5.4.1	Under trafficable area 1/side/50m Elsewhere 1/side/100m	Table S4.1, Operational Works Specification S4 "Stormwater Drainage", WRC Development Manual	2
		MDD	Q110A or Q132A	1/material type		n/a
	Compaction (Cohesionless)	Density Index	Q132B or AS 1289.5.6.1	Under trafficable area 1/side/50m Elsewhere 1/side/100m		2
		Min/Max Dry Density	AS 1289.5.1.1 or AS 1289.5.5.1	1/material type		n/a
Backfill (RCP, RCBC or similar)	Material Quality	Grading	Q103A or AS 1289.3.6.1	1/material type	Table 19.2.3, MRTS04	n/a
		Linear Shrinkage	Q106 or AS 1289.3.4.1			
	Compaction (Design Trench Width $\leq$ 4m)	RDD	Q111A/B/C or AS 1289.5.4.1 or	Under trafficable area 1/300mm lift/50m	Table S4.1, Operational Works Specification S4 "Stormwater Drainage",	1 (between structures)

			AS 1289.5.7.1	Elsewhere 1/900mm lift/100m	WRC Development Manual	
		MDD	Q110A or AS 1289.5.1.1 or	1/material type		n/a
			AS 1289.5.7.1	1/RDD		

Construction Activity	Verification Requirement			Minimum Test Frequency	Specification Requirement	Minimum No. of Tests
	Description	Test Required				
STORMWATER DRAINAGE CONSTRUCTION (cont'd)						
Backfill (RCP, RCBC or similar) (cont'd)	Compaction (Design Trench Width > 4m)	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	Under trafficable area 1/300mm lift/200m^2 Elsewhere 1/900mm lift/400m^2		1 (between structures)
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/material type 1/RDD		n/a
Backfill (In-Place Structures other than RCP, RCBC or similar)	Material Quality	Grading	Q103A or AS 1289.3.6.1	1/material type	100% < 50mm	n/a
		Plasticity index	Q105 or AS 1289.3.3.1		2 ≤ IP ≤ 12	
	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	2/500mm lift	Table S4.1, Operational Works Specification S4 "Stormwater Drainage", WRC Development Manual	2
		MDD	Q110A or AS 1289.5.1.1 or	1/material type		n/a
			AS 1289.5.7.1	1/RDD		
Backfill (Stabilised Sand)	Material Quality	Stabilised sand shall comprise sand meeting the requirements of Table 19 MRS11.04 in an intimate mixture of 12 parts sand and 1 part of either Type GP or GB cement			Table 19.2.5, MRTS04	n/a

Bedding/Haunch/Backfill/Overlay (Buried Metal Corrugated Structures)	Material Quality	All materials shall be in accordance with the manufacturer's recommendations. Evidence of these recommendations and subsequent compliance shall be incorporated with the Contractor's quality records.			As per manufacturer's recommendations.	
	Installation	Installation shall be in accordance with the manufacturer's recommendations. Evidence of these recommendations and subsequent compliance shall be incorporated with the Contractor's quality records			As per manufacturer's recommendations.	
Construction Activity	**Verification Requirement**			**Minimum Test Frequency**	**Specification Requirement**	**Minimum No. of Tests**
	Description		**Test Required**			
STORMWATER DRAINAGE CONSTRUCTION (cont'd)						
Stormwater Drainage System	CCTV Inspection	Appendix A, Operational Works Specification S4 "Stormwater Drainage", WRC Development Manual				
ROAD CONSTRUCTION						
Ground Surface Treatment	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/2500m²	>0.3m below pavement subgrade - 95% SRDD	3
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD	<0.3m below pavement subgrade - 97% SRDD	n/a
Embankment (Road)	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/200mm lift/2500m² or 1/500m³	>0.3m below pavement subgrade - 95% SRDD	3
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD	<0.3m below pavement subgrade - 97% SRDD	n/a
Embankment (Concentrated Operations –	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or	1/200mm lift/500m² or	>0.3m below pavement subgrade - 95% SRDD	3

Gullies etc)			AS 1289.5.7.1	1/100m³	<0.3m below pavement subgrade - 97% SRDD	
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD		n/a

Construction Activity	Verification Requirement			Minimum Test Frequency	Specification Requirement	Minimum No. of Tests
	Description	Test Required				
ROAD CONSTRUCTION (cont'd)						
Subgrade (General)	Material Quality	CBR	Q113C (soaked)	Representative each material and 1 test per 500m carriageway or part thereof	97% MDD 100% OMC	n/a
	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/1000m²	97% SRDD	3
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD		n/a
Subgrade (Turnouts and Entrances)	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/100m²	97% SRDD	1
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD		n/a
Pavement Layers (General)	Material Quality	All materials shall be sourced from a Quality Assured material supplier and the results of the manufacturer's testing to assure quality of the product shall be incorporated with the Contractor's quality records			MRTS05 Section 7.2 "Type 2 Unbound Material"	
	Compaction	RDD	Q111A/B/C or	1/500m²	100% SRDD	4
			Q112 or	2/500m²		8

			AS 1289.5.4.1	1/500m² (2/500m² if using AS1289.5.8.1)		4 (8)
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.4.2	1/material type/5000m² as required		n/a

Construction Activity	Verification Requirement		Minimum Test Frequency	Specification Requirement	Minimum No. of Tests
	Description	Test Required			
ROAD CONSTRUCTION (cont'd)					
Pavement Layers (Turnouts and Entrances)	Compaction	RDD	Q111A/B/C or	1/100m²	100% SRDD	1
			Q112 or	2/100m²		
			AS 1289.5.4.1	1/100m² (2/100m² if using AS1289.5.8.1)		
		MDD	Q110A or AS 1289.5.1.1 or	1/material type		n/a
			AS 1289.5.4.2	as required		
Structural Concrete	Compressive Strength		AS 1012.1 AS 1012.3.1 AS 1012.8.1 AS 1012.9 AS 1012.12.1	1 sample of 2 cylinders for each 15m³ or part thereof placed in an essentially continuous manner	Table S7.1, "Concrete Classes", WRC Development Manual	1 sample per casting day

Table 19.2.3 - Select Backfill Properties

MRTS04

AS SIEVE SIZE (mm)	Percent (by mass) Passing Sieve	
	Gravel *	Loam
37.5	100	100
9.5	60 – 85	100
2.36	25 - 70	70 – 100
0.425	10 – 40	10 – 40
0.075	3 - 30	3 - 30
Other Properties Linear Shrinkage	8 maximum	6 maximum

* Material of size greater than 2.36mm shall be stone

Table 19.2.5 - Sand Properties

MRTS04

Property	Natural Sand	Blended and Manufactured Sand
Percent passing 6.7mm AS sieve	100	100
Percent passing 0.075mm AS sieve (maximum)	5	20
Plasticity Index (maximum)	5	10

Table 19.2.6 – Grading Limits for Bedding Material

MRTS04

AS SIEVE SIZE (mm)	% Passing By Mass
19	100
2.36	30 – 100
0.425	15 – 70
0.075	Mar-30
Other Properties Linear Shrinkage	6 maximum

ADDENDUM TO WATER

SUPPLY CODE OF AUSTRALIA

WSA 03-2002

2.1 SYSTEM PLANNING PROCESS

2.1.1 Extending on Existing Water Supply Scheme

Where a water supply network simulation model exists Council shall assess the impacts of the proposed development on the existing water supply system. The assessment shall be based on the details of the system extension provided by the Consulting Engineer.

2.2 DEMANDS

Refer to Section DG 5.7 – Design Criteria of this Manual for the water supply demand requirements to be adopted in design.

2.4.3 Operating Pressures

Refer to Section DG 5.7 – Design Criteria of this Manual for operating pressure parameters to be adopted in design.

2.6 PUMPING STATIONS

2.6(c) Standby Arrangements:

Council requires standby pump units to be provided. The standby capacity shall be as directed by Council.

The power supply to pumping stations shall have 50% spare capacity for future upgrading and be electrically configured such that the pumping station can operate from an emergency generator supply at times of power failure (thus, a provision of space in the switchboard for a manual ATS change over panel is required).

2.7 SERVICE RESERVOIRS

Refer to Section DG 5.7 – Design Criteria of this Manual for storage parameters.

2.10 CONCEPT PLAN

Refer to Section AP 1.28 – Water Reticulation Concept Plan of this Manual for requirements for a Concept Plan.

3.2.3 Empirical sizing of reticulation mains

Table 3.1 is not to be used for sizing of reticulation mains. Refer to Section DG 5.7 – Design Criteria of this Manual for population and design flow requirements.

3.2.5.3 Hydraulic Roughness Valves

Refer to Section DG 5.7 – Design Criteria of this Manual for roughness values to be used in design.
The Hazen-Williams formula is to be used for head loss calculations.

3.7.2 Minimum pressure class

The minimum class for pipe and fittings shall be PN 16.

3.8 PIPELINE MATERIALS

Pipes used for water mains shall comply with the following table.

Nominal Size DN	Type of Pipe	Class of Pipe
63, 90	MDPE	Series 1 PE100 – SDR11 MIN PN 12
100 150, 200, 250, 300	PVC, PVC-M & PVC-O	Series 2 MIN PN12
100, 150, 200, 250, 300	Ductile Iron	PN20, K9 & K12

4.1.1 Design Tolerances

Horizontal alignment shall be referenced to the MGA co-ordinate system.

4.3 LOCATION OF WATER MAINS

4.3.1 General

The location and alignment of water mains shall generally be in accordance with Council's Standard Drawing.

4.4 SHARED TRENCHING

Shared trenching shall not be specified without prior approval of Council.

4.6 RIDER MAINS

Rider mains are not permitted.

4.7 CONNECTION OF NEW MAINS TO EXISTING MAINS

The connection of new water reticulation to Councils existing system is to be at the Developer's expense.
Council staff shall undertake all connections to Council's water infrastructure. The Contractor shall not carry out the connection unless Council gives special approval in exceptional circumstances.

4.8.3 Permanent ends of water mains

Dead Ends to water mains should be avoided. However, should Dead Ends be unavoidable, the following facilities shall be constructed to facilitate scouring of the lines;

- For mains 100m diameter or greater a hydrant shall be positioned at the end of the line.

4.10.7 Deviation of mains around structures

Deviation of mains around other structures shall only be permitted as a fully flanged offset complete with 1.200m tail pieces.

6.7 SWABBING POINTS

Swabbing points shall be provided where specified by Council.

6.8.3 Hydrant types

Hydrants shall be the spring hydrant "Maxi Flow" 2000 type (DN80) manufactured in accordance with AS 3952 by an Australian Standards quality endorsed company.

Hydrants are to be coated with a thermosetting epoxy powder to AS 2638 and AS 3952.

6.8.7 Hydrant Spacing

The maximum spacing between hydrants shall be 80 metres.

7.3 RECORDING OF WORK AS-CONSTRUCTED INFORMATION

As constructed information shall conform to Section CP 1.21 – Operational Works Construction Procedures of the WSC Development Manual.

11.5.4.2 Traffic Management

Traffic management shall be in accordance with the requirements of the authority responsible for the roads where construction activities are carried out.

15.2.3 Bending Pipe

Bending of pipes is not permitted.

ADDENDUM TO SEWERAGE CODE OF AUSTRALIA WSA 02-2002

2.3.1 Loading per Serviced Property

Refer to Section DG 6.8 - Design Criteria of this Manual.

2.3.2 Assessment of future loads

Refer to Section DG 6.8 - Design Criteria of this Manual.

3.1 DESIGN FLOW ESTIMATION

Refer to Section DG 6.8 - Design Criteria of this Manual.

3.2 DESIGN FLOW ESTIMATION METHOD

Refer to Section DG 6.8 – Design Criteria of this Manual.

4.2.5 Easements

Refer to Section DG 6.12 – Dedication of Land, Easements and Permits to Enter of this Manual.

4.3.7 Horizontal Curves in Sewers

Horizontal curves in sewers are not permitted.

4.5.3 Minimum Air Space for Ventilation

Refer to Section DG 6.8 – Design Criteria of this Manual.

4.5.4 Minimum pipe sizes for maintenance purposes

Refer to Section DG 6.13 – Property Connections in this Manual.

4.5.7 Minimum Grades for Self Cleansing

Refer to Section DG 6.8 – Design Criteria of this Manual.

4.6.5 Minimum Depth of Sewer Connection Point

The sewer shall be deep enough to drain the entire lot except where a private pump station is approved on the lot.

4.6.7 Vertical Curves

Vertical curves are not permitted.

4.6.8 Compound Curves

Compound curves are not permitted.

5.2 LIMITS OF CONNECTION TO SEWERS

Add: connections into manholes will be permitted at end of lines only, elsewhere connections are required in line only.

5.3 METHODS OF PROPERTY CONNECTION

The methods of property connection shall be as per Council's Standard Drawing
.

5.5 NUMBER OF PROPERTY CONNECTIONS

5.5.2 Multiple Occupancy Lots

An application shall be made at design stage for determination of servicing method.

5.6 LOCATION OF CONNECTION POINTS

5.6.1 Undeveloped lots

Property connections should generally be located at the lowest corner of the allotment between 0.5 and 1.5m upstream of the allotment boundary or manhole.

Where a sewer main lies within an adjoining allotment, the property connection is to extend a distance of 1.0m into the allotment. For battle-axe allotments with the property connection located within the access, the property connection shall extend along the access to a point 1.0m within the main part of the allotment or, where a sealed driveway is required for the full length of the hatchet 'handle' then 1m past the extents of the driveway to allow a suitable future point of connection. Where a sewer is contained within a stormwater drainage easement, then the property connection should extend a minimum of 1m past the easement boundary and into the lot it is serving. All property connections should be finished a minimum of 1m clear of any infrastructure.

5.7 Y – PROPERTY CONNECTIONS

Y-property connections are not permitted.

6. MAINTENANCE STRUCTURES

Table 6.1

The use of horizontal and vertical bends is not permitted.
The use of Maintenance shafts shall be by conditional approval only.
The use of terminal maintenance shafts is not permitted.

6.3.2 Maintenance Structure Spacing – Reticulation Sewers

The maximum distance between any two consecutive maintenance structures shall be 90m.

6.6.3 Design Parameters for MHs

External drops are not permitted for use with precast manholes.

6.6.4 Property Connections in MHs

Property connections must not be connected into maintenance holes.

6.6.8 Ladders Step Irons and Landings

Ladders, step irons and landings are not required.

6.7 MAINTENANCE SHAFTS

6.7.1 General

The use of maintenance shafts is permitted, subject to approval in reticulation sewers subject to the design parameters detailed in this Manual and WSA 02-2002.

6.7.2 Design Parameters for MSs and TMSs

The following design parameters apply to maintenance shafts and terminal maintenance shafts in addition to or instead of those detailed in WSA 02-2002.

- Sizing and installation of maintenance shafts to generally comply with the manufacturers recommendations.
- Maintenance shafts shall be graded to the intersection point of the sewer main and maintenance shaft coupling/bend/fitting.
- Maintenance shafts may be used on 100mm, 150mm and 225mm diameter sewer mains and house connection branches only.
- Maintenance shafts shall be used to a maximum depth of 3.0m.
- Maintenance shafts must be supported on a concrete cradle/surround.
- Testing of maintenance shafts shall generally be carried out in conjunction with the testing of the sewer main.
- Property connection branch inspection tees shall be 200mm clear of the centre of the Maintenance Shaft.
- Property connections must not be made into maintenance shafts.
- Maintenance shafts must be provided with a 600mm dia Ductile Iron Class B cover located within a precast surround. The trench bedding material shall extend below the shaft inspection opening surround.
- A maximum of five (5) Maintenance Shafts will be permitted between two conventional maintenance holes with a total length of sewer of not more than 250m between maintenance holes.
- Maintenance Shafts shall be located with a maximum spacing of 50 metres to an adjoining structure.

Maintenance shafts are not permitted in the following locations:

- As the receiving manhole at a pumping/lift station;
- As a discharge manhole for a rising main;
- Within roadway central medians, roundabouts or within kerb and channel;
- As the connection structure for future development stages;
- In an area zoned Industrial, Commercial, or Multi-unit.

7.2 WATER SEALS, BOUNDARY TRAPS AND WATER – SEALED MH'S

Water seals are not required.

7.3 GAS CHECK MH'S

Gas check MH's are not required.

7.4 VERTICAL AND NEAR VERTICAL SEWERS

Prior approval must be obtained from Council for the use of vertical or near vertical sewers.

7.7 VORTEX INLETS AND WATER CUSHIONS

Prior approval must be obtained from Council for the use of water inlets and water cushions.

7.8 INVERTED SYPHONS

The use of inverted syphons is not permitted.

7.10 FLOW MEASURING DEVICES

Flow measuring devices are not required to be installed. Not withstanding this provision shall be made in the design of the valve chamber to allow the future installation of an electromagnetic flowmeter.

7.11 WET WEATHER STORAGE

Prior approval must be obtained from Council for using wet weather storage as a means of reducing downstream infrastructure.

Appendix D
Standard Conditions for Water Supply Above RL50

WATER SUPPLY

1. The water supply system shall be designed in accordance with Water Resources Commission Guidelines and amendments, Council's Development Manual, Council's Standard Drawings, and to the requirements of the Council's Water Supply and Sewerage Engineer. Similarly, adherence to Acts, Regulations, relevant standards and Council's ByLaws is required.

RESERVOIRS

2. The reservoir is to be reinforced concrete cast insitu with a concrete roof, as per Whitsunday Regional Council, Standard Drawings and notes, fully secured and to the full satisfaction of Council's Water and Sewerage Engineer.
3. The land on which the reservoir is constructed and sufficient surrounding land, 4 meters minimum, shall be dedicated to Council at no cost to Council.
4. A 240v power supply shall be provided to the reservoir site.
5. A suitable sealed access and turning area shall be constructed and dedicated to Council at no cost to Council, in accordance with Council's Development Manual.
6. The access road to the reservoir is not to be utilised as a common access. Land in which the access road is situated is to be dedicated to Council at no cost to Council.
7. The gradient of the access road is not to exceed 20%.
8. Storm water layout with details of overflow / scour / underdrainage flow path is to be identified.
9. Security fence details are to be provided.

PUMP STATION BUILDING

10. The reservoir is to be reinforced concrete cast insitu with a concrete roof, as per Whitsunday Regional Council, Standard Drawings and notes, fully secured and to the full satisfaction of Council's Water and Sewerage Engineer.
11. The land on which the pump station is constructed and sufficient surrounding land, 3 meters minimum, shall be dedicated to Council at no cost to Council.
12. The finished floor level of the pump station should be self draining and no less than 200mm above the surrounding finished ground level.
13. Should be situated at a suitable RL AHD so that the return gravity system does not exceed to maximum head recommended by the Water Resources Commission Guidelines.
14. Provision is to be made within the building, opening to external, for a suitable sized room to house the disinfection equipment and storage tank. The room shall be independent of all mechanical and electrical equipment.
15. Pump control room is to be fitted with sufficient ventilation to allow air flow within the room.
16. A suitable sealed access and hard standing area shall be provides and constructed as per Council's Development Manual.
17. Security fence details are to be provided.
18. Building to be sized to house the following but not limited to:
    a. Duty / Stand-by pump arrangement.
    b. Electromagnetic type flow metering. (ie. Kent or combined Instruments).
    c. Control cabinet and switching equipment as per council's standard specifications.

d. Telemetry connected and commissioned to be fully compatible with Councils existing telemetry control system.
e. Low pressure safety cut out switch on the suction side of the pumping system, shall be installed in a manner so that it can be isolated from the main and release the pressure to text the suitability without having to close down the water supply to the pumps.
f. Room to house the disinfection equipment.

PUMPS

19. For calculating the duty head of the pump please note that the BWL of the Cannonvale reservoir is at RL 72.
20. Duty / Stand-by pump arrangement is to be provided. They must be able to run in parallel if required.
21. Pumps must be fitted with mechanical seals.
22. Reflux valves shall be on the discharge side of the pump.
23. Valving is to be provided so each pump can be isolated and removed if necessary should the case arise.
24. Vacuum and pressure gauges are to be fitted.
25. Pumps and system should be protected against water hammer.
26. All pumping equipment is to be new.

POWER TO THE SITE

27. All power used up until the project is placed on maintenance shall be the developer's responsibility. At On Maintenance the developer shall have the Ergon account transfer to Council.

PIPEWORK

28. All appropriately sized pipe work into / out of the pump station and pipe work associated with the pump connections shall be DLCL and fully flanged.
29. A dedicated rising main, appropriated sized, of K9 DICL shall link the pump station to the reservoir.
30. All gravity mains, appropriately sized, may be uPVC Class 16.
31. Water mains are to be installed on the topside of the road, in natural ground, where possible.
32. Horizontal separation of the rising main and the gravity main shall be maintained at 300mm.
33. Any under-boring of main roads shall utilise 6mm steel for the sleeve as a minimum or as their approval.
34. Long section of the main on the suction side of the pumps shall be submitted, to ensure air locks can not affect the performance of the pumps.

DISINFECTION

35. Disinfection facilities (sodium hypochlorite) to be provided should include but not limited to:
    a. Adequate sized room to house all equipment to comply with WHS regulations.

b. Adequate sized storage tank complete with an approved measuring device
c. Pumping equipment with adequate pumping capacity to maintain a chlorine residual in the reticulation system to the satisfaction of Council.
d. Bunding details, pump out pit (300 x 300 x 200mm deep) and the method of sealing all of the concrete works and walls are to be provided
e. The retractable injection quell shall be installed external to the building and suitably protected from damage.
f. The injection point is to be installed on the discharge side of the pumps.
g. Provide an approved safety shower / eye wash basin in a secured area, external to the building.
h. Provide a 20mm hose tap in a secured area.

CONSULTATION

36. It is essential that the applicant's water supply consultant discuss in full the system with Council's Water and Sewerage Engineer prior to and during the design phase.
37. An Elpro approved installation contractor is to be used for the telemetry system.

Appendix E
Addendum to
Gravity Sewerage Code of Australia
WSA 02-2014

Gravity Sewerage Code Section Reference	WRC Requirement
2.4.1 Loading per serviced lot	Refer Section DG 7.8 of this Manual
2.4.2 Estimating future catchment loads	Refer Section DG 7.8 of this Manual
3.2 Design Flow Estimation	Refer Section DG 7.8 of this Manual
3.3 Design Flow Estimation method	Refer Section DG 7.8 of this Manual
5.2.8 Easements	Refer Section DG 7.12 of this Manual
5.3.8 Horizontal curves in sewers	Horizontal curves in sewers are not permitted
5.5.3 Minimum air space	Refer Section DG 7.8 of this Manual
5.5.4 Minimum pipe sizes for maintenance purposes	Refer Section DG 7.13 of this Manual
5.5.7 Minimum grades for self cleansing	Refer Section DG 7.8 of this Manual
5.6.5 Minimum depth of sewer connection point	The sewer shall be deep enough to drain the entire lot except where a private pump station is approved on the lot.
5.6.7 Vertical curves	Vertical curves are not permitted
5.6.8 Compound curves	Compound curves are not permitted
6.2 Limits of connection to sewers	Add: connections into manholes will be permitted at end of lines only, elsewhere connections are required in line only
6.3 Methods of Property Connection	The methods of property connection shall be as per Council's Standard Drawing No S-0030.
6.4.2 Multiple Occupancy Lots	An application shall be made at design stage for determination of servicing method
6.5.2 Vacant Lots	Replace with: Property connections should generally be located at the lowest corner of the allotment between 0.5 and 1.5m upstream of the allotment boundary or manhole. Where a sewer main lies within an adjoining allotment, the property connection is to extend a distance of 1.0m into the allotment. For battle-axe allotments with the property connection located within the access, the property connection shall extend along the access to a point 1.0m within the main part of

	the allotment or, where a sealed driveway is required for the full length of the hatchet 'handle' then 1m past the extents of the driveway to allow a suitable future point of connection. Where a sewer is contained within a stormwater drainage easement, then the property connection should extend a minimum of 1m past the easement boundary and into the lot it is serving. All property connections should be finished a minimum of 1m clear of any infrastructure.
6.6.2 'Type 7 spur' or "Y" property connection sewers	Y property connections are not permitted.
Table 7.1 Maintenance Structures	The Use of horizontal and vertical bends is not permitted.
7.3.2 Maintenance Structure Spacing – Reticulation Sewers	The maximum distance between any two consecutive maintenance structures shall be 90m
7.6.2 Types of Manhole Construction	Approved PE manholes may be used as a standard manhole for a pumping/lift station or as a discharge manhole for a pressure (rising) main. PE manholes are not permitted in the following locations: - Within roadway central medians, roundabouts or within kerb & channel; - As the connection structure for future development stages; and / or - In an area zoned Industrial or Commercial.
7.6.3 Design Parameters for Manholes	Internal drops are not permitted for use with precast or any other manholes unless otherwise approved by Council.
7.6.4 Property Connections in Manholes	Property connections must not be connected into maintenance holes except at end of line.
7.6.9 Ladders Step Irons and Landings	Ladders, step irons and landings are not required.

Appendix F
Addendum to
Sewerage Pumping Station Code of Australia

Part 3 – Construction

Sewerage Pumping Station Code Section reference	WRC requirement
25.1 Pump Lifting Chains	- Lifting chains shall be fitted to each pump and shall be in accordance with AS 2321; - Eyebolts shall be in accordance with AS 2317 – galvanised; - Shackles in accordance with AS 2741 – galvanised; - Lifting eyes in accordance with AS 3776 – galvanised; - Lifting chain to be grade L – galvanised; - The lifting chain for pumps less than 1 tonne shall be 10mm link as a uniform standard; - Lifting chain for pumps weighing greater than 1 tonne shall be sized accordingly; - Provide a suitable bracket and hook in an out of the way location for hanging the chain; and - For checking and chain replacement, each pump station shall have an easily visible plaque mounted adjacent to the wet well stating length and weight of chain and the weight of the pump to which it is attached.
25.2 Brackets	- Provide stainless steel brackets for mounting of floats; and - Provide stainless steel brackets for fastening the level sensor stilling well.

Appendix G
Addendum to the
Vacuum Sewerage Code of Australia WSA 06-2008

Vacuum Sewerage Code Section reference	WRC requirement
5.3.1 General	Remove references to PVC-U and PVC-M – use PE pipe only
6.6.3 Generator Types	Add the following: In larger stations (>20 l/s), Liquid ring vacuum generators shall not be used. Oil filled vacuum generators are required. For stations < 20 l/s, dry run vacuum generators are preferred.
6.6.9 Air Handling Pipe Material	Any pipe within the Vacuum Station designated for the handling of air or air sewage / water mixture shall be Stainless Steel 316L with wall thickness designed for the application.
6.10 Noise	Add the following: - In addition to noise environmental regulations to be met, the noise level in residential areas, measured as the Adjusted Maximum sound pressure level LA10adj, 10mins shall not be greater than the background noise level plus 3 dB(A) at the boundary of vacuum station lot; - In Industrial or Commercial areas it shall not be greater than the background noise level plus 8 dB(A). It will likely be necessary to provide sound attenuation construction within the building, sound rated doors and mufflers on pipes leading to the exterior of the building in order to meet requirements.; and - The developer shall perform noise studies before and after commissioning to demonstrate that requirements have been met.
6.11.2 Biofilters	Add the following: - The odour control bed shall be roofed; and - The odour control bed shall have fitted over it an automatic sprinkler system with moisture control, to ensure that

	the bed operates at an operator selectable moisture content
8.3 Alarms (Table 8.1)	Add the following: - Vacuum Generator HIGH TEMPERATURE. Provide a high temperature sensor for each of the Vacuum Generators which will both alarm and shut down the unit in the event of the temperature rising to a manufacturer recommended maximum set point.
16.1 Services	Add the following: - Tool Kit and Special Tools, as follows: Provide a tool kit with the station containing a range of tools which will allow the operator to perform the duties required to operate and maintain the system. Provide also any specialized tools required for the same purpose.
16.2 Vacuum Station Fixtures	Add the following: - Provide a vacuum testing station on the workbench utilising the station vacuum in order to test valves and vacuum equipment after repair. Pipe and valve the test station appropriately.
26.2 Switchboard Installation (Clause 25.6.4.4 Cubicle Labels)	Add the following: - Ensure pump labels match with the labelling of the pumps on the floor
28.3 Installation of Pumping and Vacuum Generator Units (Clause 28.3.3 Unit Numbers)	Add the following: - Ensure that Unit numbers match with the labelling numbers on the switchboard.
Part 4 Standard Drawings	Chamber series of drawings, VAC 1200, VAC 1201, VAC 1202, VAC 1203, VAC 1204 and VAC 1205: - Remove references to brickwork risers in the construction of the collection chambers. Brickwork is not permitted; and - To the vacuum layout series of drawings, VAC 1300 and VAC 1301, add the following: provide an appropriately sized suction line (minimum DN 200), from the Vacuum

	Vessel to the outside of the building for a sucker truck connection. The suction line shall be valved outside the building to permit the draining of the Vacuum Vessel without the operator of the suction truck having to enter the building.

Construction Specification

Sewage Pumping Station

Supplement to the
WSAA Sewage Pumping Station
Code of Australia (WSA 04-2005
Version 2.1)

Revision 2
August 2018

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Preface

The construction of sewage pumping stations and associated infrastructure must comply with the Water Services Association of Australia publication 'WSA 04-2005 Version 2.1 – Sewage Pumping Station Code of Australia' (the 'Code') except where the Code is amended by this document.

The following amendments, additions, deletions and alterations apply to and form part of the Code. Section and Clause numbers refer to those in the Code.

The standard drawings contained in the Code do not apply. Refer to the Whitsunday Regional Council standard drawings.

Ultimately, this document will include amendments, additions, deletions and alterations to Part 1 'Planning and Design' of the Code so as to form a complete supplement to the Code.

At this time the amendments, additions, deletions and alterations to Part 1 'Planning and Design' of the Code are included in the Whitsunday Regional Council this Appendix.

Glossary of Terms, Abbreviations and References

REFERENCED DOCUMENTS

(Add the following)

The latest edition of all referenced documents, including all amendments and supplements, are to be used.

The following documents are referred to in this Code:

- Queensland Development Code:
  MP1.4 – Building over or near relevant infrastructure

- Council Standard Drawings;

- WSAA Codes of Practice:
  WSA 02-2002 – Sewerage Code of Australia;
  WSA 04-2005 – Sewage Pumping Station Code of Australia; and
  WSA 101-2008 – Industry Standard for Submersible Pumps for Sewage Pumping Stations.

- Australian Standards; and

- Other Documents:
  'Planning Guidelines for Water Supply and Sewerage' (Department of Environment and Resource management, April 2010).

Part 1: Construction

1 GENERAL

1.1 Scope

(Add the following)

Any inconsistency or ambiguity between the various documents comprising this Specification shall be resolved by the adoption of those documents in the following order of precedence;

- Statutory Legislation;
- This Specification;
- Whitsunday Regional Council Standard Drawings;
- Whitsunday Regional Council Development Manual;
- Sewerage Code of Australia (WSA 04-2005 Version 2.1); and
- Australian Standards.

The work must comply with relevant Statutory Legislation, Codes of Practice, Australian Standards and Council's local laws, policies, guidelines and specifications.

This Specification applies in the construction of the various elements of a sewage pumping station system and a sewer rising main system which include, but are not limited to:

- sewage pumping stations of capacity up to and including 200litres / second;
- pressure mains of a size up to and including DN375;
- maintenance structures; and
- standard appurtenances.

Construction of gravity sewers and associated gravity maintenance structures shall be in accordance with the requirements of WSA 02-2002 'Sewerage Code of Australia' and Council's Development Manual.

1.2 Interpretation

(Add the following)

Asset Creation means any or all aspects of the planning, design, construction, supervision of construction, testing and commissioning and eventual handover of sewerage infrastructure to Whitsunday Regional Council.

Contractor means a person, corporation, company, business or other legal entity bound under law to execute work under a contract or agreement. Contractor also means 'Constructor'.

Council means Whitsunday Regional Council and the Whitsunday Water & Waste business unit of Whitsunday Regional Council.

Designer means a Professional Engineer who is qualified in Queensland (currently met by a person being registered as a Registered Professional Engineer Queensland (RPEQ) and is competent to perform the engineering works required for the Asset Creation process on behalf of a Developer.

Developer means the person who has submitted a planning application for the provision of infrastructure under the Asset Creation process or for the utilisation of existing sewerage infrastructure.

HOLD POINT means a point beyond which work may not proceed without authorisation, and sign-off, by the Superintendent's representative and / or Whitsunday Regional Council's representative. Release of a hold point may also be subject to an inspection of works by the Superintendent's representative and / or Whitsunday Regional Council's representative.

IDAS means the Integrated Development Application System under the Sustainable Planning Act (SPA).

Maintenance Structure means manhole, maintenance hole, pressure main discharge chamber, receiving access chamber or non-entry maintenance chamber.

MONITOR means intermittent surveillance of any stage of the work in progress by the Superintendent and / or the Superintendent's Representative and / or the principal's representative and / or Whitsunday Regional Council's representative.

SELF INSPECT means the progressive verification of the quality, and/or adherence to construction specifications, by the constructor/service provider and Principal Constructor (Contractor) performing the work. Confirmation of completion of *Self Inspect* requirements shall be by constructor checklist sign-off.

Surveyor means a person, registered as a Surveyor (minimum Class – 'individual') with the Surveyors Board of Queensland under the Surveyors Act of Queensland, who is competent to perform the surveying work required of the works described in this document and the documents referenced herein.

Sewer Reticulation means sewer pipe work less than DN375 to which property connections are permissible.

SCA means Switch-gear and Control-gear Assembly and includes main switchboard, main distribution board, distribution board, control board, electrical kiosk, electrical panel, control panel or similar enclosure.

SPA means the Queensland Sustainable Planning Act 2009.

The Code means the Sewage Pumping Station Code of Australia (WSA 04-2005 Version 2.1) published by the Water Supply Association of Australia (WSAA).

Trunk Mains means pipe work equal to or greater than or equal to DN225 or rising mains with a dimeter of greater than to or DN150 in diameter and to which property connections are not permissible or generally not present.

WITNESS POINT means a point beyond which work may not proceed without the Contractor notifying the Superintendent's representative and / or Whitsunday Regional Council's representative in order to provide the Superintendent's representative and / or Whitsunday Regional Council's representative with the opportunity to witness, and sign-off, an inspection or test an aspect of the work. The Superintendent's

representative and / or Whitsunday Regional Council's representative, at their discretion, may authorise the inspection or test or aspect of the work to proceed without the Superintendent's representative and / or Whitsunday Regional Council's representative witnessing, and signing off, the inspection or test or aspect of the work.

WRC means the Whitsunday Regional Council.

2 QUALITY

2.1 Quality Assurance

2.1.1 Quality Management System

(Add the following)

Prior to works commencing the Contractor must submit to Council and / or the Superintendent evidence of third party certification of their quality system. The Superintendent shall submit all certification evidence to Council prior to works commencing.

Submission of certification evidence to the Superintendent constitutes a **HOLD POINT**. Release of the Hold Point, is subject to Council's and / or the Superintendent's review and confirmation of the certification, is required prior to works commencing.

2.1.2 Inspection and Test Plans

(Add the following)

Whitsunday Regional Council and / or the Superintendent may at their discretion instruct the Constructor to add additional Hold or Witness Points.

The Contractor's ITP must include, at least, all the details contained within Section CP1 of Council's Development Manual.

2.1.3 Quality Audits

(Add the following)

Witness Points and Hold Points are specified within this document and referred documents for works described within this document and referred documents.

It is the Constructors / Contractors responsibility to advise the Superintendent and / or Council of the anticipated or planned occurrence of any construction process / aspect or Inspection activity / aspect for which there is an associated Witness Point or Hold Point.

2.2 Personnel Qualifications

(Add the following)

All concrete and excavation work, including tunneling, must be performed and supervised by appropriately-qualified and / or appropriately-accredited personnel.

In particular Leading Hands, Supervisors and CCTV Operators must hold Statements of Attainment for Units of Competence (from either the Water Industry National Training Package NWP07, the Civil Construction Training Package RII09 or a training organisation's training course / package acceptable to Council) pertaining to the particular tasks or work that they are engaged in.

Prior to the commencement of any work, Leading Hand, Supervisor and CCTV Operator qualifications must be submitted to the Superintendent. The Superintendent shall then submit all qualification / accreditation documentation to Council for Council review.

Submission of all qualification / accreditation documentation to the Council and/or the Superintendent constitutes a **HOLD POINT**. The Superintendents review and acceptance of the nominated personnel to perform their nominated duties constitutes release of the Hold Point. Works must not commence until the Hold Point is released.

3 GENERAL CONSTRUCTION

3.1 General

(Add the following)

The Contractor must provide all necessary plant, equipment, labour, and materials required to satisfy the intent and / or requirements of this specification.

The Contractor must comply with the requirements of all relevant Authorities including, but not limited to, having regard for stormwater management, dewatering effects / impacts, silt control, noise abatement, proximity to existing buildings and the amenity of adjacent property owners.

All works are to be constructed to the tolerances set out under the relevant sections of Council's Development Manual.

3.2 Customer Focus

3.2.1 Resolution of Complaints

(Add the following)

All customer enquiries and complaints must be documented including time, date, contact details for the complainant and summary of the complaint and forwarded immediately to the Superintendent for forwarding onto Council for discussion.

It shall be the Superintendent's responsibility to ensure complaints are appropriately actioned with any change to the works scope, methodology etc approved by Council in advance.

3.3 Protection of People, Property and Environment

3.3.1 Safety of People

(Add the following)

The Contractor must comply with relevant Statutory and OH&S requirements when cutting and disposing of asbestos-cement pipes and materials.

3.3.2 Protection of Other Services

(Add the following)

Prior to works commencing, the Contractor must locate all existing utilities and services and protect them from damage and interference.

Where it is necessary to relocate or alter any existing utility or service, the Contractor must make all necessary arrangements with, and comply with, the requirements of the relevant authorities.

Further to notification requirements, the Contractor must immediately repair damage to any existing utility or service to the satisfaction of the utility or service owner, the Council and the Superintendent.

The Contractor is responsible for all costs associated with rectification of the utility or service regardless of the accuracy of any prior location information provided by the Superintendent, Council, the utility service owner or its agent.

All costs associated with the location, protection, and repair of all services must be borne by the Contractor.

3.3.3 Disused / Redundant Sewers and Pressure Mains

(Add the following)

Existing maintenance structures that are no longer required must be removed.
Where the Project Drawings or Specification do not identify actions to be taken for disused or redundant sewers and pressure mains, the Superintendent is to be notified immediately. The Superintendent will then seek an instruction from Council as to their preferred treatment (e.g. removed, grout filled etc)

3.3.4 Private and Public Properties

(Add the following)

Excavated materials must not be stockpiled against any fence or the walls of any building.

3.4 Affected Party Notifications

(Add the following)

For all notifications the period of notice must be 5 (five) working days.

4 PRODUCTS, MATERIALS AND EQUIPMENT

4.1 Authorised Products and Materials

(Add the following)

4.1.1 Pressure Pipe-work and Pipe Fittings

(This clause 20.1.1 is a new clause)

Requirements for pressure pipe-work and pipe fittings are as follows:

- Polyvinyl Chloride (PVC) Pipe and Fittings, PVC pressure pipe must be:
  - PVC-M or PVC-O;
  - Series 2 (compatible with ductile iron (DI) pipe);
  - Rubber ring (elastomeric seal) jointed;
  - Class PN16 (minimum;
  - Cream in colour for sewerage applications (neither lighter RAL 080 90 20, nor darker than RAL 075 80 20) or Lilac in colour for recycled water application in accordance with AS1477 and WSAA PS211; and
  - Compliant with AS1260 Parts 1 – 5 (pipes and fittings.

Pipes and fittings must be handled, transported and stored as per the manufacturer's guidelines and AS/NZS 2566.

Further to the requirements of AS2032 “Installation of PVC pipe systems” all PVC pipes installed to operate in direct sunlight must be painted (primer coat and double top coat) with a light coloured water-based acrylic paint.

- Ductile Iron (DI) Pipe and Fittings shall be:
  - rubber ring (elastomeric seal) jointed or flanged;
  - PE sleeved (Colour – Cream);
  - Cement mortar (type SR cement) lined or epoxy lined; and
  - Class PN35; and
  - Compliant with AS 2280 and shall be class K9, rubber ring joined, for spigot and socketed pipes, and class K12 for pipes with one or both ends flanged.

- Flanges shall be:
  - to Figures B5 & B6 of AS 4087, as appropriate; and
  - Provided with Grade 316 SS bolts and Grade 304 SS nuts and washers applied with thread anti-seize or oil based lubricant.

Pipe and fittings are to be handled, transported and stored as per manufacturer’s guidelines.

All DI pipes below ground shall be provided with polyethylene sleeving for the full length in accordance with AS 3690.

Pipes and fittings cast into concrete must be treated, cleaned and prepared (including power- tool cleaned) in accordance with AS 1627.2 ‘Metal finishing – Preparation and pretreatment of surfaces Part 2: Power tool cleaning’.

PVC pipework shall not be socketed directly into DI fittings.

- Polyethylene (PE) Pipe and Fittings:
  - electro-fusion, butt-fusion or compression joined;
  - a minimum of class PN16;
  - of either PE80B or PE100 polymer material; and
  - Colour coded to suit the application in accordance with WSA 01.

  Fittings shall be:
  - (for fittings ≤ DN110mm) - PE in accordance with AS4129; and
  - (for fittings > DN110mm) - DI in accordance with AS2280; and coated internally & externally with PE in accordance with AS4129.

Pipe must be of the required internal diameter shown in the design drawings.

Pipes and fittings are to be handled, transported and stored as per manufacturer’s guidelines.

- Steel Pipe and Fittings must only be used with Council approval on a project specific basis. If approved, Steel pipe and fittings shall be:
  - ring jointed, flanged or welded;
  - Fusion bonded polyethylene (FBPE, e.g. Sintakote) or epoxy coated;
  - rubber SR type cement or epoxy lined; and
  - Minimum wall thickness the greater of 6mm or diameter/120.

Flanges shall be:
- To Figures B7, B8 & B9 of AS 4087, as appropriate; and
- Provided with Grade 316 SS bolts and Grade 304 SS nuts and washers.

Steel pipe must be provided with cathodic protection where specified.

Pipe and fittings are to be handled, transported and stored as per manufacturer's guidelines.

- ABS Pipe and Fittings

ABS pipe and fittings shall be:
- Solvent welded; and
- Minimum class PN16 pressure.

Joining of pipe shall be in accordance with the manufacturer's instructions.

Pipes and fittings are to be handled, transported and stored as per manufacturer's guidelines.

- Copper Pipe and Fittings

Copper pipe and fittings shall be:
- manufactured in accordance with AS 1432;
- in the range of DN6 to DN200 for Type A or Type B;
- insulated from ferrous mains; and
- in compliance with AS3500 'Plumbing and drainage Part 2: Sanitary plumbing and drainage'.

Fittings shall:
- comply with AS 3688 'Water supply – Metallic fittings and end connectors';
- be de-zincification resistant; and
- if capillary fittings, have silver brazed joints or solder insert capillary joints.

4.1.2 Valves

.

(This clause 20.1.2 is a new clause)

Requirements for valves are as follows:

- General Valve Requirements

All valves are to be anti-clockwise close type.

Flange connections for valves must comply with AS4087 'Metallic flanges for waterworks purposes' (or AS2129 'Flanges for pipes, valves and fittings' where appropriate) and have a minimum pressure rating PN16. Bolts must be Grade SS316. Nuts and washers must be Grade SS304.

All sewer valves are to be fitted with a red top / handle.
All ferrous alloy (cast iron, spheroidal graphite cast iron, plain carbon and alloy steel) valves must have protective epoxy coatings.

Oil valves and repack valve glands if directed by the Superintendent.

- Knife Gate Valves shall be:
  - Flanged unless noted otherwise on the Drawings.

- Unless specified in the project drawings or directed by the Superintendent otherwise, Air Valves shall be:
  - a minimum size of DN80mm;
  - provided with an isolating sluice valve; and
  - Tyco/Pentair (Council nominated make).
- Sluice Valves shall be:
  - Provided to each pump connection pipe work in the valve pit;
  - Flanged unless shown otherwise on the Drawings; and
  - Resilient seated.
  -
- Non-return Valves shall be:
  - provided to each discharge pipe in the valve pit; and
  - Resilient seated -Tyco/Pentair swing-flex check valves (Council nominated make).

- Ball Valves shall be:
  - Flanged unless noted otherwise on the Drawings.

- Butterfly Valves shall be:
  - only used with prior approval of Council; and
  - If approved, flanged, unless noted otherwise on the Drawings.

- Scour Valves shall be:
  - Sluice valves; and
  - Have assemblies as noted on the Drawings.

4.1.3 Electrically operated actuators

(This clause 20.1.3 is a new clause)

Requirements for electrically operated actuators are as follows:

- General

  Electrically operated actuators shall:
  - be selected to be interchangeable with existing actuators where works augment existing sewerage infrastructure; and
  - be selected subject to Council approval.

- Electrical properties

  Electrically operated actuators shall:
  - be 3 phase with a rated voltage of 415V 50Hz;
  - be suitable for operation over a phase voltage range of 400V to 440 V; and
  - have phase rotation protection integral with 3 phase actuators.
- Installation

  Electrically operated actuators shall:

- be suitable for indoor and outdoor installation;
- be within IP56 (minimum, to AS 60529) enclosures, including all auxiliary enclosures;
- have all electrical connections, controls, and the like, accessible from platforms or walkways;
- be fitted with limit switches and torque switches appropriately adjusted;
- be fitted with 240 V ac anti-condensation heaters;
- be fitted with a Grade 316 SS nameplate, in accordance with AS 1359; and
- be fitted with a local mechanical position indicator.

- Penstocks and Valves

  Electrically operated actuators for penstocks and valves shall:
  - be specifically designed for penstock or valve actuator service;
  - have Class F winding insulation;
  - have a rated speed and rotation direction (in conjunction with the gear reduction unit used) to suit the operational requirements of the penstock or valve;
  - deliver a penstock operation time (fully closed to fully open and vice versa) within the range of 2 to 3 minutes;
  - deliver a valve operation time (fully closed to fully open and vice versa) within the range of 4 to 6 minutes;
  - be mounted directly on the valve or penstock capstan so that all forces are confined to the valve or penstock;
  - be supplied with design verified maximum opening and closing torque calculations (supplier prepared) for presentation to Council; and
  - be sized for non-overload operation under the design verified maximum opening and closing torque loadings.

It shall be the Contractor's responsibility to determine the rated output (kW) of the motor, in conjunction with the gear reduction unit used, to suit the operational requirements of the respective penstock or valve.

- Manual override hand wheels
  - Electrically operated actuators shall be fitted with a manual override hand wheel:
  - located not more than 1000 mm, or less than 700 mm, above the operating floor level;
  - between 500mm and 600 mm in diameter (and minimum clearance 150 mm for penstocks);
  - of a diameter which shall require a force of no more than 130 Newtons at the rim to operate the penstock or valve from fully open to fully closed under all operating conditions. Where this cannot be achieved due to the limit on the hand wheel diameter;
  - or a gear reduction unit where a force of no more than 130 Newtons at the rim to operate the penstock or valve from fully open to fully closed under all operating conditions cannot be achieved;
  - that rotates clockwise to close the valve;
  - clearly marked with the words "OPEN" and “CLOSE” and arrows in the appropriate directions; and
  - having rims machined to a smooth finish.

- Control

Electrically operated actuators shall be fitted with integral open and close contactors (Contactors for modulating duty actuators shall be solid state type):

- be fitted with local open / close / emergency stop control pushbuttons;
- be fitted with Local / Remote control selector switch;
- be fitted with all ancillary equipment such as control transformers, relays and other components as required;
- be supplied with an integral reversing DOL starter and associated control equipment;
- shall be able to be controlled either locally manually or remotely (for valves and penstocks);
- be fitted with the integral OPEN / CLOSE push buttons, a padlock able LOCAL / REMOTE rotary selector switch, and an emergency stop push button;
- stop the valve or penstock, regardless of selector switch position, following activation of the emergency stop push button;
- be fitted with open, close and stop interposing relays which shall enable the actuators to be opened and closed by the control system when remote is selected;
- be provided with voltage free contacts for remote connection of monitoring signals including, Open and close status, Actuator available (i.e. voltage present and remote selected) and Actuator fault – e.g. over torque, motor overload/over temperature fault;
- be suitable for remote operation from the PLC;
- be fitted with a position signal transmitter with an isolated 4 to 20 mA output suitable for connection to the PLC (where specified); and
- be fitted with temperature sensing devices which shall be embedded in the motor phase windings and shall be arranged to prevent motor overload. Non-modulating actuators shall be rated for 60 starts (reversals) per hour.

4.1.4 Preferred Equipment

(This clause 20.1.4 is a new clause)

Unless noted otherwise on the Drawings, the Contractor shall select components from the preferred equipment list included under Council's *Construction Specification: Sewage Pumping Station Electrical Switchboards.*

4.2 Rejected Products and Materials

(Add the following)

Pipes, fittings or materials, including coatings and linings, that are damaged or defective beyond the manufacturer's described damage / defect limits, or those limits defined in the relevant Australian Standard, must not be used.

Damage or defect includes, but is not limited to, delamination, scratching, distortion, chipping, thinning, deflection and cracking.

4.3 Pumps

(Add the following)

In addition to the requirements of WSA 101 'Industry standard for submersible pumps for sewage pumping stations', pumps shall:

- be submersible type and either Grundfos or Flygt (other makes of pump may be considered by Council);
- be capable of operating at the required duty point for the application;
- be capable of operating near optimal efficiency within the range of operating conditions;
- be capable of continuous operation;
- possess non-overloading characteristics beyond the duty point close to zero head;
- possess starting characteristics acceptable to the electricity supply company and the Council;
- possess a minimum of four (4) poles unless approved otherwise by Council;
- be either soft starter or VSD (Variable Speed Drive) as required by the process and shall not be DOL starting unless approved to be by Ergon Energy;
- experience a maximum of 12 (twelve) starts per hour; and
- include an option for the Operator to select whether the duty / standby changeover occurs on a 'per operation' or per 24-hour basis.

Where electronic starters are used the disturbance to the electrical supply system shall not exceed limits set down in TR IEC 61000.3.6 '*Electromagnetic compatibility (EMC)- Limits - Assessment of emission limits for the connection of distorting installations to MV, HV and EHV power systems*' and TR IEC 61000.3.7 '*Electromagnetic compatibility (EMC) - Limits - Assessment of emission limits for the connection of fluctuating installations to MV, HV and EHV power systems*'.

Radio interference external to the electronic starters shall not exceed limits set down in AS CISPR 11 '*Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement*'. A suitable R.F.I. filter shall be provided to ensure compliance with AS CISPR 11.

The level of total harmonic distortions at the point of common coupling (PCC) must be limited to planning levels as set by the Electricity Supply Authority. Appropriate harmonic filters shall be provided on each VSD unit to comply with the Electricity Supply Authority requirements.

4.4 Transportation, Handling and Storage of Products and Materials

(Add the following)

Notwithstanding manufacturer's guidance advice, PVC, non-black PE and GRP pipes and fittings must be fully protected from sunlight at all times during handling and storage using a breathable shrouding material such as hessian. Black plastic must not be used to protect or shade pipes and fittings under any circumstances.

4.5 Fasteners

(Add the following)

Option 2 applies.

Nuts and bolts shall comply with AS 1111.1 '*ISO metric hexagon bolts and screws - Product Grade C - Bolts' and AS 1112.3 'ISO metric hexagon nuts - Product Grade C'*, 150 metric series.

Washers shall be fitted beneath all bolt heads and all nuts.

Washers shall comply with AS 1237.1 '*Plain washers for metric bolts, screws and nuts for general purposes - General plan'* and AS 1237.2 '*Plain washers for metric bolts, screws and nuts for general purposes – Tolerances*'.

Stainless steel for nuts, bolts and washers shall conform to AS 4673 '*Cold formed stainless steel structures*', ISO 3506-1 '*Mechanical properties of corrosion-resistant stainless steel fasteners – Part 1 Bolts, screws & studs*' and ISO 3506-2 '*Mechanical properties of corrosion-resistant stainless steel fasteners – Part 2 Nuts*' and be minimum grade 316 SS for bolts and minimum grade 304 SS for nuts and washers.

4.6 Works Inspection and Testing

4.6.1 Switchboards

(Amend Cl 20.9.1 (o) to the following)

Check that the duty and standby pumps alternate their duty upon each operation and upon a 24-hour cycle.

(Add the following)

Electrical switchboards and control panels must be tested in Australia. Switchboards must be type tested by a NATA accredited testing facility in accordance with AS3439.1. Type test certificates must be provided to Council.

The performance of works testing of switchboards in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect the works testing is required. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the works testing is required.

4.6.2 Pumps

(Add the following)

The performance of works testing of pumps in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect the works testing is required. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the works testing is required.

4.6.3 Motors

(Add the following)

The performance of works testing of motors in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect the works testing is required. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the works testing is required.

4.6.4 Definitions

(This clause 20.9.4 is a new clause)

'Works Inspection' means an inspection at the manufacturer's factory or facility during the manufacture of equipment to be supplied. The Contractor is to carry out works inspections to ensure that manufacturing is in accordance with specification requirements.

'Works Testing' means testing at the manufacturer's factory or facility by the Contractor, their suppliers or their subcontractors, prior to completion of the works.

The Contractors Inspection and Test Plan (ITP) must note all works inspections and works tests. The Contract Programme must provide for all inspections and tests required.

4.6.5 Works Testing – In General

(This clause 20.9.5 is a new clause)

Works testing of pumps, motors, flow measuring equipment, SCA's, mechanical equipment, electrical switchboards and control panels is required.

Certified test reports and test certificates must be submitted to the Superintendent. The Superintendent shall submit all reports and certificates to Council.

Measuring instruments, including flow meters, shall be tested and calibrated by a NATA accredited testing facility. Test certificates shall be provided to the Superintendent.

4.6.6 Switchgear and Controlgear Assembly (SCA)

(This clause 20.9.6 is a new clause)

4.6.7 Works Inspections

The performance of works inspections of each SCA in the presence of the Superintendent constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect the works is to be exercised. If exercised, the Superintendent's presence during inspections, and satisfactory inspection results, is required prior to the release of the Witness Point.

The performance of works inspections of each SCA in the presence of Council constitutes a **HOLD POINT**. Council's inspection of the works, and satisfactory inspection results, is required prior to the release of the Hold Point.

Works inspections shall consist of:

1. First Inspection – Metalwork finished;
2. Second Inspection – Metalwork finished and painted;
3. Third Inspection – All electrical equipment installed; and
4. Final Inspection.

The Contractor shall notify the Superintendent at least seven (7) working days before each inspection is required. The Superintendent shall notify Council at least five (5) working days before each inspection is required.

Inspections, other than the final inspection, are intended to maintain construction standards and are not intended, unless otherwise arranged, as functional tests. SCA manufacture shall not cease during these inspections.

The Contractor shall provide inspection reports to the Superintendent.

Any work carried out by the Contractor beyond, or in excess of, the work necessary for the final inspection is at the Contractor's risk. If a Council inspection is requested before work has reached a stage where the inspection is warranted, the cost to Council of the premature inspection may be recovered from the Developer or deducted from the Contract sum.

4.6.8 Works Testing

The performance of works testing on each SCA in the presence of the Superintendent constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to attend works testing is to be exercised. If exercised, the Superintendent's presence during works testing, and satisfactory works testing results, is required prior to the release of the Witness Point.

The performance of works testing on each SCA in the presence of Council constitutes a **HOLD POINT**. Council's presence during works testing, and satisfactory works testing results, is required prior to the release of the hold point.

Works testing on each SCA shall include, but not be limited to:

- Visual inspection, equipment mounting and wiring termination checks;
- Insulation tests before and after power (high pot) tests, including each phase to earth, each phase to neutral, between phases using a minimum of 1000 V megger;
- Power tests (high pot) with AC voltage of 2.5 kV;
- Operational test of all protective devices; and
    - Simulated functional tests for all drives and electrical equipment in manual mode and in automatic mode where applicable

Testing must comply with the requirements of AS3439.1 and be performed during the final inspection in the presence of a Council representative.

4.6.9 Test Certificates

Following completion of all tests the Contractor shall submit to the Council a full set of test certificates for each SCA.

4.6.10 *Mechanical Equipment*

(This clause 20.10.1 is a new clause)

4.6.11 Works Inspections

The performance of works inspections of mechanical equipment in the presence of the Superintendent constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect the works is to be exercised. If exercised, the Superintendent's presence during inspections, and satisfactory inspection results, is required prior to the release of the Witness Point.

Works inspections shall consist of:

1. First Inspection – Metalwork finished;
2. Second Inspection – Metalwork finished and painted;
3. Third Inspection – Fully assembled equipment; and
4. Final Inspection.

Inspections, other than the final inspection, are intended to maintain construction standards. The Contractor shall provide inspection reports to the Superintendent.

4.6.12 Works Testing

The performance of works testing on mechanical equipment in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect the works testing is to be exercised. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the works testing is to be exercised. If exercised, the Superintendent's and Council's presence during works testing, and satisfactory works testing results, is required prior to the release of the Witness Point.
Testing at the factory for materials and of major items of equipment supplied by the Contractor under this contract must be carried out on the following as a minimum:

- Pumps with motor sizes greater than 11 kW must be works tested at the supplier's factory in accordance with AS2417 (Rotodynamic Pumps – Hydraulic performance acceptance tests – Grades 1 and 2); and
- as nominated in the Tender Document for all other mechanical equipment.

4.6.13 Test Certificates

Following completion of all tests the Contractor must submit to the Superintendent a full set of test certificates for each item of mechanical equipment.

4.6.14 Valves

(This clause 20.10.2 is a new clause)

4.6.15 General

The performance of works testing of valves in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise at the time of notification by the Contractor whether the option for the Superintendent to inspect

the works testing is to be exercised. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the works testing is to be exercised. If exercised, the Superintendent's and Council's presence during works testing, and satisfactory works testing results, is required prior to the release of the Witness Point.

4.6.16 Works Testing of Knife Gate Valves

Knife Gate valves shall be works tested in accordance with the manufacture's specification and the enclosed Pre-commissioning check sheets (Refer Appendix A).

4.6.17 Works Testing of Air Valves

Air valves shall be works tested in accordance with the manufacture's specification and the enclosed Pre-commissioning check sheets (Refer Appendix A).

4.6.18 Works Testing of Gate Valves and Non-Return Valves

The following works testing shall be performed:

- Test 1 — Body Test

  The valve shall be blanked off at both ends and a body test pressure of 1.5 times the valve rated pressure shall be applied for 5 minutes with the plug in the partially open position. No leakage shall be visible;

- Test 2A — Plug or Gate Test

  The valve shall be blanked off at the upstream flange only, and a test pressure of 1.5 times the valve rated pressure shall be applied for 5 minutes with the valve in the closed position. There shall be no visual evidence of structural damage to the plug or of leakage through the plug itself;

- Test 2B

  While the valve is set up in the Test 2a position a test pressure equal to the working pressure specified shall be applied and the valve shall be partially opened to prove that the rim force required on the hand wheel does not exceed 180N; and

- Test 3 — Seat Test

  The valve shall be blanked off at the downstream flange and a test pressure equal to the valve rated pressure shall be applied for 5 minutes with the valve in the closed position. No leakage past the valve seat shall be observed when the test is made. All tests shall simulate a valve in a terminal position held rigidly at one end only. In this condition, the valve shall be blanked off in such a manner that the axial hydraulic force is not externally restrained. This simulates a valve in a fully differential pressure situation held rigidly at one end only.

4.7 Concrete Works

(Add the following)

Classes of concrete used for the construction of the works must be as detailed in Table 4.7.1.

Application	Grade	Minimum Cement Content (kg/m3)	Maximum W/C ratio	Maximum Flyash Content (%)
Blinding concrete, mass concrete	N15	-	-	-
Surface footpaths & driveways	N25	-	-	-
Unreinforced thrust blocks, anchor blocks, bulkheads & concrete encasement - all environments	N25	-	-	-
Reinforced thrust blocks, anchor blocks, bulkheads & concrete encasement - all environments	N32	-	-	-
Maintenance holes & benching – all environments	S40 (SR Cement)	380	0.50	20
Valve chambers & flow-meter pits – non-aggressive* environments	N32	-	-	-
Valve chambers & flow-meter pits - aggressive* soil and groundwater environments	S40 (SR Cement)	380	0.50	-
Underground pumping station wells - all environments.	S40 (SR Cement)	380	0.45	-

Table 4.7.1 – Concrete Properties

Cover to reinforcement for water retaining structures must comply with the requirements of AS3735 'Concrete structures retaining fluids'.

Cover to reinforcement for structures other than water retaining structures must comply with the requirements of the relevant Exposure Classifications within AS3600 'Concrete structures' but must not be less than that required for C1 in aggressive environments and B1 elsewhere.

Concrete surfaces exposed to aggressive environments must be provided with a protective coating. The protective coating applied must be in addition to the concrete cover requirements.

All concrete work shall be supervised by a person (the Supervisor) experienced in all aspects of concrete construction. Refer to Section 18.2 for details of requirements.

The Superintendent will inspect all formwork, reinforcement and pour location for each concrete construction (including thrust blocks, property connection branches, MH

bases, concrete structures etc.) prior to placement of any concrete. The Contractor shall be in attendance when the Superintendent inspects the work prior to concrete placement.

All formwork, reinforcement, reinforcement supports, block-outs, excavations and preparations, and the like, must be in place, and the Superintendent notified, at least one full working day before concrete is scheduled to be placed in any section of the work.

Inspection of the works by the Superintendent prior to concrete placement constitutes a **HOLD POINT**. Release of the Hold Point by signoff by the Superintendent following inspection is required prior to concrete placement at each concrete construction.

Inspection of the works by Council prior to concrete placement constitutes a **WITNESS POINT**. Council shall advise at the time of notification by the Superintendent whether the option to inspect is to be exercised. If exercised, release of the Witness Point, by signoff by the Council, is required prior to concrete placement at each concrete construction.

5 ELECTRICAL WORKS

5.1 Scope of Work

(Add the following)

- Where provision of standby diesel generator connection facilities is only required (supply of generator by others), supply and install an external weather-proof and vandal-proof socket inlet, or a junction box, as described above;
- Negotiations with the Electricity Supply Authority. The Contractor must complete and submit all relevant application forms, attain all relevant approvals and pay all relevant fees;
- Supply and installation of electrical switchboard;
- Supply and installation of all instrumentation and field mounted control equipment;
- Supply, installation and termination of all cabling;
- Supply and installation of all junction boxes, conduits, cable trays, cable ladders and fittings;
- Liaison with Council;
- Any other work as required in the project specification; and
- Supply and installation of Lighting and Surge Protection as specified in the Technical Specification. (The Designer shall have assessed the need for lightning protection for the site in compliance with the requirements of AS1768 “Lightning Protection’).

Surge protection earth cable shall be of a size as recommended by the manufacturer and as a minimum must comprise stranded 16 (sixteen) mm² cable. Surge protection earth cable shall be green / yellow PVC insulated cable installed such that it is segregated from all other cables in as direct a path as possible, no sharp bends are permitted to be installed in the surge protection cabling.

Surge protection devices must be provided as follows:

- Inside each Main SCA or Switchboard / Panel / Distribution Board across incoming electricity supply;
- Across electricity supply to all instrumentation loops mounted outside in the field;
- On all signal lines run to and from outside. Instrument surge diverters must be provided on both ends of each loop; and
- On all data and cable communication lines.

5.2 Consumer Mains

5.3.1 Mains Requirements

(Add the following)

A minimum site power factor of 0.9 must be provided. The prospective fault level of each electrical installation shall be as nominated by Electricity Supply Authority but in any case the minimum fault level shall be as follows:

- Not less than 15kA for one (1) second for the Main Switchboards rated 100 amp or less; and
- Not be less than 25kA for one (1) second for the Main Switchboards rated over

100 amp.

If Variable Speed Drives (VSD) drives are used the level of total harmonics distortion (THD) at the point of common coupling (PCC) must be as required by the Electricity Supply Authority.

Consumer mains with a cross section greater than 120 mm^2 shall consist of single core XLPE/PVC cables laid in trefoil configuration.

The current carrying capacity of consumer mains shall be at least 1.3 x maximum demand.

Consumer mains shall be sized to ensure the voltage drop at the incoming terminals of the switchboard does not exceed 2.5% under 1.3 x maximum demand conditions.

Electricity supply metering must be provided as required by the Electricity Supply Authority.

5.3 Earthing

5.3.1 General

(Add the following)

The primary electricity supply must be a 3-phase 415 V 50 Hz MEN system with sufficient capacity to accommodate the pumping station full load and meet the electricity supply company's starting requirements (as per WSA 04 Section 7.2.3 'Primary supply').

Earthing rods must be copper clad stainless steel, 16mm (minimum) in diameter and 3m (minimum) in length. Each earthing cable must be provided with a PVC sleeve. Bare earthing conductors must not be used. All earthing cable connections to earthing rods must be by means of approved earthing clamps.

An earth inspection pit shall be provided at each rod. Each pit must be marked for easy identification.

5.4 Switchboard Installation

5.4.1 General

(Add the following)

Where a permanent standby diesel generator is required to be provided on site, the main switchboard shall be fitted with an Automatic Transfer Switch (ATS) to facilitate an automatic transfer between the electricity grid and the generator supply. Where provision of standby diesel generator connection facilities is only required the changeover switch shall be manual switch. For details of ATS refer to Council's Preferred Equipment List and Standard Specification Sewage Pumping Station Electrical Switchboards.

5.5 Installation of Level Sensors

5.5.1 Wet-well level sensor probes

(Add the following)

Install one (1) continuous level measuring device in each wet well. The output of each level measuring device shall be a 4-20 mA signal and shall be an input to the pump station controller.

Install two (2) float switches for the HH level alarm and HHH level alarm in each pump station.

For continuous level measuring device details and float switch details refer to Council Construction Specification: Sewage Pumping Station Electrical Switchboards.

6 MECHANICAL INSTALLATION OF PUMPS, VALVES AND FITTINGS

6.1 General

(Add the following)

Valves shall be installed such that:

- Operation of valves may be performed manually without the need for tools. Valves shall be capable of opening against full unbalanced head, and closing against full flow, smoothly and without vibration or cavitation. The maximum effort required at the hand wheel under load shall not exceed 135 N;
- Valves and their actuators are easily accessible for maintenance purposes and are capable of being removed from their location in a pipeline without obstruction by the pipeline or other equipment; and
- Hand wheels shall be clearly marked with the words OPEN and SHUT and adjacent arrows to indicate the direction of rotation to which each operation refers.

Valves must be compatible with pipe work to ensure that proper sealing is achieved between pipe flanges and valve flanges. Concrete lining in pipe work must not be chipped away or reduced to provide clearance from the working parts of valves.

Valves must be located to avoid conflict with property accesses, telecommunications service pits, electrical service pits and any other street side furniture.

6.2 Flanged Joints

(Add the following)

Bolts on all flanges will protrude no more than 10mm past the nut when tightened.

Apply sufficient anti-seize / anti-galling material to the threads of all stainless steel fasteners. The material shall be Polytetrafluroethylene (PTFE) (either tape to AS 1272, dipped or sprayed) or molybdenum disulphide.

Flanges must comply with AS4087 ‘Metallic flanges for waterworks purposes’ (or AS2129 ‘Flanges for pipes, valves and fittings’ where appropriate).

6.3 Gauges and Recorders

6.3.1 Pressure Gauges

(Add the following)

The dry well pipework pressure gauge must comply with AS 1349 and have minimum gauge face diameter of 50mm.

Steel and ductile iron pipes of DN150 and larger shall have gauges and fittings screwed into the pipe wall. In steel and ductile iron pipe work less than DN150mm, gauges and fittings shall be screwed into a tapping band. Tapping bands shall be used on pipes other than steel or ductile iron.

The pressure gauge range for single or parallel pumps duty shall be 0 to 1.7 times the closed valve head of the pumps.

6.3.2 Electromagnetic Flowmeters and Flow Switches

(This clause 24.4.3 is a new clause)

Provide an electromagnetic flow meter housed within the pumping station or in a separate dedicated concrete structure. House the flowmeter converter in the pump station electrical switchboard and provide an input into the site telemetry system. For the flowmeter details refer to refer to Council's Preferred Equipment List.

Provide each pump with an IFM Effector flow switch. For details refer to refer to Council's Preferred Equipment List.

25 Pump Lifting Chains

(Add the following)

Sewerage Pumping Station Code Section reference	WRC requirement
25.1 Pump Lifting Chains	- Lifting chains shall be fitted to each pump and shall be in accordance with AS 2321; - Eyebolts shall be in accordance with AS 2317 – stainless steel; - Shackles in accordance with AS 2741 – stainless steel; - Lifting eyes in accordance with AS 3776 – stainless steel; - Lifting chain to be grade L – stainless steel; - The lifting chain for pumps less than 1 tonne shall be 10mm link as a uniform standard; - Lifting chain for pumps weighing greater than 1 tonne shall be sized accordingly; - Provide a suitable bracket and hook in an out of the way location for hanging the chain; and

	- For checking and chain replacement, each pump station shall have an easily visible plaque mounted adjacent to the wet well stating length and weight of chain and the weight of the pump to which it is attached.
25.2 Brackets	- Provide stainless steel brackets for mounting of floats; and - Provide stainless steel brackets for fastening the level sensor stilling well.

7 ACCESS ROAD AND HARDSTAND AREAS

7.1 General

(Add the following)

As a minimum, all Access Roads shall be sealed with a two (2) coat bitumen seal in accordance with Section 26.4 of the Code, or Council's Standard Rural Access Driveway drawing R-0035 as appropriate. The Designer shall give consideration to vehicle access to Pump Stations during periods of prolonged wet weather when determining the finished RL and provision drainage for the Access Road.

8 EXCAVATION

8.1 Safety

(Add the following)

Excavation work must be in accordance with the Safe Work Australia publication 'Excavation Work – Code of Practice'. All instances of the word 'should' in the Code must be read as 'must'.
Safety barriers must be installed along the edges of open excavations and fenced pedestrian and vehicular accesses installed across trenches to maintain access to properties at all times. All installations must be adequately illuminated.

8.2 Limits of Excavation

(Add the following)

A horizontal distance of 600mm (minimum) must be maintained between the top edge of any excavation and the adjacent toe of any excavated material or stockpile.

The minimum clear trench width (extending from the trench floor to a height of 150mm above the top of the pipe) must be as detailed in Table 8.2.

Nominal Pipe Size (DN)	Minimum Trench Width(mm)

100	600
150	600
200	600
225	800
250	800
300	900
375	900
400	900
450	1000
500	1200
525	1200
600	1200

Table 8.2 – Minimum Trench Widths

Where trench shoring is used, the clear trench width is measured between the internal faces of the trench shoring.

8.3 Support of Excavations

(Add the following)

Personnel engaged in work associated with excavation support must be competent and qualified in compliance with all statutory obligations.

All excavation support must be designed by an RPEQ (Registered Professional Engineer Queensland) qualified engineer.

Temporary excavation support must be left in place where its removal may endanger structures in the vicinity of the excavation.

Steel excavation shoring and lining must comply with AS4744.1 ‘Steel Shoring and Trench Lining – Design’.

8.4 Foundations and Foundation Stabilization

(Add the following)

Where foundation material shows any signs of movement, groundwater ingress or any other possible instability, and such instability cannot be controlled by conventional means, the foundation material must be assessed by the Designer for adequacy of structural support. If the Designers assessment recommends remedial works the remedial works must be detailed in writing by the Designer.

8.5 Surplus Excavated Material

(Add the following)

Excess spoil must be removed from the site and disposed of off-site at an approved location.

Refer to Clause 19.5.3. If acid sulphate soils are identified treatment and management measures must be implemented in accordance with the Queensland State Planning Policy 2/02 Guideline 'Acid Sulfate Soils'.

9 BEDDING FOR PIPES, BENDS, WET-WELLS AND MAINTENANCE STRUCTURES

9.1 Trench Floor Preparation

(Add the following)

Trench shall also mean the excavation for wet-well and maintenance structure construction.

Inspection of trenches by the Superintendent following completion of excavation constitutes a **HOLD POINT**. Release of the Hold Point, via signoff by the Superintendent, is required prior to commencement of pipe bedding, laying and jointing.

Inspection of trenches by Council following completion of excavation constitutes a **WITNESS POINT**. Council shall advise at the time of notification by the Superintendent whether the option to inspect is to be exercised. If exercised, release of the Witness Point, by signoff by the Council, is required prior to commencement of pipe bedding, laying and jointing.

9.2 Bedding Materials

Refer to WRC Standard Drawings and others referring to 'bedding material'.

Bedding Material must be sand as defined in WSAA Product Specification WSA PS – 350 'Compaction Sand for Pipe Embedment'. Grade B must apply (as per AS2566.2 'Buried Flexible Pipelines – Part 2: Installation', Appendix G, Table G3).

Other than where shown on Council Standard Drawings, Coarse Bedding Material may only be used if specifically approved by Council.

Coarse Bedding Material must be:

- A 10mm, 7mm or 5mm processed naturally occurring single-size aggregate compliant with WSAA Product Specification WSA PS-351 “Processed Aggregates for Pipe Embedment” and as defined in Table 351.1. (Processed naturally occurring means ‘not crushed”), or; and
- A 14mm processed naturally occurring graded aggregate compliant with WSAA Product Specification WSA PS-351 “Processed Aggregates for Pipe Embedment” and as defined in Table 351.1. (Processed naturally occurring means “not crushed).

‘Crusher Dust’ (a waste product from the crushing process), whether further processed or not, is not permitted for use as Bedding Material or Coarse Bedding Material.

9.3 Placement of Bedding

(Add the following)

Refer to Standard Drawing S-0090.

9.4 Bedding for Concrete Structures

(Add the following)

Bedding material for concrete structures shall be as per bedding material for maintenance holes.

9.5 Bedding for Maintenance Shafts and Variable Bends

Maintenance shafts, terminal maintenance shafts, inspection openings and variable bends as defined in WSA 04-2005 ‘Sewage Pumping Station Code of Australia’ are not permitted for use by Whitsunday Regional Council.

10 PIPE LAYING AND JOINTING

10.1 Installation of Pipes

10.1.1 General

(Add the following)

Refer to Standard Drawings for minimum cover to the top of a pressure main.

Less depth of cover than that noted or referred to in this clause may be permitted subject to provision of adequate pipe protection and approval by Council.

10.1.2 Cleaning, inspection and joint preparation

(Add the following)

Joints must be made such that the witness mark must, at no point, be more than 1mm from the end of the socket.

Pipes, fittings, valves, and materials must be cleaned and examined jointly by the Contractor and the Superintendent prior to laying. Each pipe length must be suspended in a sling to facilitate a full inspection should the Superintendent instruct.

Inspection of pipes, fittings, valves, and materials by the Superintendent prior to laying constitutes a **WITNESS POINT**. The Superintendent shall advise, at the time of notification by the Contractor, whether the option to inspect is to be exercised. Release of the Witness Point via signoff by the Superintendent is required.

A mechanical pipe cutter must be used for cutting pipes other than PVC and PE in the field. PVC and PE pipes may be cut in the field using a power saw or a fine toothed hand saw and mitre box. Ends of field-cut pipes must be prepared in accordance with the manufacturer's instructions, or as directed by the Superintendent.

Witness marks must be made on field-cut pipes using a felt-tip marking pen at a position from the end of the pipe as specified by the manufacturer. Witness marks must not be scored into the pipe.

Metallic pipes cut surfaces must be treated with protective coatings and linings equivalent to that on the pipe or appurtenance that has been cut.

GRP pipe cut surfaces must be treated with a resin in accordance with the manufacturer's guidelines.

10.1.3 Laying

(Add the following)

All laid and jointed pipes, including completed HCB's prior to concreting, must be inspected by the Superintendent prior to the commencement of trench backfilling (placement of embedment material above top of bedding). This action constitutes a **HOLD POINT**. The Superintendent's approval of the laid and jointed pipes is required prior to the release of the Hold Point. Backfill must not be placed until release of the hold point.

Inspection by Council of all laid and jointed pipes, including completed HCB's prior to concreting, prior to commencement of trench backfilling (placement of remaining embedment material above top of bedding) constitutes a **WITNESS POINT**. Council shall advise at the time of notification by the Superintendent whether the option to inspect is to be exercised. If exercised, release of the Witness Point, by signoff by the Council, is required prior to backfilling commencing.

Where PVC pipes are to be joined to ductile iron pipes, the joints must be made by inserting a PVC spigot into a ductile iron socket. Ductile iron spigots must not be joined to PVC sockets. Alternatively, multi-fit mechanical couplings or flanged adaptor couplings may be used to join pipes of different materials.

10.2 Horizontal and Vertical Deflection of Gravity and Pressure Mains

10.2.1 General

(Add the following)

Horizontal and vertical deflection of gravity sewers (including horizontal, vertical and compound curves) is not permitted.

10.2.2 Methods of Deflection

(Add the following)

Horizontal and vertical deflection of gravity sewers (including horizontal, vertical and compound curves) is not permitted.

10.3 Horizontal and Vertical Separation of Crossing Pipelines

(Add the following)

Refer to Table 3.1 of WSA 04-2005-2.1 *Sewage Pumping Station Code of Australia Part 1: Planning & Design* for minimum offsets between pressure mains and underground services.

10.4 Flotation Control

(Add the following)

Flotation of pipes during laying, backfilling and testing must be prevented. Pipes that float or move must be removed and the pipeline re-constructed. Pipes that are removed must only be reused in the pipeline reconstruction provided they are undamaged and are inspected and accepted by the Superintendent for re-use.

Temporary supports and restraints must be removed prior to completion of backfilling.

10.5 Thrust and Anchor Blocks and Restrained Joints for Pressure Mains

(Add the following)

Council consent is required for the use and type of restrained joints, as an alternative to thrust blocks, in congested service corridors and under urgent commissioning conditions.

Provide temporary anchorages adequate to restrain the pipe when under hydrostatic test. Provide all other temporary anchorages and supports as required during construction.

10.6 Marking Tapes

10.6.1 Detectable Marking Tape

All rising main construction must include placement of detectable marking tape.

Detectable marking tape must be laid along the line of sewer rising mains and non-metallic mains at a depth of least 300mm, and no more than 500mm, from finished surface level.

10.7 Bored Pipes under Roads, Driveways and Elsewhere

(Add the following)

References to ‘pipeline’ in this Clause 38.8 amendment shall also be read as ‘sewer rising main’. Refer to the following Standard Drawings.

Unless directed otherwise, encasing pipe must extend to a minimum of 1.0m behind

back-of-kerb on each side of road carriageways.

Pipelines must be fitted with pipe supports and the pipeline centrally located within the encasing pipe.

DICL pipeline enclosed within the encasing pipe need not be sleeved in accordance with Clause 38.8 (amended).

Where a pipeline crosses a state-government controlled road, a watercourse or any landform, feature or structure under the control or jurisdiction of any Authority or Owner (the 'Authority'), works must comply with the requirements of that Authority. The Contractor must provide written notification to the Authority of the intention to carry out the work and pay any applicable fees. The Contractor must then obtain the written authorisation to perform the work from the Authority prior to works commencing.

A copy of the Authorities written authorisation must be supplied to the Superintendent. Submission of a copy of the written authorisation to the Superintendent constitutes a **HOLD POINT**. Release of the Hold Point, by signoff by the Superintendent, following submission of the written authorisation is required prior to works commencing.

Submission, by the Superintendent, of a copy of the Authorities written authorisation to Council constitutes a **WITNESS POINT**. Council shall advise at the time of notification by the Superintendent whether the option to review the written authorisation is to be exercised. If exercised, release of the Witness Point, by signoff by the Council, is required prior to works commencing.

Installation of pipeline by open trenching installation methods is not permitted over those pipeline lengths designated for installation by trenchless installation methods.

Work Method Statements for trenchless pipeline installations must be submitted to the Superintendent and must address the following matters:

- General description of method and operation sequence;
- Size, invert depth and location of temporary access / work pits required;
- Use of specialist subcontractors; and
- Specialist equipment to be used.

Submission of Work Method Statements to the Superintendent constitutes a **HOLD POINT**. Release of the Hold Point, by signoff by the Superintendent, following the review of Work Method Statements and confirmation of their adequacy by the Superintendent is required prior to works commencing.

10.8 Corrosion Protection of Cast Iron

(Add the following)

All pipes and fittings must be sleeved with polyethylene film, adhesive tape (PVC), straps and buckles that comply with AS3680 'Polyethylene sleeving for ductile iron piping'.

Sleeving must be installed in compliance with the requirements of AS3681 'Application of polyethylene sleeving for ductile iron piping' and the pipe/fitting manufacturer's instructions. Where requirements conflict AS3681 shall take precedence.

10.9 Location Markers

(Add the following)

Refer to Standard Drawings '*Hydrant and Valve Installation*'.

Where no kerb, or kerb and channel, is located within 6m of sewer rising main (SRM) valves install marker stakes adjacent to SRM valves and at all other locations noted on the design drawings. SRM marker stakes shall be as detailed on Standard Drawing W-0060 and marked with red lettering 'SRM' on a white background. Valve covers must be painted black.

Where kerb, or kerb and channel, is located within 6m of sewer rising main (SRM) valves install kerb markings in accordance with Standard Drawing R-0160 and marked with black lettering 'SRM' on a white background. Valve covers must be painted black.

Marker stakes material may be recycled plastic or in accordance with Standard Drawing W-0060. Marker stakes must be coloured white.

The location of pipes crossing roads shall be indicated by kerb markers. Refer to Standard Drawing R-0160.

10.10 Welding of Steel Pressure Mains

10.10.1 General

(Add the following)

At welded joints apply either polyethylene heat shrink sleeves or a petrolatum tape wrap system in accordance with the manufacturer's installation requirements.

11 WET-WELLS AND MAINTENANCE HOLES (MHS)

11.1 General

(Add the following)

Further to Clause 20.10 (amended) concrete for wet-wells and maintenance holes must:

- Contain only Type SR cement;
- Contain a maximum of 20% fly ash additive; and
- Contain cement no older than three (3) months from manufacture.

11.2 Precast Concrete Systems

(Add the following)

Precast concrete systems may only be used in lieu of cast in-situ concrete systems with prior approval of Council.

Precast maintenance holes' components must comply with:

- For concrete – AS4198 "Precast concrete access chambers for sewerage applications";

- For PVC – AS1477 “PVC pipes and fittings for pressure applications”;
- For PE – AS2033 “Installation of polyethylene pipe systems;
- For ABS – AS3518 “Acrylonitrile butadine styrene (ABS) compound, pipes and fittings for pressure applications”; and
- For GRP – AS3571.1 “Plastics Piping Systems – Glass reinforced thermoplastics (GRP) systems based on unsaturated polyester (UP) resin Part 1: Pressure and non-pressure drainage and sewerage”.

Precast wet-well components must comply with:

- For concrete – AS4198 “Precast concrete access chambers for sewerage applications”;
- For ABS – 3518 “Acrylonitrile butadine styrene (ABS) compounds, pipes and fittings for pressure applications’; and
- For GRP - AS3571.1 “Plastics piping systems—Glass-reinforced thermoplastics (GRP) systems based on unsaturated polyester (UP) resin Part 1: Pressure and non-pressure drainage and sewerage”.

Precast system components must not be delivered to the site until compliance with the relevant Australian Standard has been demonstrated to the Superintendent. This action constitutes a **HOLD POINT**. Release of the Hold Point, by signoff by the Superintendent following review of the submission and confirmation of its adequacy by the Superintendent, is required prior to delivery.

11.3 Internal Coating of Concrete Wet-wells and MHs

(Add the following)

Refer to Council Standard Drawings for the required internal coating of 1800 diameter and 2400 diameter wet wells respectively.

Use of alternate protective coatings will not be permitted with first receiving written confirmation from Council.

11.4 Covers

(Replace the contents of Clause 31.8 with the following)

11.4.1 Maintenance Holes

Maintenance hole covers must be finished flush with the surface in roadways, footpaths and paved surfaces of any type. Elsewhere, covers must be finished to the levels detailed on Standard Drawings S-0020, S-0021, S-0022, S-0024, S-0025 and S-0026.

Bolt-down covers must be installed in areas subjected to 1 in 100 year flooding and elsewhere as shown on the Drawings.

11.4.2 Wet-wells, Valve Pits and Flow Meter Pits

McBerns sealed safety lids (or similar) are to be provided for all pump wells. Safety screens must be of Grade 316 Stainless Steel. Lids and frames must be of aluminium construction.

11.4.3 Wet-well Ventilation

(Add the following)

Vents (inducts and educts) are to be designed in accordance with WSA Cl 5.5 and approved by Whitsunday Regional Council prior to installation. All installation shall be as per the design specification.

11.4.4 Odour Control

(Add the following)

Odour control measures are to be to be designed in accordance with WSA Cl 10.10 and approved by Whitsunday Regional Council prior to installation. All installation shall be as per the design specification. As a minimum all vents are to be fitted with a “Green Dome” to be specified by Whitsunday Regional Council.

The use of forced aeration techniques to control wet-well odour are not to be specified without prior agreement with Whitsunday Regional Council.

11.4.5 Water Service Connection

(Add the following)

The contractor shall provide a 32mm internal diameter water service to each pump station, and the cost of such shall be included in the contract price. Each service shall be fitter with a Reduce Zone Backflow Prevention Device and hose cock.

11.4.6 Wet-well Washers

(Add the following)

Well washers are to be provided for all pump stations. Well washers are to be operated by an automated timer system. Design of well washers is to be in accordance with WSA Cl 5.4.7 and Whitsunday Regional Council requirements.

11.4.7 Dewatering and Groundwater

(Add the following)

The contractor is to implement appropriate dewatering measures as required to permit excavation and construction of the pump station and lift stations and associated works.

The contractor shall take all necessary precautions to prevent uplift of structures due to groundwater. Prior to construction of the wet well, the Contractor will supply buoyancy calculations (by an RPEQ) demonstrating that the necessary ballast has been provided.

11.4.8 By-pass Connection

(Add the following)

The Contractor shall provide a rising main bypass connection in the valve pit. The bypass is to be a take-off from the rising main and incorporate a check-valve, sluice-valve and cam-lock fitting. The arrangement is to be approved by Whitsunday Regional Council prior to works commencing.

12 PIPE EMBEDMENT AND SUPPORT

12.1 Embedment Materials

(Replace the contents of Clause 32.1 with the following)

Refer to WRC Standard Drawings and others referring to 'Embedment material'.

Embedment Material must be sand as defined in WSAA Product Specification WSA PS – 350 'Compaction Sand for Pipe Embedment'. Grade B must apply (as per AS2566.2 'Buried Flexible Pipelines – Part 2: Installation', Appendix G, Table G3).

Coarse Embedment Material must be:

- Either a 10mm, 7mm or 5mm processed naturally occurring single-size aggregate compliant with WSAA Product Specification WSA PS – 351 'Processed Aggregates for Pipe Embedment' and as defined in Table 351.1. (Processed naturally occurring means 'not crushed'), or; and
- A 14mm processed naturally occurring graded aggregate compliant with WSAA Product Specification WSA PS – 351 'Processed Aggregates for Pipe Embedment' and as defined in Table 351.1. (Processed naturally occurring means 'not crushed').

'Crusher Dust' (the waste product from the crushing process), whether further processed or not, is not permitted for use as Embedment Material or Coarse Embedment Material.

12.2 Compaction of Embedment

12.2.1 General

(Add the following)

Table 36.2 'Minimum Compaction of Embedment and Trench / Embankment / Other Fills' does not apply.

Table 22.1 and Table 22.2 of WSA 02-2002 apply.

Unless concrete encased, backfill to risers must be hand compacted to the top of the socket, or coupling, on the highest branch off the riser and for the full width of trench and for a minimum distance of 500mm upstream and downstream of the riser.

Compaction of embedment material using water flooding is not permitted.

12.2.2 Methods

(Add the following)

Embedment operations must not damage structures, pipes and fittings, pipe and fitting external coatings, pipe and fitting sleeving or produce any movement of structures, pipes or fittings.

Damaged materials must be replaced.

12.3 Concrete Embedment and Encasement

(Add the following)

Concrete encasement of pipes is not permitted without the written approval of Council

13 FILL

13.1 Trench Fill

13.1.1 General

(Add the following).

Backfilling operations must not damage pipes and fittings, pipe and fitting external coatings, pipe and fitting sleeving or produce any movement of the pipe and fittings.

Damaged materials must be replaced.

Trench fill requirements and specifications also apply to general fill around pump stations.

13.1.2 Material Requirements

(Replace the contents of the erroneously numbered Clause 33.3 with the following).

Refer to WRC Standard Drawings and others referring to 'Trench Fill'.

Trench Fill within trenches not under new or proposed roadways, new or proposed improved surfaces, new or proposed trafficable areas or road reserves must be Ordinary Fill as defined by AS2566.2; that is, material obtained from the excavation, or imported, and containing not more than 20% by mass of rock with a size (any dimension) between 75mm and 150mm and none larger than150mm.

Trench Fill within trenches under new or proposed roadways, new or proposed improved surfaces, new or proposed trafficable areas or road reserves must be Sand as defined by AS2566.2 (Appendix G, Table G3); that is, the same material defined as Embedment Material.

Trench Fill within trenches under existing roads, existing improved surfaces, existing trafficable areas or road reserves must be a cement stabilised sand comprising sand as defined by AS2566.2 (Appendix G, Table G3) and 5% cement by weight.

13.1.3 Compaction of Trench Fill

(Add the following)

Table 36.2 'Minimum Compaction of Embedment and Trench / Embankment / Other Fills' does not apply.

Table 22.1 and Table 22.2 of WSA 02-2002 apply.

Compaction of trench fill material using water flooding is not permitted.

14 CONNECTION TO EXISTING GRAVITY SEWERS

(Add the following)

All connection to existing sewers or sewerage infrastructure must be undertaken by Council at the Contractors expense.

A cost estimate of the works to be undertaken by Council will be provided to the Contractor and the connection will not be made until the payment is made to Council. An undertaking to pay the actual costs of the work, signed by the Contractor, must accompany the payment.

The Contactor must provide Council, affected neighbouring residents and the Superintendent with five (5) working days' notice of the proposed connection commencement date.

Connections to existing pipes in-service shall be made at such times as will cause the least interference with the system operation.

If Council is to perform the connection:

- All connection to existing sewers work undertaken by Council shall be at the Contractors expense; and
- A cost estimate of the works to be undertaken by Council will be provided to the Contractor and the connection will not be made until the payment is made to Council.

If the Contractor is to perform the connection:

- The Contractor must obtain Council's written approval to perform the works;
- A Council representative shall attend all works involved in connecting to existing sewers (including plugging of live mains);
- The Contractor must follow Council directions;
- The Contractor remains responsible for all matters relating to the health and safety of the Contractor, his employees and those affected by the works;
- All costs incurred by Council due to Council involvement in connection to existing sewers shall be at the Contractors expense;
- A cost estimate of the works to be undertaken by Council will be provided to the Contractor and the connection must not commence until the payment is made to Council. A signed undertaking to pay the actual costs of the work must accompany the payment;
- The Contractor must co-ordinate the work including notifications to Council, the Superintendent and the Developers representative;
- The Contactor must provide Council, the Superintendent and the Developers representative with 5 working days' notice of the work commencement date; and
- Council reserves the right to stop, or take over, works being undertaken by the Contractor, if, in Council's opinion, the Contractor is incapable of completing the connection work in a reasonable time, Council's infrastructure may be damaged or undue inconvenience to the public may be caused.

15 RESTORATION

15.1 General

(Add the following)

References to 'trench' in this Clause 35 amendment shall also be read as 'excavation'.

15.2 Pavements

(Add the following)

Final restoration of pavements must include the removal of temporary restoration works.

Backfilling must restore full support to those structures or surfaces (including kerb and channel, road pavements or other improved surfaces) tunneled under in lieu of trenching.

15.3 Provision for Settlement

(Add the following)

Further backfilling must be carried out, or the original backfill trimmed, at the end of the Defects Liability Period so that the surface of the completed trench matches design and/or adjacent finished surface levels.

Subject to Council approval, and to the satisfaction of the Superintendent, material excavated from trenches and surplus to backfill requirements may be disposed of by spreading neatly in the vicinity of the trench in such a way as to avoid future erosion of the backfill and adjacent ground surfaces.

Trench backfill finished surfaces must be levelled at the time of backfilling where the reasonable convenience of persons would be impacted upon if the backfill was left 'high'. Subsequent settlement must be made good by additional filling at the time that the settlement becomes apparent.

15.4 Maintenance of Restored Surfaces

(Add the following)

Backfill and adjacent areas must be maintained throughout the Defects Liability Period.

16 ACCEPTANCE TESTING

('Acceptance Testing' shall be read as 'Acceptance Inspections and Testing')

16.1 Pipelines

This Clause 36.1 title is amended to '36.1 General'.

(Add the following)

Construction of gravity sewers and maintenance structures, including acceptance testing of such, shall be in accordance with the requirements of WSA 02-2002 'Sewerage Code of Australia'.

16.2 Compaction Testing

16.2.1 Trench fill compaction testing

16.2.1.1 Frequency and location of tests

(Add the following)

The contractor shall perform compaction tests 75mm to 100mm below the top surface of the fill layer to be tested.

Fill material within a trench traversing existing, proposed or new roads and road reserves must be tested for compaction in at least one location in each 300mm of fill material depth along the trench length within the road or road reserve extents.

16.3 Air Pressure and Vacuum Testing of Gravity Sewers

16.3.1 Testing of concrete emergency storage and maintenance structures

16.3.1.1. General

(Add the following)

Initial pressure testing and acceptance pressure testing requirements for emergency storage structures shall be determined by Council on a project specific basis given the variety of emergency storage structure types.

The performance of initial pressure testing on emergency storage structures in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise, at the time of notification by the Contractor, whether the option for the Superintendent to inspect the initial pressure testing is to be exercised. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the initial pressure testing is to be exercised.

The performance of acceptance pressure testing on emergency storage structures in the presence of the Superintendent and Council constitutes a **HOLD POINT**. The Superintendent's and Council's presence during acceptance pressure testing and sign-off of the test result certificates, as satisfactory is required prior to the release of the hold point.

16.4 Hydrostatic Pressure Testing of Pressure Mains

16.4.1 General

(Add the following)

The performance of acceptance pressure testing in the presence of the Superintendent and Council constitutes a **HOLD POINT**. The Superintendent's and Council's presence during acceptance pressure testing and their sign-off of the test result certificates, as satisfactory, is required prior to the release of the Hold Point.

Pressure mains shall be tested in sections approved by Council as soon as practicable after each section has been laid, jointed and backfilled, provided that:

- if so specified, or if the Contractor so desires, some or all of the pipe joints shall be left uncovered until the whole of the section has been successfully pressure tested;

- pressure testing shall not commence earlier than seven (7) days after the last concrete thrust or anchor block in the test section has been cast; and
- pressure testing shall not be carried out during wet weather unless approved by Council.

A test section is defined as a length of pressure main which can be effectively isolated for testing, e.g. by means of main stop valves.

The length of pressure main tested in one test event must not exceed 1000 metres.

Pressure main of different diameter shall be tested separately and shall not be tested in the same test event.

Any failure, defect, visible leakage or excessive leakage detected during the Defects Liability Period shall be rectified by the Contractor at the Contractor's expense.

16.4.2 System test pressure

(Replace the contents of Clause 36.5.2 with the following)

The system test pressure shall be a minimum of 900kPa measured at the highest point in the test section.

16.4.3 Maximum allowable loss

(Replace the contents of Clause 36.5.3 with the following)

Calculate the Maximum Allowable Loss Rate (Q) as follows:

$$Q = ((0.000532 + (C/ L_p)) \times D \times L \times (H)^{0.5}$$

Where:

Q = Maximum Allowable Loss Rate (litres per hour)
C = 0.0548 (for D.I. pipe) or 0.0568 (for PVC pipe)
D = nominal diameter of pipe (mm)
L = length of section tested (km)
H = average test head (m)
L_p = average pipe length (m) = L ÷ n
n = total number of pipes + total number of fittings (in the section tested)

Alternatively, the Maximum Allowable Loss Rate (Q) may be calculated by the following simplified formula for the specific pipe types and associated average pipe lengths tabulated. The simplified formulae are based on coefficient "C" value as noted.

Pipe Type	Simplified Formula	Coefficient "C"	Average Pipe Length (m)
DI	$Q = 0.0105 \times D.L\,(H)^{0.5}$	0.0548	5.5
PVC	$Q = 0.01 \times D.L(H)^{0.5}$	0.0568	6.0

16.4.4 Test Procedure

(Add the following)

Prior to preliminary pressurisation (refer to Section 36.5.4 (c) the pressure main must be kept full of water for a period of not less than 24 hours.

During testing all pipe joints which have not been backfilled must be clean, dry and accessible.

During testing each stop valve must sustain, at least once and for at least 15 minutes, the full test pressure on one side of the valve in closed position with no pressure on the other side.

16.5 Electrical Works

(Add the following)

The Contractor is responsible for acceptance testing of the completed pump station electrical installation.

The Contractor must provide all testing and calibration equipment and instruments as required.

Megaohm meter testing must not damage any electronic equipment.

The performance of acceptance testing on the completed pump station electrical installation in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise, at the time of notification by the Contractor, whether the option for the Superintendent to inspect testing is to be exercised. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect testing is to be exercised. If exercised, the Superintendent's and Council's inspection of testing and sign-off of the test results, as satisfactory, is required prior to the release of the Witness Point.

16.6 Sewage Pumping Station Site Testing

(This Clause 36.10 is an additional sub-clause to Clause 36 of WSA 04-2005)

Sewage Pumping Station Site testing (Site Testing) must be performed once the works are substantially completed and the equipment is in a condition to be tested.

Site testing must include, but not be limited to the following:

- Performance tests of the mechanical and electrical equipment;
- Adjustments and setting of all field control and safety devices;
- Noise level measurements;
- Electrical and control tests as detailed below;
- Functional check of all control and instrument loops and logic testing of circuitry and programs;
- Verification of calibration of all flow meters;
- Setting and calibration of all other instrumentation;
- MEN Earthing: Conformation of effective earthing of exposed metal of electrical

equipment;

- A static and dimensional inspection to establish that all items of equipment are complete and the equipment is ready for no-load operation;
- No-load operation to demonstrate that all equipment functions successfully, both separately and as components of integrated systems;
- Design load/acceptance operation to demonstrate that all equipment can successfully and reliably operate under working conditions;
- checks and tests stipulated by those Australian Standards relevant to the works; and
- checks and tests required by the Electricity Supply Authority.

Submit a Site Testing Program to the Superintendent two (2) weeks prior to the commencement of any site testing.

All testing equipment, labour and necessary facilities for all tests must be supplied by the Contractor. Site testing of all equipment must be supervised by the Contractor and representatives of the relevant sub-contractors.

If it is not possible to activate any electrical protective equipment or device, use a simulate test to trigger a change of state in the RTU and observe control system functionality.

Further to the requirements of clause 33.5 of WSA 04-2005-2.1, which details electrical works acceptance testing to be performed, further specific site tests must be performed in relation to all aspects of the sewage pumping station as detailed in the Pre-Commissioning Record Sheets and as identified by the Contractor's Site Testing Program and ITP

Specific site test results must be recorded and submitted as test certificates. The Pre-Commissioning Record Sheets must also be completed appropriately.

The performance of the specific site tests on the sewage pumping station in the presence of the Superintendent and Council constitutes a **WITNESS POINT**. The Superintendent shall advise, at the time of notification by the Contractor, whether the option for the Superintendent to inspect testing is to be exercised. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect testing is to be exercised. If exercised, the Superintendent's and Council's inspection of testing and sign-off of the test results, as satisfactory, is required prior to the release of the Witness Point.

16.7 Detectable Marking Tape

(This Clause 36.11 is an additional sub-clause to Clause 36 of WSA 04-2005)

Demonstrate detection of buried detectable marking tape in the presence of the Superintendent following completion of trench and structure backfill. Demonstrate at the rate of one in seven sewer- sections/structures.

The performance of detection demonstrations in the presence of the Superintendent constitutes a **HOLD POINT**. The Superintendent's presence during detection demonstrations and sign-off of the test results, as satisfactory, is required prior to the release of the hold point.

The performance of detection demonstrations in the presence of the Council constitutes a **WITNESS POINT**. Council shall advise at the time of notification by the Superintendent whether the option for Council to inspect the detection demonstrations is to be exercised.

17 COMMISSIONING

17.1 General

(Add the following)

Field testing shall mean site testing.

Tests and inspections shall comply with relevant Australian Standards.

17.2 Pumping Station

17.2.1 Pre-Commissioning

(Add the following)

Pre-commissioning is the preparation of plant or equipment so that it is in a safe and proper condition and ready for commissioning and operation. It includes all aspects of plant operation such as safety, electrical, mechanical and instrumentation.

Pre-commissioning is the culmination of all works inspections and testing, all acceptance inspections and testing and all inspections and testing noted on the pre-commissioning record sheets.

Submit a Pre-Commissioning programme to the Superintendent for review two (2) weeks prior to the commencement of any site testing.

The pre-commissioning process shall include, but is not limited to:

- Completion of all works inspections and testing;
- Completion of all acceptance inspections and testing;
- Completion of all inspections and testing (other than those conducted as part of 'Acceptance Inspecting and Testing') as listed on the Pre-Commissioning Record Sheets;
- Completion of mechanical, electrical and control component testing;
- Completion of equipment and system operational tests;
- Submission of all inspection and testing results to the Superintendent;
- Submission of all Superintendent-verified inspection and testing results to Council;
- Submission of all manufacturer's compliance certificates for items, materials and equipment supplied, including, but not limited to, pipes, valves, pumps, flow-meters and electrical equipment, to the Superintendent;
- Submission of all Superintendent-verified manufacturer's compliance certificates to Council;
- Submission of all as-constructed information, including but not limited to drawings, to the Superintendent;
- Submission of all Superintendent-verified as-constructed information, including but

not limited to drawings, to Council;

- Submission of the 'Pump Data Record Sheet' to the Superintendent;
- Submission of the Superintendent-verified 'Pump Data Record Sheet' to Council;
- Initial charges of lubricants to pump arrangements;
- Proving the installations functional aspects such as rotation direction checks, balancing and vibration checks, temperature, pressure and flow measurements, control and protection equipment including adjustment of instrument set points and alarm settings and proving correct operation of alarms; and
- Proving the installations dimensional aspects such as assembly completeness, alignments and clearances.

Notwithstanding the hold-point and witness-point requirements noted elsewhere, the presence of the Superintendent and Council, during the various inspections and tests that constitute the pre-commissioning process, constitutes as a minimum a **WITNESS POINT**. The Superintendent shall advise, at the time of notification by the Contractor, whether the option for the Superintendent to witness any of the various inspections and tests that constitute pre-commissioning is to be exercised. Council shall advise at the time of notification by the Superintendent whether the option for Council to witness any of the various inspections and tests that constitute pre-commissioning is to be exercised. If exercised, the Superintendent's and Council's sign-off of test results, as satisfactory, is required prior to the release of the Witness Point.

Following completion of all inspections and tests, and other physical pre-commissioning process aspects, the submission of:

- satisfactory inspection and test results (refer paragraph below; 3 copies);
- all as-constructed information (refer Clause 39);
- the 'SPS Operations and Maintenance Manual' (refer Clause 39.3; 3 hard copies and 1 electronic soft copy);
- the 'Pump Data Record Sheet' (refer Appendix B); and
- the Commissioning Programme (refer to Clause 37.2.1; 3 hard colour copies)

From the Contractor to the Superintendent, the Superintendents verification that the submitted information satisfies the construction specification requirements, and then submission of the verified information by the Superintendent to Council, constitutes a **HOLD POINT.** The submission as a whole will be referred to as the 'Pre-commissioning Submission'.

Inspection and test results to be submitted include, but are not limited to:

- Works inspection and testing results (refer clause 20.9 (amended);
- Acceptance inspection and testing results (refer clause 36 (amended); and
- Pre-commissioning Record Sheet inspection and testing results (refer Appendix A).

The basis of the inspection and test results submission is the works inspection record sheets, the works testing record sheets, the acceptance inspection record sheets, the acceptance testing record sheets, the 'Pre-commissioning Record Sheets' and any other record sheet required to adequately record all inspection results or test results not described on the record sheets noted here.

Council's review and acceptance of the Pre-Commissioning Submission is required

prior to the release of the Hold Point. Pumping station commissioning shall not commence until the Hold Point is released.

17.2.2 Commissioning

(Add the following)

Commissioning is the running of the plant and equipment to ensure flow through the pumping system, and carrying out any necessary inspections, tests and adjustments until the sewage pumping station is ready and suitable for normal starting and running under service conditions.

A commissioning programme must be submitted to the Superintendent and Council for review (refer Clause 34.2.1).

The Contractor must give the Superintendent a minimum of five (5) working days' notice of the intention to commence commissioning and can only provide that notice after release by Council of the Hold Point stipulated in the Clause 34.2.1.

Commissioning inspections and tests must be carried out by qualified personnel. The commissioning process shall include, but is not limited to:

- Completion of pump performance tests in accordance with the 'Pump Performance Test Sheet' (refer Appendix D); and
- Completion of all inspections and tests noted on the 'Commissioning Record Sheet' (refer Appendix C).

The performance of commissioning inspections and tests in the presence of the Superintendent and Council constitutes a **HOLD POINT**. The Superintendent's and Council's presence during commissioning and their sign-off of the Record Sheets, as satisfactory, is required prior to the release of the Hold Point.

Pump performance testing must demonstrate that:

- Fixed-speed pumps operate at flow and head required under all operating condition to achieve the performance requirements; and
- Variable-speed pumps operate at flow and head required under all operating conditions over the entire range of operating speeds to achieve the performance requirements.

Commissioning is not complete until the pump station has been run continually without any faults for a minimum of fifteen (15) days in accordance with required control and operation procedures. If during this period any mechanical or electrical equipment does not operate as specified, then the commissioning must be repeated after rectification of defects. All rectification works and the cost of additional commissioning will be at the Developer's expense.

17.2.3 Handover

(Add the following)

The sewage pumping station must be complete and be in working order, as demonstrated by the successful completion of the pre-commissioning and commissioning processes, before the works are accepted by Council either as 'on-maintenance' or as 'practically complete'.

18 TOLERANCES ON AS-CONSTRUCTED WORK

(Add the following)

Construction of gravity sewers and maintenance structures, including as-constructed tolerances of such, shall be in accordance with the requirements of WSA 02-2002 'Sewerage Code of Australia'. Refer to Clause 23 of WSA 02.

Road and hardstand construction tolerances are not specified by this document.

19 WORK AS-CONSTRUCTED DETAILS

19.1 General

(Add the following)

Refer to Council's construction specification CP1 'Construction Procedures'.

Further to the requirements of CP1, as-constructed Drawings must show:

- sewage pumping station details;
- maintenance structure location (perpendicular distances to property boundaries), type, level;
- house connection branch location (distance to centre of downstream MH), type, depth to top-of- riser;
- pipeline locations / alignments, size, type, levels and grades; and
- easement extents.

Structures represented on design drawings and removed during the works (including but not limited to pipe, fittings, pavements etc.) must not be represented on the as-constructed drawings.

Structures represented on design drawings and made redundant during the works (including but not limited to pipe, fittings, pavements etc.) must be noted as 'redundant' on the as-constructed drawings.

Areas of side-fill which contribute to the structural integrity of pipelines of a diameter greater than 225mm must be shown on the as-constructed drawings as areas not be disturbed without performance of an appropriate risk assessment.

19.2 Operations and Maintenance Manuals

(This clause 39.3 is a new clause)

Operations and Maintenance Manuals must be submitted in hard-copy (paper) form and in soft-copy (electronic pdf) form.

All hard-copy pages and drawings shall be properly reinforced where attached to the binder.
Operations and Maintenance Manuals shall contain at least the following information:

- Cover page displaying:

- Council issued SPS number and SPS name; and
- SPS location (Street, Suburb)

- Contents Page
- Section containing:
- Constructors name, address and telephone numbers; and
- Principal's Contract number and project description.
- Section containing:
- Pumping station general arrangement as-constructed drawings.
- Section relating to pumps (including motors) and containing:
- details and formatting in accordance with WSA 101-2008 'Industry standard for submersible pumps for sewage pumping stations', Appendix D 'Documentation'; and
- Safe Work Procedures for all operating procedures and maintenance procedures.
- Section relating to valves and containing:
- dimensioned sectional arrangement drawings with associated parts and material list; and
- Safe Work Procedures for all operating procedures and maintenance procedures.
- Section relating to Electrical Equipment and containing:
- Component-part-number list;
- Technical data sheets;
- Routine maintenance details & procedures – step-by-step procedures for preventative maintenance work carried out at intervals of two (2) weeks or less;
- Periodic maintenance details & procedures – step-by-step procedures for preventative maintenance work carried out at intervals in excess of two (2) weeks, including replacement of consumables;
- Repair & Overhauling – step-by-step procedures for fault correction and for preventative maintenance, involving parts other than consumables. A list of any necessary special tools shall be included; and
- Recommended spare parts list – illustrations and schedules for identification and specification of all items of equipment.
- Section relating to Electrical Drawings and containing:
- Electrical-drawing index;
- Single-line diagram;
- Power-distribution schematic;
- Common-controls schematic;
- RTU-termination drawings;
- Equipment list;
- Cable schedule;
- Switchboard-label schedule;
- Site layout (with accurate as-constructed conduit paths noted);
- Switchboard general arrangement; and

- Switchboard construction details.
- Section relating to equipment warranty and containing all warranty information relating to:
- Pumps;
- Motors;
- Valves;
- Switchboards;
- Control equipment;
- Communications equipment;
- Other electrical equipment; and
- Miscellaneous fittings, fixtures, materials and equipment

.

Appendix A

Pre-Commissioning Record Sheets

Pre-Commissioning Record Sheet Mechanical Installations				
Job Name:		Date:		
Job Number:		ITP Reference:		
Description:		Category:		
Check Item Description:		Status (Y/N/n/a)	Checked (Initial & Date)	Comments
1	Check that the installation of pump sets & associated pipe-work, pump pedestals, valves, fittings & gauges complies with approved design			
2	**Static & Dimensional Check** – all equipment is complete			
3	**Static & Dimensional Check** – pipe alignments & clearances			
4	Pump sets provided comply with WSA 101- 2008			
5	Guide rails provided comply with WSA 101- 2008 – Clause 3.9.1. Guide rails & top guide rail mounting bracket constructed of 316 stainless			
6	Lifting chains comply with WSA 101 – 2008 – Clause 3.9.2. Lifting chains constructed of 316 stainless steel. Confirm lifting chains are coupled correctly to pump at nominated lifting points.			
7	Pump mounting pedestal fitted to floor in accordance with Council specifications. Check all pedestal holding down bolts are fastened and tight. Pedestal holding down bolts 316 stainless steel minimum 20mm			
8	Visually check alignment of connections of pump to pedestal.			
9	Pumps can be removed from the well using guide rails & no conflict occurs with pipe-work, fittings or well			
10	No rubbish at the bottom of the well which is likely to damage the Pump when it is started			
11	All fasteners and mountings are tightened correctly			
12	Pump set & motor labels have been provided as per WSA 101-2008. Details have been noted for inclusion in site documentation.			
13	Confirm lubricant levels as per manufacturers requirements			
14	Rotor mechanical freedom – manually turn to confirm			

Pre-Commissioning Record Sheet Mechanical Installations				
15	Confirm that vendor Factory Testing Certificates or Type Test Certificates and pump curves have been obtained (attach copy of pump curve to this ITP)?			
16	Bump test pumps to confirm correct shaft direction of rotation			
17	Operate pumps against closed discharge valve & confirm pump seal is effective & that no pipe-work leaks			
18	All valves operate from the closed to fully open position. All valves are right handed, easy to operate and have no sharp protrusions on Hand Wheels. Number of turns between fully open to closed to be noted &			
19	Confirm all valves seal when closed			
20	Pressure gauges & associated process connection installed in valve chamber as per approved design. Pressure gauges ranged correctly for maximum discharge pressure			
21	Operate pumps & confirm balance/vibration levels are			
22	Pump well & confirm rising main is full by sighting 100% flow discharging at receiving manhole			
23	Close line valve & open scour valve, confirm flow back into well with pumps operating			
24	Open line valve (no pumps operating) & confirm rising main drains back into well			
25	Open emergency pump valve with pumps operating & confirm discharge from camlock fitting			
26	Design-load Operation performed – flow (calculated & flow meter), pressure, amps, kwh/1000lts.			
General Comments				

Representatives			Date
Principal Contractor	Name		
	Signature		
Superintendent	Name		
	Signature		

Pre-Commissioning Record Sheet Electrical Installations				
Job Name		Date:		
Job Number		ITP Reference:		
Description		Category:		
Check Item		Status (Yes/No/n/a)	CHECKED (Sign & Date)	Comments
1	Insulation resistance - @ 1000V between phases and each phase-to-earth			
2	Circuit Continuity			
3	Continuity (Earth Connections) – check and check on phase & earth connections in terminal boxes			
4	Continuity (hard-wired motor control & motor monitoring circuits)			
5	Functional Check (Control circuits & Devices) – ensure correct operation prior to energising motors			
6	Direction of Rotation – via local start/stop operation and/or control station operation			
7	Run & Direction – check			
8	No-load Currents – Record			
9	Confirm Motor frame and Terminal Boxes have been properly grounded?			
10	Safety labels installed correctly			
11	Main earthing conductor, protective earthing conductors & bonding conductors to earth stake Resistance to earth			
12	Motor wiring and earthing conductor is enclosed in a continuous metallic sheath or conduit which has a good contact to both the motor and the inverter chassis on VSD			
13	Insulation Resistance between all live parts & earth – Consumer Mains & Motor Cables (>1MΩ measured with 500V insulation tester)			

Pre-Commissioning Record Sheet Electrical Installations				
14	See evidence of polarity testing to ensure correct connection of active, neutral & earth			
15	FAT results attached – Earthing system continuity to AS3000.8.3.5			
16	FAT results attached – Insulation resistance to AS3000.8.3.6			
17	FAT results attached – Polarity to AS3000.8.3.7			
18	FAT results attached – Circuit connections to AS3000.8.3.8			
19	FAT results attached – Impedance to AS30000.8.3.9			
20	General inspection of electrical installation. Works are completed & ready for testing.			
21	Confirm no installation damage has occurred to switchboard – dents, scratches etc.			
22	All equipment checked against equipment schedules and marked up schedules adjusted as required			
23	SCA rating plate complying with AS3439.1 has been fixed to indoor type SCA and all detail have been confirmed			
24	Station identification labels mounted at top of each outer door on outdoor pump station SCA's			
25	Electrical signage installed as per AS3439 – Clause 5.2			
26	KWH meter panels are wired to Supply Authority			
27	Switchboard orientation and fixing correct			
28	Switchboard plinth and all gland plates sealed			
29	All wiring holes are bushed			
30	No sharp edges on metal work			
31	All cables properly glanded at the switchboard			

Pre-Commissioning Record Sheet Electrical Installations				
32	Weather seals fitted to all outer door openings and fixed securely			
33	All locking bars on multi point lock systems are fixed securely into lock mechanism			
34	Switchboard locks fitted – all operable			
35	Adequate space provided around switchboards as per AS3000 – Clause 2.9.2.2. Clearance space does not include a step down in concrete FSL - trip hazard.			
36	Consumer mains have been sized for all operational pump loads plus any auxiliary load. Submit all cable calculations			
37	Consumers mains installation inspection – mechanical protection, location of underground cable & proximity of other services confirmed			
38	All power & earthing cable terminations tested for tightness			
39	Consumer mains conductor CSA, current carrying capacity, DC resistance - recorded. Primary (Ergon) protective device rating/characteristics – recorded. Insulation resistance test conducted at 500VDC, test result no less than 1.0Mohm.			
40	Cables checked as per cable schedule. Derated Cables (0.6/1kV Cables) – check for compliance with AS3008.1.1. check cables are as per cable schedule			
41	Cable Markers (0.6/1kV Cables) – check for correct identification as per drawings			
42	Labels identifying all neutral connections located adjacent to neutral link			

Pre-Commissioning Record Sheet Electrical Installations				
43	Electrical supply has been connected and energised.			
44	Phase Rotation – Consumer Mains (L1, L2, L3) clockwise			
45	Earth Electrode installed in specified connection box. Earth electrode diameter > 16mm & depth 2400mm.			
46	Structure concrete reinforcing connected to main earth. Connection able to be separated from the main earth for testing.			
47	Earth pit, main earth electrode and water service bond equipotential bonding installed & labelled as per AS 3000 Clause 5.5.1.3.			
48	Main earth & equipotential earth resistance– complies with AS3000 & AS3017. Values no more than 0.5 ohm.			
49	Sub-circuit earthing to comply with AS3000 & AS3017. Fault loop impedance tests for each sub-circuit to be tested & results provided.			
50	Sub-circuit insulation testing to be conducted & results provided. Insulation resistance test conducted at 500VDC, test result no less than 1.0Mohm.			
51	Insulation Resistance (0.6/1kV Cables) – check with 1000V megaohm meter (phase-to-phase, phase-to-neutral, phase-to-earth)			
52	Insulation Resistance (0.6/1kV Cables) – test all control cores in a cable, as a group, to earth - value not to exceed 1.0Mohm @ 500VDC			
53	All labels fixed to insulating panels and enclosures are fixed with insulated bolts, nuts and fixings			
54	Rating of all fuse elements is marked by label adjacent to the respective fuse			

Pre-Commissioning Record Sheet Electrical Installations				
55	Termination numbers as per drawings			
56	Confirm sufficient terminals installed to allow an individual terminal for every incoming field wire			
57	All control wiring terminated with crimp lugs or crimp ferrules			
58	Wire numbers as per drawings			
59	Point-to-point checks conducted			
60	All motor isolating switches are labelled			
61	All motor isolating switches are pad-lockable in the off position			
62	Fuses/circuit breaker settings correct as per drawings			
63	Control switches & sequences operate as specified			
64	Confirm that supply monitoring relay picks up (indicating correct supply phase			
65	Trips tested			
66	Control sequences – delay start etc			
67	Pump detail and rating plate installed and all pump details engraved on the plate have been confirmed against pump manufacturers approved pump			
68	Ratings for all motor starter equipment and ammeters checked against Specification and information from pump drive motor supplier			
69	Shielded cable has been used on VSD starters. Shield terminated in EMC glands & terminals at both the VFD & motor as per manufacturers requirements.			
70	Insulation test motor PU01 at 500V – motor isolated from starter circuitry (must be > 1.0 Mohm) Pump 1 -____MΩ Pump 2 -_			

Pre-Commissioning Record Sheet Electrical Installations				
71	Insulation test motor PU02 at 500V – motor isolated from starter circuitry (must be > 1.0 Mohm) Pump 1 -____MΩ Pump 2 -_			
72	Insulation test motor PU03 at 500V – motor isolated from starter circuitry (must be > 1.0 Mohm) Pump 1 -____MΩ Pump 2 -_			
73	Thermistor resistance T1 to T2 – measured with low voltage ohmmeter (must be between 150ohms - 600ohms) Pump 1 -____Ω Pump 2 -___Ω Pump 3 -____Ω			
74	Motor Thermistor resistance – measured with high impedance multi-meter (must be 150ohms < R < 600ohms)			
75	Resistance between control cores S1 & S2 (non-Flygt pumps) – S1 disconnected (must be R>40 Kohm) Pump 1 -____kΩ Pump 2 -__kΩ Pump 3 -____kΩ			
76	Resistance between control cores S1 & Earth (Flygt pumps) – S1 disconnected (must be R>40 Kohm) Pump 1 -____kΩ Pump 2 -__kΩ Pump 3 -____kΩ			
77	Cable supports for the pump cables and level instrumentation are correctly located and properly fixed			
78	Excess cable is supported clear of incoming sewer levels			
79	No cable stocking has more than one cable installed in it			
80	Motor cables are supported in the well so as to avoid damage when removing other pump			
81	Motor cables in wells have minimal slack and do not present undue stress on motor cable glands			

Pre-Commissioning Record Sheet Electrical Installations				
82	Appropriate lugs/pins fitted to all cables, and cables correctly identified at terminations			
83	Motor terminations are in accordance with the manufacturers' connection diagram. With star- delta starters, cable No. 1 is			
84	Where parallel cables may be installed on site, provision has been made to ensure only one cable lug needs to be installed on each side of terminal lug.			
85	Bell all cores (0.6/1kV cables)			
86	Point-to-point wiring checks performed			
87	Voltage Variation – Phase-to-Phase & Phase- to-Earth (variation < 2%)			
88	With Flygt pumps, ensure that an earth has been put on S2P			
89	Seal Failure Probe resistance – test with high impedance multimeter (R>40,000ohms)			
90	Level probe supported by suitable cable clamp			
91	Level probe stilling pipe installed			
92	Level probe is minimum 300 mm clear of all concrete and metal components & free of entanglement with other equipment			
93	Level probe is mounted at correct level as per drawings			
94	Analogue signals are calibrated (incl. Flow & pressure transmitters)			
95	Analogue Spans – configured as per Council requirements (instrument, RTU, & SCADA) as per drawings			
96	Level sensor ranged to include up to overflow level			
97	Pressure transmitters ranged for maximum discharge pressure including shut head conditions & hydraulic transients			
98	Pressure Switches – check settings as per drawings			

Pre-Commissioning Record Sheet Electrical Installations				
99	Alarms transmit to centralised alarm monitoring point			
100	Hydrostatic level sensor breather tube filter installed			
101	Instrument mounting bracket installed			
102	Float cables fitted with stainless steel thimbles			
103	Instruments installed with sufficient spare cable to permit 1m adjustment & easy removal from the well for inspection			
104	High level float activated & RTU input activation confirmed			
105	Imminent Overflow level float activated & RTU input			
106	Emergency back-up circuit activated & run timer calibrated			
107	Flow Meters – calibration verified			
108	Generator socket inlet or junction box installed as per approved design			
109	Emergency Start – alternator starts upon mains power failure (if applicable)			
110	Generator inlet socket phase rotation configured (L1, L2, L3) clockwise			
111	Generator connected to inlet socket & operation of “Mains/Generator” transfer switch confirmed			
112	Noise levels (alternator operated on full station load) At 1m -____dB At nearest property Boundary - dB			
113	UPS Full Load Test – Output delivered for 8 hours duration			
114	General Power – test all power outlets as per AS3000			
115	General Power – test all RCD’s as per AS3000 & AS3017			

Pre-Commissioning Record Sheet Electrical Installations				
116	Lighting – test switching circuits & light fitting operation.			
117	Emergency Lighting – test			
118	Smoke detectors – test			
119	Arc flash certification – if applicable			
120	**Static & Dimensional Check** – all equipment is complete & ready for no-load operation			
121	No-load Operation performed – all equipment functions correctly			
123	Design-load Operation performed – all equipment operates reliably under working conditions			
124	Electrical Drawings (current) stored onsite			

General Comments

Representatives			Date
Principal Contractor	Name		
	Signature		
Superintendent	Name		
	Signature		

Pre-Commissioning Record Sheet Telemetry Installations				
Job Name:		Date:		
Job Number:		ITP Reference:		
Description:		Category:		
DESCRIPTION:		Status (Y/N/n/a)	CHECKED (Sign & Date)	Comments
1	Installation – check aerial supports & mast comply with approved design eg stainless steel fixtures, galvanised mast etc. As per drawings / vertical aligned / drain hole to bottom			
2	All unit isolating switches are labelled			
3	Visual check of antenna installation, clearance from surroundings and			
4	Check antenna magnetic bearing and polarisation (as specified on licence)			
5	Check antenna mounted with weep hole to bottom			
6	Inspect telemetry and radio supply cable connections for correct polarity			
7	Check for secure earth on radio coax surge protection (if applicable) and Coax continuity			
8	Check that telemetry cubicle doors & latches operate effectively & that WRC locks are fitted to telemetry cubicle.			
9	Check correct rating of protective devices for radio and telemetry			
10	Check for mains voltage rated insulation on data cables where mixed with mains voltage cables			
11	I/O's – Point-to-point testing			
12	Measure telemetry supply voltage and back up battery voltage			
13	Check hardware configuration of telemetry unit			
14	Check address switch/es of telemetry unit for correct addressing.			
15	Enable RTU and check telemetry unit is configured correctly			
16	Check software configuration of telemetry unit			

Pre-Commissioning Record Sheet Telemetry Installations				
17	Check telemetry transmit level to network device. Set as required by network device			
18	Radio TX/RX – check signal strength & fade margins are within project approved levels -82dB between site &			
19	Check telemetry receive level from network device, and set as required by the network device (or if not adjustable,			
20	Monitor telemetry messages for error			
21	Monitor radio audio clarity and set audio control off or to min. volume			
22	Signals transmit to centralised alarm monitoring point			
23	I/O's – Point-to-point testing, all signals register on scada & activate events & alarms as per approved design			
24	RTU operates for 8 hours without mains power applied			
25	Functional Operational check – all equipment as specified as per approved design			
26	Operation – all hardware & software provided as per approved design			
General Comments				
Representatives				Date
Principal Contractor	Name			
	Signature			
Superintendent	Name			
	Signature			

Pre-Commissioning Record Sheet Civil Works				
Job Name:		Date:		
Job Number:		ITP Reference:		
Description:		Category:		
Check Item Description:		Status (Y/N/n/a)	Checked (Initial & Date)	Comments
Structure & Surrounds				
1	Concrete structure as per approved design eg cast in- situ. Drop tube and baffle wall installed etc.			
2	Structure sited on allotment as per approved design – survey verification			
3	Structure dimensions as per approved			
4	SPS FSL as per approved design			
5	P.S. Level is 150mm higher than Fill			
6	Structure verticality within tolerance			
7	No damage to any exposed concrete			
8	Seepage through structure not present			
9	Wall penetrations sealed (around pipes & conduits)			
10	Pump-well benching as per approved			
11	Internal wall surface coating as per			
12	Internal wall coating application certification (Wall coating installed as per manufacturers requirements. Temperature, humidity, wall preparation,			
13	Structure hardware installed as per approved design eg lids, bollards			
14	Lids hinge freely and locking systems operate effectively. Lid gas proofing seals inspected & functional.			
15	Pit sumps are provided as per approved design & dimension verified			
16	Pit drains are installed as per approved design & gas seal is functional			
17	Vent pole installed as per approved			
18	Vent pole rag bolt assembly & grouting installed as per approved design			
19	Vent pole RL & foul air pipe-work invert into wet well verified by survey			
20	Vent pole PVC to metal support pole termination installed correctly. Rotary vent installed & functional			

Pre-Commissioning Record Sheet Civil Works				
21	Security fences & gates installed as per approved design, alignment verified by survey. Fence material, gate openings & location, heights, fitment of locks verified.			
22	Site drainage is installed as per approved design. Surface stormwater drains away from SPS & is sized adequately for site flows.			
23	Potable water service provided to the site as per approved design. Authority water meter installed. RPZ valve installed, tested & verification certificate provided. 50mm camlock water outlet provided. 25mm general water service provided adjacent to the wet well c/w vandal tap. Mandatory signage depicting non potable water supply in use is provided.			
24	Wet-well washers comply with Council Specifications. Wet-well washers fitted with gate valves, solenoids & regulators. Well washers water distribution is effective.			
25	Driveway & Access area sealed as per approved design			
26	Civil construction debris removed from general site & well/pits. No trenching slumps present. Site restoration is complete.			
27	Maintenance truck turnout radius confirmed. Adequate space for outrigger extensions verified. Adequate space for mobile crane to access site. Concrete pump well slab loading tag installed.			
Health & Safety				
1	Facility name plaque with WRC contact details installed			
2	Safety grates over pits installed as per approved design			
3	Adequate space provided around switchboards as per AS3000 – Clause 2.9.2.2. Clearance space does not include a step down in concrete FSL - trip hazard.			
4	Mandatory signage installed – eg indication of confined spaces etc			
5	Electrical signage installed as per AS3439 – Clause 5.2			

Pre-Commissioning Record Sheet Civil Works				
6	Stainless steel labels provided to indicate location of PU01 & PU02.			
7	Stainless steel tag installed on internal well wall indicating overflow level for wells with network overflow discharges			
8	All gates, lids & switchboard doors lock effectively & are fitted with WRC locks			
9	Height safety davit sockets installed. Test certificates provided.			
Products & Materials				
1	All products are Council approved			
2	Plates & labels installed			
3	Covers & frames greased			
4	Non hinged covers have lifting-lugs provided			
Pipes & Fittings				
1	Valves are anti-clockwise closing			
2	Valve supports installed			
3	Valve extension spindles installed			
4	Pipe supports installed (to horizontal pipes) & are constructed of 316 stainless			
5	Valve hand wheel installed			
6	All pipework of correct diameter			
7	Gate valves operate through full range & are in open position			
8	Flap valve on valve chamber drain installed			
9	Valve coatings as per Council requirements			
10	Pipework coatings as per Council requirements			
11	Inlet pipe dropper installed			
12	Flange bolting system as per Council requirements			
13	All valves pumps can be removed from well through opening			
14	Flanged dismantling joints installed			
15	All bolts are 316SS & Nuts are 304SS			
16	Emergency pump-out pipework (incl. camlock arrangement) installed			
17	SRM air releases/SRM scours installed			

Pre-Commissioning Record Sheet Civil Works				
18	Clearances between pipe-work, valves & fitting to adjacent pit floor or well walls > 300mm			
Overflow EROS				
1	Overflow pit constructed as per approved design			
2	Frog-flaps installed & operational (Pit & Outlet)			
3	Pit covers are of specified class and material			
4	Covers are installed as per approved design. Lids & hinges operate effectively & are locked.			
5	Screens are installed as per approved design. Screen sizes & material of construction confirmed.			
6	Overflow RL & well invert confirmed by survey			
7	Overflow is accessible for maintenance			
Acceptance Testing				
1	Pump-well infiltration test – result complies			
2	SRM testing – results comply			
General Comments				

Representatives			Date
Principal Contractor	Name		
	Signature		
Superintendent	Name		
	Signature		

Appendix B

Pump Data Record Sheet

Pump Data Record Sheet				
Project			Date	
Job Number		ITP Reference		
Pump Data - General				
Equipment Tag Number		Serial Number		
Equipment Location		Weight (kg)		
Hazardous Area Rating		Design Flow (l/sec)		
Manufacturer		Design Head (m)		
Pump Type		Liquid Type		
Rated Motor Power (kW)		Paint Type		
Pump Speed (rpm)		Casing Material		
Pump Data - Motor				
Manufacturer		Motor Speed (rpm)		
Model Number		Speed – if fixed (rpm)		
Serial Number		VSD Max. Speed (rpm)		
Full Load Current (Amp)		VSD Min. Speed (rpm)		
Rated Volts (V)		Gearbox		
Weight (kg)		Gearing Ratio		
IP Rating		Gearbox Weight (kg)		
Comments				

Appendix C

Commissioning Record Sheet

Commissioning Record Sheet				
Job Name		Date:		
Job Number		ITP Reference:		
Check Item		Status (Y/N/n/a)	CHECKED (Sign & Date)	Comments
1	**HOLD POINT** release by WRC	Yes		◄ Sign-off by WRC Dev Eng Inspector
2	Motor and pump nameplate details match pump rating plate data. Record name-plate information ►			
3	Megger test motors at 500V - main switch, pump circuit breakers, control isolating switches in OFF position (must be >1Mohm, ideally >30Mohm) Pump 1 -____Mohm Pump 2 -_____Mohm Pump 3 -____Mohm			
4	Set “Reduced Voltage Starter” as per manufacturer's instructions			
5	Wet-well is filled with water			
6	Operate the station and record performance data for sewage pumps and check they are operating in accordance with design parameters and without undue noise, vibration, temperature or unusual odour.			
7	Demonstrate control and protection equipment functionality for manual and automatic modes			
8	Check pipework for leakage			
9	Check operation of the alternating set with utility power switched off under design operating conditions. The alternating set should operate without undue noise,			
10	Switch all circuit breakers and the main switch off			
11	Check that adjustments and setting of no-flow, torque limit switches and thermal overload relays have been set.			
12	Test any associated field devices. e.g. isolating switches and safety devices			
13	Test pump for Field start / stop and emergency stop control.			
14	Uncouple motor and check direction of motor by jump- start. Is direction of rotation of pump correct?			
15	Test pump for Remote Manual start / stop control?			

Commissioning Record Sheet				
16	Test pump for SCADA start / stop control			
17	Check that the equipment Input / Output signals are consistent with the control system Feedback signals			
18	Has Motor Been Re-coupled from direction test?			
19	Have all dry-commissioning checks been signed of as per ITP?			
20	Is there any leakage in the system?			
21	Do upstream and downstream pressure gauges read the same?			
22	Thermistor resistance T1 to T2 – measured with low voltage ohmmeter (must be 150ohms < R < 600ohms) Pump 1 -____ohm Pump 2 -_ohm Pump 3			
23	Motor Thermistor resistance – measured with high impedance multi-meter (must be 150ohms < R < 600ohms)			
24	Resistance between control cores S1 & S2 (non-Flygt pumps) – S1 disconnected (must be R>40 Kohm) Pump 1 -____Kohm Pump 2 -_____Kohm Pump 3 -____Kohm			
25	Resistance between control cores S1 & Earth (Flygt pumps) – S1 disconnected (must be R>40 Kohm) Pump 1 -____Kohm Pump 2 -_____Kohm Pump 3 -____Kohm			
26	Is there any leakage in the system?			
27	Does equipment fulfil its designed function under Wet- commissioning? (Delivers design flow rates, current draw etc.)			
28	Is equipment deemed ready for Process Commissioning / demonstration? (e.g. can be operated under Remote Manual control for a process cycle without tripping alarms)			
29	Check pump type (brand, pole)			
30	Wet-well mechanical installation (pipework & fittings) – material type, valve types, operational check			
31	Valve Pit mechanical installation (pipework & fittings) – material type, valve types, operational check			

Commissioning Record Sheet				
32	Pump-out mechanical installation (pipework & fittings) – type material, valve types, operational check			
33	Overflow pit mechanical installation (pipework, screens & fittings) – material type, valve types, operational check			
34	Perform Performance Test (complete 'Pump Performance Test' sheet)			
35	Operate bypass system (SRM closed)			
36	Operate Mobile Pump Connection arrangement			
37	Vent pole is correct height			
General Comments				

Commissioning Representatives			Date
Principal Contractor	Name		
	Signature		
Superintendent	Name		
	Signature		
WRC Dev Eng Inspector	Name		
	Signature		

Appendix D

Pump Performance Test Sheet

Pump Performance Test Record Sheet					P&ID No.: Location: Date :				Job Job No: ITP No:		
Description	Current Amp.	Rated Motor Current Amp.	Current-draw acceptance (1-2)/2<10% Y/N	Flow Measurement					Flow rate		Vibration -visual observation Normal/Abnormal
				Surface area of Wet Well m^2	Water Depth At START m	Water Depth at STOP m	Pumped Flow L	Duration of Test S	Design (Units) L/sec	Measure (Units) L/sec	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Pump No. (Tag. No.):											
Test 1											
Test 2											
Test 3											
Comments:											
Notes:											
				Witnessed by: (Contractor's Representative) Signed: Dated:				Witnessed by: (Supervising Engineer) Signed: Dated:			

ADDENDUM TO

DUAL WATER SUPPLY SYSTEMS

WSA 03-2011

NWD 2.2 Water Supply Mains – Drinking Water

Buried appurtenances shall be colour coded blue.

NWD 2.3 Water Supply Mains – Non-Drinking Water

Buried appurtenances shall be colour coded lilac.

NWD 3.1 Design – Demands

Fire-fighting demands shall be provided from the drinking water mains.

NWD 3.4 Cross-Connections between Drinking and Non-Drinking Water Supply Systems.

No cross-connections, either permanent or temporary, shall be installed between drinking and non-drinking water supply systems downstream of Councils headwork storages without prior council approval.

NWD 3.4.2 Temporary Cross-Connections

No temporary cross-sections shall be installed downstream of Councils headwork storages without prior council approval.

NWD 3.5 Sizing of Mains

The sizing of external non-drinking water mains shall be undertaken by the Consulting Engineer.

The standard sizes for non-drinking water mains shall be the same as the standard sizes for drinking water mains.

NWD 3.7 Location of Mains

Water mains shall be laid on the standard alignment – refer to Section D6.10 of this manual. Where the non-drinking water mains and drinking water mains are laid in the same footpath, the drinking water main shall be laid nearest to the property boundary. Access to the valve and pipe need to be clear of the footpath.

NWD 3.8 Main Depths

The depths of non-drinking water mains shall comply with the requirements for drinking water mains.

NWD 3.10 Property Services

The size of non-drinking water property services shall be DN20 or DN25 as agreed with Council. Where non-drinking water and drinking water property services are laid across a road at a common location, the services shall be placed in a commonDN100 conduit. Meters for the non-drinking water shall be placed above ground.

NWD 3.12 Hydrants

Hydrants shall only be installed on the drinking water mains. Flushing points shall be provided on the non-drinking main, at all ends of line and cul-de-sac heads. Flushing points shall consist of an isolation valve and camlock coupling with dust cap.

NDW 3.18 Identification Markers and Marker Posts

Identification markers for the components for the non-drinking water network shall comply with that specified for drinking water components except that:

The hydrant road pavement markers shall be purple.

Where there is no road pavement adjacent to hydrants, posts with reflective indicator plates shall be installed similar to that for the hydrants marker posts on drinking water mains.

All marker posts for the non-drinking water components shall have the letters

NDW added to the lettering on the indicator plates and the top of the marker posts painted purple.

NWD 7.1 Tapping of Mains

Tapping of non-drinking water mains shall be carried out to the same requirements as specified for tapping of drinking water mains.

NWD 8.3 Independent testing of Reticulation Main

The test pressure for non-drinking water property services shall be 1.2 MPa.

Construction Specification

Sewage Pumping Station Electrical Switchboards

Supplement to the WSAA Sewage Pumping Station Code of Australia (WSA 04-2005 Version 2.1

Revision 2
November 2016

Document Control

Rev	Date	Clause	Details	Author	Verifier	Approver
1	19/5/2016	-	Original Version	AC		
2	2/11/2016	-	Final Version	AC		

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1 Scope of Specification

This specification covers the requirements for materials and the standard of workmanship to be employed in the construction of low voltage electrical switchboards. Note however that this document is not a complete electrical specification. A job specification will need to be provided for any given project. The checklist provided in Appendix G will provide some guidance on the elements required to be covered under the job specification.

Design of sewerage pumping station switchboards is to be carried out generally in accordance with WSA 04 Sections 6 – 8 (inclusive).

This specification should be read in conjunction with WSA 04 Sections 20.6, 20.9 and 21.6 and the job specification to determine the requirements for a particular project. Any conflict between WSA 04, this specification and the job specification should be referred to the Superintendents Representative for clarification.

Appendix F contains a schedule for the submission of design information, inspections, testing and as-constructed information.

While this specification represents the current preferred standards, Council is prepared to consider new developments that may offer advantages such as cost saving, improved control or reliability. Any such alternatives are to be submitted to the Superintendents Representative for approval prior to purchase.

2 Design Philosophy

This switchboard shall be designed and constructed to:

- Ensure safe, reliable and efficient operation;
- Withstand the electrical and mechanical loads, temperatures, pressures and vibration that will be encountered under normal service and fault conditions;
- Ensure that operation or failure of any component does not cause damage to other equipment;
- Minimise electrical interference;
- Require the minimum of maintenance;
- Prevent the ingress of dust, moisture, vermin or other foreign matter; and
- Facilitate operation, cleaning, maintenance and repairs.

The switchboard manufacturer shall confirm the electrical loads of all equipment supplied from the switchboard and shall determine the ratings of all switchgear and protective equipment.

3 Standards and Regulations

Design, materials and workmanship shall conform to the requirements of:

- WSA 02-2002 – Sewerage Code of Australia;
- WSA 04-2005 – Sewage Pumping Code of Australia;
- Queensland Electrical Safety Act, Regulations and Code of Practices;
- Ergon Energy;
- Australian Communications and Media Authority (ACMA);
- Any other Authority having jurisdiction over the works;
- All relevant Australian Standards;
- Relevant IEC Standard or British Standard where no Australian Standard exists; and
- To the satisfaction of the Superintendents Representative.

The contractor shall be responsible for ensuring that all equipment and materials supplied are in complete accordance with the requirements of all relevant authorities and that all required approvals are obtained.

4 Operating Conditions

All equipment shall be suitable for operation in a tropical coastal environment.

Unless specified otherwise in the job specification the equipment will be required to operate continuously under the following conditions:

Minimum ambient temperature	4°C
Maximum ambient temperature	44°C
Minimum relative humidity	33%
Maximum relative humidity	100%
Elevation	Not exceeding 1000m
Atmosphere	Refer to job specification*
Location	Refer to job specification
Wind Loading	Refer to job specification

* Note that a corrosive gas (sulphide gas) environment is common at Council wastewater facilities

5 Materials - General

All materials used shall be new and of the best quality, manufactured and tested in accordance with the relevant Australian Standards.

6 Power Supply

Unless specified otherwise in the job specification the power supply will be 400/415V 3 phase 4 wire 50Hz. The switchboard shall be designed for the fault level present at the installation site - refer to job specification.

The control voltage will generally be 230/240V AC or 24V DC. In some cases, additional supplies of 24V AC, 24V DC or 12V DC may be required for instrumentation or telemetry equipment.

The switchboard shall be arranged for a MEN earthing system in accordance with AS 3000 and Supply Authority requirements.

The switchboard shall be constructed to withstand the short circuit stresses generated by the fault level stated in the job specification. If a fault level is not stated, the fault level shall be taken to be a minimum of 35kA rms for one second with a Peak Factor of 2.2 at the source of supply.

All sites operate on a 12V control supply with DC/DC converts as required to operate other low voltage equipment. The 12V battery system shall be sized such that it will run the sites SCADA and telemetry system for a minimum of 24hrs in the event of power failure.

6.1 Voltage Drop and General Cabling Requirements

- All cables shall be sized for 1.3 time's maximum demand of the nominal running currents;
- The maximum voltage drop for any circuit under normal load conditions shall be limited to less than 3½% of the no load voltage at the consumer terminals;

- Motor cables shall be sized such that the maximum voltage drop at the motor terminals under DOL starting conditions is not more than 20% relative to the consumer main no load voltage. This sizing requirement is regardless of whether the motor will be DOL or soft started, they must be sized to allow for DOL starting within 20% voltage drop limits; and
- Joining of cables is unacceptable, unless indicated on the design drawings.

7 Metering

Where kWh metering is required in the job specification it shall be installed in strict compliance with the Supply Authority requirements. Refer to Queensland Electricity Connection and Metering Manual. Special attention is drawn to the requirements for spacing / shielding meters from heavy current carrying conductors.

For external switchboards, Supply Authority meters shall be housed in a section of the switchboard with access via a dedicated door that can be fitted with a Supply Authority padlock. A glass viewing window is not required.

When the main switchboard is located inside a building the Supply Authority metering shall be located in a separate cubicle mounted in an external location accessible to the meter readers. The material of construction will be typically stainless steel. A propriety type metering enclosure can be used. Refer to the job specification for details of meter locations and metering cubicle.

The required metering tariff will be specified in the job specification.

8 Switchboard Enclosure

8.1 General Construction

The switchboard will be a cubicle type construction, fully front connected and present a complete dead front. Switchboards for a typical water or wastewater pumpstation will generally be constructed to Form 2 separation. Power distribution switchboards or motor control centres will have other form of internal separation specified, e.g. Form 3b or 4b. Refer to job specification (Form factors refer to AS3439).

Cubicles will generally be fabricated from 1.6mm grade 316 stainless steel and be constructed to IP56D to AS60529. Aluminium may be offered with prior approval of the Superintendents Representative. Other materials such as sheet steel may be considered when the switchboard is to be located in environments free of corrosive agents such as control rooms. The job specification will detail if materials, other than stainless steel, can be offered.

The cubicle will be constructed of folded and welded construction. All seams shall be a continuous weld and be ground smooth after fabrication. Spot welding will not be accepted.

Typically, the maximum dimensions for cubicles shall not exceed 2100mm high or 3000mm in length. Where length of the switchboard will exceed 3000mm, the switchboard is to be supplied with suitable shipping breaks complete with appropriate wiring harness, busbar joints and seals between sections.

Avoid contact between metals of widely dissimilar electrode potential to minimise electrolytic corrosion.

8.2 Mounting

Cubicles to be suitable for pole / wall mounting or plinth mounting as per job specification. Mounting brackets / bolts for pole / wall mounted cubicles are to be external to the cubicle.

Plinth mounted cubicles are to be fitted with a channel base fabricated from 75 x 40 (min) mild steel channel. The channel base shall have a suitable number of 40 x 40 tags welded to the external long-side edges. Each tag shall have 16Φ hole and shall be used for fixing down the switchboard. The tags shall be positioned so it is possible to drill through them perpendicularly into the supporting material (e.g. concrete) once the cubicle has been positioned. The channel base shall be hot dipped galvanised after fabrication.

Cubicles that cannot be safely lifted by two people shall be provided with removable eyebolts and plugs. Alternatively, for plinth mounted cubicles, tubes can be provided through the channel base to permit the insertion of lifting rods.

Freestanding cubicles shall be stiffened to ensure overall rigidity. Additional stiffening and support members shall be provided where necessary to support heavy equipment. Such members shall be fabricated to the same specification as the cubicle.

8.3 Sunhood

All external switchboards are to be fitted with a sunhood. The purpose of the sunhood is to limit the temperature rise within the cubicle caused by direct sunlight thus protecting the internal electronic equipment from adverse heating effects. Sunhoods shall be fabricated from the same material as the cubicle. The sunhood shall project beyond the vertical faces of the cubicle and provide an air gap between the sunhood and the cubicle roof.

The dimensions of the sunhood are to be such that the back, front and sides of the switchboard are protected from direct sunlight (between the hours of 9am to 4pm). It would be acceptable to install additional false plates on the back and sides of the cubicle to prevent direct sunlight falling on the cubicle walls. These false plates would be spaced from the cubicle wall so that a minimum air gap of 50mm is provided. The sunhood shall extend approximately 900mm in front of the switchboard to offer some protection from rain and allow operators to open the external door and access control switches and indicators during wet weather. The sunhood shall be fixed in a manner suitable for the cyclonic wind loading possible at the site. Additional support posts may be required. The support posts can be fabricated from mild steel sections and be hot-dipped galvanised after fabrication.
Sun hoods and standoff supports shall be made of the same material as the main switchboard.

8.4 Doors, Mounting Pans and Hat Sections

Each cubicle shall be accessible at the front by hinged doors. Doors shall be fabricated as per the cubicle. They shall be of folded construction and fitted with stiffening members to ensure adequate rigidity and freedom from warping. Alternatively, a heavier gauge material may also be used. Each door shall have an M6 stud welded on the inside (lower hinge side corner) for earthing purposes. A 6mm^2 spiralled flexible connection shall be fitted for earth bonding across the door hinges.

Typically, the width of any door shall not exceed 850mm.

Doors shall be fitted with chromium plated hinges of the lift off type. The hinge pins are to be stainless steel. Fixing screws are to be concealed when the door is closed. Door handles are to be chromium plated (unless otherwise specified) padlockable swing handles (e.g. Emka 1107). Detail of handles to be submitted for approval. Door handles are to be locked with Lockwood No. 234A long shank padlocks, keyed to Whitsunday Regional Council's (WRC) master system, with two keys to be supplied to WRC. Doors with a height greater than 600mm shall be fitted with a 3-point roller latch to secure the door at the top, bottom and middle. External doors shall be fitted with a catch stay or strut to hold them in the 120^o open position.

External doors shall be fitted with a resilient neoprene gasket retained by metal framing. The gasket shall be compressed when the door is closed to ensure a moisture and dust proof

seal. The gasket shall not be installed in a stressed condition.

Where escutcheon doors are required, they shall be manufactured from either 2mm grade 316 stainless steel or 2mm sheet steel (powdercoated after fabrication). Refer to job specification. They shall be fitted with a chromium plated "T" handle fitted with a standard L&F 92268 series lock. Escutcheon doors shall be fitted with a catch stay or strut to hold them in the 120^{o} open position.

Each cubicle compartment shall be provided with a mounting pan. The mounting pan shall be manufactured from either 2mm grade 316 stainless steel or 2mm sheet steel (powdercoated after fabrication). Refer to job specification. The mounting pan shall be of folded construction and have a 20mm return. Mounting pans will generally be removable to facilitate the initial mounting of switchgear and wiring. They shall be fixed to the rear wall of the cubicle by M6 studs and chrome acorn nuts. Mounting pans are to be of the maximum possible dimensions. Where two (2) or more mounting pans are located in the same compartment they shall neatly butt against each other.

Hat sections are to be manufactured from the same material as the mounting pans and have the same surface finish. Where hat sections are used to support switchgear they must be rigid and not flex when switchgear is operated.

The design of the cubicle shall incorporate sufficient ribs, channels, hat sections and the like to accommodate all equipment mounting and wiring requirements. Screws and bolts shall not project through the walls and doors of the cubicle (screws for labels and door hardware excepted).

Cubicles may be specified for either outdoor or indoor locations. Outdoor cubicles shall have blank external doors. The number of external doors is to be kept to a practical minimum with segregation achieved by internal partitions / escutcheon doors (exceptions - Supply Authority metering and cable zone). All control switches, indicators and the like shall be mounted on an internal hinged escutcheon door. With the prior written approval of the Superintendents Representative, indoor cubicles may have equipment mounted on external doors but such equipment must provide an IP56 seal.

8.5 Ventilation

All cubicles shall be provided with adequate ventilation to ensure that the internal equipment does not exceed the manufacturer's specified operating temperature range when installed on site and operating under typical conditions at full load for extended periods. The effects of heating due to solar radiation shall receive full consideration in the design.

As a minimum all cubicles shall be provided with ventilation openings in each compartment, including the cable zone. The vents shall provide a minimum of 22,500mm^2 total outlet area per cubic meter of internal volume. The ventilation openings shall be provided with a protective cover to prevent the entry of rain. The vents shall be fitted with insect and vermin proof stainless steel gauze and a removable dust proofing media. Ensure the cubicle design and equipment layout will allow the easy replacement of dust-proofing media once the switchboard has been put in to service.

Where increased cooling is required, quiet running forced ventilation equipment shall be employed. Ventilation fans shall be thermostatically controlled and operate under a positive pressure. High quality replaceable filters shall be provided to dust proof the air intakes. For some applications cubicle mounted air-conditioners may be required.

The supplier shall submit for review, drawings and calculations detailing the effectiveness of the proposed ventilation, prior to switchboard construction.

8.6 Cable Entry

Each switchboard shall be provided with a dedicated cable zone to facilitate cable entry and glanding. The cable zone is to be not less than 250mm in height (if horizontal) or 250mm in width (if vertical) and be of suitable dimensions to accommodate the field cables. The cable zone shall be fully segregated and shall have a gas-tight seal from the remainder of the switchboard. Access to the cable zone can be either via a hinged door or removable panel fixed with chrome acorn nuts. Gasket seal and earthing of cable zone access shall be as previously specified for external doors. In certain situations, it may be considered impractical to provide a cable zone. For such situations prior written approval is required from the Superintendents Representative before this requirement will be varied.

Cable entry shall generally be through the bottom of the cubicle. Non-magnetic gland plates are to be provided. Brass is the preferred material. Aluminium will be accepted in non-corrosive environments where only non-metallic glands will be used and adequate provision is made to minimise electrolytic corrosion. Gland plates shall be fitted with a neoprene gasket and be secured by screws and nuts. Nuts are to be welded to the underside of the cubicle. Ensure adequate clearance is provided to allow tool access to gland plate fixings, e.g. do not have fixings located under ducts.

For plinth mounted cubicles the gland plates shall be in two (2) sections – one (1) section for cable glands and the other to permit hand access below the cubicle with the other section in place. This is to facilitate cable installation and the tightening of glands.

8.7 Surface Finish and Completion

Upon completion of fabrication the cubicle shall be descaled and degreased then given a light buffing. All surfaces are to be free from blemish, scratches, welding splatter and the like.

Unless otherwise specified in the job specification, all cubicles (including stainless steel cubicles) shall be powder coated or painted with 2-pack polyurethane. Surface preparation and coating application shall be in accordance with the manufacturer's instructions. The colour of cubicles shall be specified in the job specification. Escutcheon doors, mounting pans, hat sections and the like shall be white. Powdercoating / painting shall only be done after all fabrication work including the punching of holes and cut-outs has been completed.

A PVC document holder for drawings and a circuit breaker schedule cardholder shall be provided on the rear of a cubicle door.

The cubicle shall be suitably crated / packaged to minimise damage during transportation.

8.8 Distribution Boards

Consideration would be given to use of a proprietary line of enclosures for circuit breaker distribution boards and small cubicles such as telemetry panels or marshalling boxes. Such enclosures are to be manufactured from a material suitable for and have an IP rating appropriate to the environment in to which they are to be installed. Full details are to be submitted to the Superintendents Representative for approval before use.

9 Switchboard Equipment

9.1 Main Switch

The main switch shall typically be a three pole moulded case circuit breaker. In certain circumstances a manual change over switch may be used as a main switch – refer to clause 9.1.1 below. Automatic changeover switches shall not be used as a main switch without written approval of the Superintendents Representative.

The main switch shall be capable of breaking an inductive current 20% (minimum) in excess

of the calculated maximum demand for the switchboard. The main switch shall have a fault rating higher than the prospective fault current at that point of the distribution network but shall not be less than 6kA at 250V A.C. (sym).

The main switch shall be mounted so that it can be operated without opening the escutcheon or exposing live terminals. Where extension shafts are used they are to be suitably supported so that they do not sag thus making door closing difficult. Extension shafts shall not exceed 100mm in length. Hat sections shall be used to mount the switch at a suitable position.

The handle of the main switch shall be padlockable in the off position. It shall be possible to open the escutcheon with the switch in the on position (by use of a tool to operate / defeat the door interlock mechanism).

Care shall be taken to ensure discrimination between the main switch and other downstream circuit breakers.

The line side terminals of the main switch shall be fully shrouded to IP4X such that with the main switch in the off position there are no exposed live terminals in the switch board.

The main switch shall be fitted with an auxiliary contact that is closed when the main switch is closed.

Residual current protection shall only be fitted to the main switch with the express permission of the Superintendents Representative.

9.1.1 Manual Change-over Switches

For switchboards that incorporate a generator inlet socket or link connection bars it may be preferable to utilise a manual change-over switch as the main switch upstream of the main circuit breaker. The manual change-over switch, whether used as a main switch or not, shall comply with the requirements of clause 9.1 above and the following additional provisions.

The three positions of the change-over switch shall be clearly labelled “Mains” – “Off” – “Generator”. It shall be padlockable in the off position.

The manual change-over switch shall have two (2) auxiliary contacts, one that is closed when the switch is closed on mains and the other that is closed when the switch is closed on generator.

9.2 Lightning and Surge Protection

Protection of circuits against the effects of lightning shall be provided on all switchboards. Protection systems shall be designed in accordance with AS1768 and be suitable for a location category C site.

Primary surge protection shall be provided on incoming mains. The surge protection devices (SPD) shall be of an approved type, housed in a metal enclosure and be segregated from remainder of switchboard equipment. The SPD shall be connected between phase and neutral or phase and earth, as per manufacturers recommendation. The primary SPD shall be located in close proximity to the main switch and the main earth bar. Connecting leads are to be a minimum of 6mm^2, be as short as practical (consideration to be given to the effect of lead inductance). They shall not be run in ducting or loomed with other wiring.

SPD’s shall be capable of discharging a minimum of 40kA (8/20μs waveshape) per phase and incorporate status indication, visible without the need to open the escutcheon door or expose any live terminations. SPD’s shall be protected by HRC fuses or circuit breaker in accordance with manufacturer’s recommendation.

In high risk installations, such as remote sites more than 150m from adjacent earthing, more stringent surge protection will be required. In these cases, it is recommended that the surge protection capacity be increased to a minimum of 85kA (8/20μs waveshape) per phase.

Secondary protection for communications, data and instrumentation shall be specified elsewhere in this document.

Total length of cable between the active conductors through the surge diverter to earth shall not be more than 50cm.

9.3 Busbars

Busbars shall be fabricated from high conductivity copper with radiused edges. The current rating of the busbars shall be minimum 20% higher than that of the associated switchgear. Busbars, where not enclosed within a segregated, earthed chamber, are to be fully insulated. Insulation shall be applied by a hot dip process or heat shrink unless otherwise approved by the Superintendents Representative. Insulation is to be phase coloured.

Connections between busbars shall be tinned. Where it is necessary to have tapped threads in a busbar then stainless steel inserts shall be used to ensure that screw threads do not bear directly on the conductor material. Busbars are to be supported on insulators and be capable of withstanding the stresses arising from the prospective fault currents.

Main busbars will be fully enclosed and with the exception of power take-offs be segregated from other wiring and equipment. Inspection covers are to be provided in each busbar enclosure and at each connection point.

Where flexible busbar is used then correct work practices shall be adopted when cutting, punching and terminating to minimise lamination damage.

9.4 Active, Neutral and Earth Links

All links shall be manufactured from brass or copper and have studs and/or tunnels of correct capacity for the wiring to be terminated. Each link shall have at least 20% spare capacity for the termination of future circuits. Links shall be mounted so that access to them is not obstructed by wiring or cables. Active and neutral links shall be mounted on insulated supports and be fitted with a coloured insulated cover (red for active links, black for neutral) over all live surfaces. Neutral and earth links shall have capacity for the individual termination for the maximum number of circuits that can be supplied from the switchboard.

9.5 Circuit Breakers (CB)

Circuit breakers are to be used for the protection of all circuits and shall be selected to provide reliable supply. Circuit breakers shall be selected to match the prospective fault current of the switchboard but shall not be less than 6kA at 250V A.C. (sym). Tripping characteristics shall be selected to suit the particular circuit it protects. When selecting circuit breakers consideration must be given to the cable the circuit breaker is protecting and the earth fault loop impedance of the circuit. Cascading of CB's in accordance with manufacturer's instructions is permissible. Circuit breakers shall be graded to ensure correct discrimination.

Circuit breakers used for motor protection shall be matched to the motor ratings and shall not trip on motor starting inrush current but shall trip on all overloads in excess of 125% of full load current. The CB shall not trip on 105% of the rated current continuously. Operating curves shall be submitted on request. Motor circuit breakers shall provide Type 2 short circuit coordination with the motor starter unless otherwise specified in the job specification. Circuit breakers used for motor protection shall have an auxiliary contact fitted to allow for remote signalling of closed status.

If circuit breakers are used as an isolating switch they must also comply with Section 9.6 below.

Circuit breakers will be mounted on a suitable chassis with a standard busbar assembly. Chassis shall have a minimum spare pole capacity of 25%. The operating tags of all circuit breakers are to be accessible without the need to open escutcheon doors or exposing any live terminals. Escutcheon cut-outs are to match the maximum number of poles on the chassis. Insulated pole fillers shall be installed to blank spaces. If mounted on sheet metal hat sections, then these shall be manufactured from the same material as the mounting pans and have the same surface finish.

9.6 Isolating Switches

Isolating switches shall be rated for utilisation category AC-23. They shall be padlockable, preferably by a device integral to the switch. Removable latch dog or clip-on type devices are not acceptable. Isolating switches are to be mounted so that they are operable without the need to open escutcheons or expose live terminals. Where extension shafts are used they are to be suitably supported so that they do not sag thus making door closing difficult. Extension shafts shall not exceed 100mm in length. Hat sections shall be used to mount the switch at a suitable position. It shall be possible to open the door with the isolator in the on position (use of tool to operate defeat mechanism is acceptable). The line side terminals of the switch shall be fully shrouded to IP4X. An auxiliary contact is to be fitted to allow for remote signalling of closed status. Every motor shall have a padlockable isolating switch rated to break the locked rotor current.

9.7 Combination Fuse Switches (CFS)

CFS units will only be used when specifically called for in the job specification. CFS units shall comply with AS60947.3 and be of the double break type. Full interphase shrouding is required throughout the travel of the switch. Utilisation category shall be AC-21 minimum and AC-23 for motor circuits. Fuses shall be of the HRC type and be replaceable without the use of special tools. CFS units shall be flush mounting, dustproof and be padlockable in the off position. On-off status is to be clearly indicated by handle position. An auxiliary contact is to be fitted to allow for remote signalling of closed status.

9.8 Fuses

Fuses shall only be used for circuit protection where approved in writing by the Superintendents Representative. Fuses shall be of the HRC type and comply with AS60269. Fuses selection shall suit the fault level of the installation. Fuse holders shall be a fully enclosed type and have fully shrouded contacts. One full set of spare fuses shall be provided for each rating used, (e.g. where fuses protect a 3-phase circuit then 3 spare fuses shall be provided).

Fault current limiting fuses are to be located in an accessible compartment of the switchboard.

9.9 Isolatable Fuse-carrier

Isolatable fuse carriers shall be used to provide short circuit and over current protection to circuits wired on the line side of main switches or metering equipment. The fuse-carriers shall be of fully insulated construction, have a switched disconnection function and be suitable for equipping aM or gG type HRC fuses. Fuses shall be captive. Merlin Gerin STI or equivalent.

9.10 Selector Switches

Selector switches shall be cam operated with a rotary snap action. Contacts shall have a minimum rating of 10A at 250V. Switches shall be suitable for flush mounting and incorporate an engraved escutcheon indicating switch function and its respective positions.

9.11 Pushbuttons

Pushbuttons shall be a heavy duty, IP66 industrial type with a shroud to prevent accidental operation. Contacts shall be rated at 10A minimum and be of the double make-break type with definite over travel limits. Pushbuttons will generally be 22.5mm dia. Colours shall comply with AS 60947.5.1. Start and stop functions shall not be combined in one pushbutton assembly. Emergency stop pushbuttons shall be red mushroom heads, twist to reset.

9.12 Indicator Lights

Indicator lights will be of an IP66 industrial type with a diameter of 22.5mm. Colours shall comply with AS 60947.5.1 as per the following table:

Lamp Colour	Function
Green	Off, Available, Safe condition
Red	Dangerous condition
Amber	Fault
White	Motor run
Blue	Miscellaneous, e.g. Duty selection

Lamps shall operate off extra low voltage (typically 24VAC) and be of the LED cluster type. Lens caps shall be of the optically enhanced type. Lamp brilliance and colour shall be readily distinguishable regardless of the effect of ambient light.

A lamp test button shall be provided to test all indicator lights. Relays shall be used in the test circuit for isolation purposes. The use of diodes will not be accepted.

9.13 Phase Failure Relays

Phase failure relays shall detect loss of phase, phase reversal, undervoltage and phase imbalance and sequence. The relay shall have an integral time delay to prevent spurious operation during momentary fluctuations and shall be self-resetting on restoration of supply.

Typically, a phase failure relay would monitor the main distribution bus within the switchboard to protect equipment from the effects of supply abnormality. A contact controlled by the phase failure relay shall operate in the control circuit of all motors and also a voltage free contact shall be provided for telemetry signalling. A 0-10 minute adjustable time delay shall be provided prior to control circuit re-energisation. The phase failure relay shall be protected by a suitably rated circuit breaker.

For some applications a separate phase failure relay may be required to protect each motor circuit. Where required this will be detailed in the job specification.

Where the switchboard incorporates a change-over switch (either manual or automatic) a separate phase failure relay shall be provided to indicate the status of the Ergon mains supply. This phase failure relay shall be connected to the mains line side of the change-over switch via an isolatable fuse carrier. A voltage free NC contact from this relay shall be wired as a digital input to the telemetry unit to indicate loss of Ergon supply.

9.14 Voltmeter

A voltmeter shall be installed to indicate the phase to phase and phase to earth voltage. The voltmeter shall be a 90^{o} quadrant type, scaled 0-500V. The meter shall be 72mm square (min), dustproof and have an accuracy class of 1.5 in accordance with AS 1042. Terminals on the rear of the meter case are to be shrouded. The voltmeter shall be protected by a suitably rated circuit breaker.

9.15 Ammeter

An ammeter shall be provided for each motor. The meter shall display the current in each phase of the motor circuit. The meter shall be a 90^{o} quadrant type, scaled so that the full load current is approx. 70% of the meter scale and incorporate a 5 times FLC over scale. The meter shall be 72mm square (min), dustproof and have an accuracy class of 1.5 in accordance with AS 1042. Terminals on the rear of the meter case are to be shrouded. Suitably rated current transformers shall be used where a direct wired type is not practical.

9.16 Hours Run Meters

An hours run meter shall be provided for each motor. The meter shall be a minimum 48mm square and consist of a non-resettable cyclometer showing 6 digits plus tenths. Terminals on the rear of the meter case are to be shrouded.

9.17 Contactors

Contactors shall be moulded block, electromagnetic, air break type incorporating double break contacts with arching enclosures. Utilisation category shall be AC-3 (AC-4 for duties involving inching or plugging operation). Coils shall be continuously rated to operate at the control circuit voltage. Contactors shall have a minimum of two auxiliary contacts (1 x N/O & 1 x N/C) over and above what is required for the control circuit. It shall be possible to fit additional auxiliary contacts to any contactor in the switchboard.

Special attention is required where ELV control circuits are used. The contactor may be wired to a 240V AC circuit and switched via a pilot relay from the ELV circuit. Alternatively, it may be possible to use contactors with electronic coil circuits.

9.18 Control Relays

Control relays will be of the plug in type and shall be rated for continuous operation. Each relay shall have an indicator to show state and be enclosed in a clear dust proof case. Contacts shall be rated for the required duty but shall not be less than 5A. Where current exceeds 12A then a contactor shall be used.

Timer relays will be solid state and of the plug in type or suitable for din rail mounting. They shall incorporate an LED to indicate timer operation. Multi-range, multi-function timers are preferred.

9.19 Control Transformers

Low voltage transformers shall be of the double wound type continuously rated with an earthed metal screen between the windings. Output load shall not exceed 80% of the transformers continuous rating.

9.20 Current Transformers (CT) (excluding Supply Authority CT's)

Current transformers shall be housed in a self-extinguishing flame retardant housing and be capable of withstanding the switchboard fault level. The rated primary current shall suit the rating of the controlling device. The secondary current shall be 5A and rated to suit the burden of the connected equipment. Measurement CT's shall have accuracy class 2 minimum. When installed the CT shall be easily removable by mounting on busbar links or short flexible cables.

9.21 Current Transducers

Current transducers shall be used to monitor current in one phase of a motor circuit via a suitable CT. The transducer shall accept either 1A or 5A CT input (selected by on board link) and provide a 4-20mA output that is proportional to the motor current. This output shall be used to provide remote signalling of the motor current via the telemetry system. Transducers shall be loop powered from a 24VDC supply and shall be easily adjusted to suit multiple current ranges. Devices with integral CT's are preferred.

9.22 Power Supplies

Power supplies for instrumentation, PLC or telemetry equipment shall provide a regulated DC output to suit the voltage requirements of the equipment, generally 12V or 24V.

Each power supply unit shall include non-sacrificial protection against input overvoltage and other mains borne transients. Noise rejection characteristics (common mode and normal mode) shall be at least 120dB. Isolation characteristics (input to output) shall provide a capacitance of less than 0.005pf.

9.23 Surge Reduction Filters (SRF)

All power supplies to electronic equipment or instrumentation distribution boards will be wired through a suitably rated surge reduction filter. The surge reduction filter shall have rapid response to transients and noise at any point on the sine wave and not be effected by line or load impedance. The SRF shall include MOV protection and LC filter stages and include status indication.

All contactors and coils larger than 5kW shall have surge suppressing snubbers fitted. The size and type selected shall be in accordance to manufacturer's recommendations.

9.24 Signal Isolators

Signal isolators shall be fully solid state and be capable of receiving a 4-20mA signal. They shall be installed where the loop impedance exceeds the source device capabilities or where specified. Front panel adjustments shall be provided for span and zero settings. Externally powered devices are preferred.

9.25 Transient Barriers

Transient barriers shall be fitted to each end of instrument signal lines, data-lines and communication circuits. The barriers shall incorporate 3 levels of protection (gas arrester, MOV and clamping diodes) and be housed in a DIN mounting enclosure with screw terminals. Current and voltage ratings shall suit the protected equipment.

9.26 Terminals

Terminals are to be din rail mounted tunnel screw type. Terminal housings are to be manufactured from 6.6 polyamide and metallic parts from non-corrodible copper with stainless steel screws. Minimum terminal size shall accommodate $4mm^2$ wiring. Terminals shall be grouped into sections of common voltage with suitable barriers separating them. An individual terminal shall be provided for each wire. Common terminals shall be linked with a bridging strip. All terminals shall have a clip in plastic number and shall match the numbering shown on the electrical schematics.

Where earth terminal blocks are used for the termination of earthing conductors, the terminal block connection to the rail shall not be relied upon to provide earth continuity. Separate earthing conductors shall be used to ensure continuity to the earth bar. An earth terminal shall be provided adjacent each outgoing circuit.

Special attention must be paid to effects of dissimilar metals when using aluminium din rail.

Knifes-edge type terminals are to be used on instrumentation analogue signals to permit isolation and testing. Fuse terminals incorporating HRC type cartridges may be used for instrumentation and I/O circuit power supplies.

9.27 Power Outlet

A 15A GPO shall be mounted on the escutcheon door of every switchboard. The GPO will be protected by a 30mA RCD.

9.28 3-Phase Power Outlet

When a 3-phase power outlet is specified in the job specification the following shall apply.

A 15A 3 phase, neutral and earth (5 pin) switched socket shall be provided mounted either on the escutcheon door or the side of the switchboard cubicle. A 30mA RCD shall be incorporated in to the outlet housing. The outlet shall be Clipsal 56 series or approved equivalent.

9.29 Lighting

An 18W fluorescent light shall be provided in each compartment of the switchboard. The light/s shall be switched by a 10A switch on the escutcheon.

Where a sunhood is fitted, an 18W vandal-proof fluorescent light shall be fitted under the sunhood and shall be switched by a 10A switch on the escutcheon.

External lighting shall not be wired on the same circuits as the switchboard lighting.

All lighting circuits shall be protected by a 30mA RCD.

9.30 RCD Test Socket

To facilitate the testing of RCD circuits a dedicated, round earth pin, unswitched socket outlet shall be provided on the switchboard escutcheon. All RCD circuits shall be connected to this test socket via a selector switch mounted adjacent to the socket. This will allow the test technician to quickly and safely carry out injection tests for all RCD circuits by plugging the test instrument into the socket outlet and using the selector switch to switch individual circuits to the socket for testing. A suitable warning label is to be fitted adjacent the socket outlet to distinguish its function from a standard GPO. A schedule card is to be provided showing switch position relative to the RCD circuit.

The number of circuits switched by a selector switch is to be kept within practical limits. For switchboards with a large number of RCD circuits multiple selector switches will need to be provided.

9.31 Intruder Switches

When intruder switches are specified in the job specification the following shall apply.

Each external door or compartment cover of the switchboard shall have a micro-switch fitted. The micro-switch would be closed when the door / cover is closed. This does not apply to Supply Authority metering compartments. The micro-switches shall be wired in series and connected to a telemetry input to provide remote signalling when a door or cover is opened.

External doors of switchrooms shall have magnetic reed switches fitted to show when a door is opened. These switches would be closed when the door is closed and wired in series with the switchboard micro-switches to a telemetry input.

9.32 Site Security Provisions

In addition to the conduit specified in clause 28.1.7, a 10A 1Φ circuit breaker shall be provided on the distribution chassis for a future security camera installation.

9.33 Anti-Condensation Heaters

Where indicated on drawings, supply and install anti condensation heaters which shall incorporate a thermostat and heat resistant leads. The wattage of the heaters shall have a minimum size of 20 watts per square meter of exposed surface area of the cabinet.

9.34 Circuit Terminations (Power and Control)

The number of terminals and terminal identification shall be based on the outgoing cable connected thereto as follows:

- Sufficient terminals shall be provided for the number of cable cores, including earth wire; and
- Terminals associated with one cable to be numbered consecutively 1, 2, 3 ...etc, with all terminals arranged in one block. The earth terminal shall be adjacent to the terminal containing the highest core number.

10 Motor Starters

10.1 General

Every motor supplied from the switchboard shall be provided with an automatic motor starter. The preferred type of starter is:

- <= 6kW – Direct On-Line (DOL);
- 6kW to 30kW – Soft Starter; and
- >=30kW – VSD

Or as directed by WRC.

When starting current limitations or other operational issues require the use of reduced voltage starting then soft starters shall be used. Only under extenuating circumstances will autotransformer or other starter types be considered.

10.2 DOL Starters

DOL starters shall comprise a contactor and motor protection device (see Clause 11). The starter shall be designed for utilisation category AC3 and an intermittent duty of up to 12 starts per hour. Type 2 coordination with motor protection and short circuit protection devices shall be employed unless otherwise specified in the job specification.

10.3 Electronic Starters

Electronic Starters include soft starters and variable speed drives (VSD) (also known as variable frequency drives (VFD)).

The starter shall be mounted in accordance with manufacturer's instructions paying due attention to the spacing and cooling requirements. The operating temperature of the unit must be maintained within the manufacturer’s specification, typically less than 40°C.

Electronic starters shall be protected by semi-conductor fuses in accordance with manufacturer’s recommendations.

Ensure that manufacturer’s directions are followed with regard to control circuit voltages. Some starters (e.g. AB SMC-Flex) will require the use of control transformers or ELV control voltage.
The disturbance to the electricity supply system due to harmonics generated by the starter shall not exceed the limits specified in AS61000. Radio interference external to the starter shall not exceed the limits specified in CISPR11. The Point of Common Coupling shall be the line side of the main switch of the switchboard that supplies the starter. The chassis of the starter shall be bonded to earth with an earth conductor 20% larger than normal. The supplier shall provide the anticipated harmonic voltages and currents and a conformance statement before construction and shall confirm the predicted values by test during commissioning.

10.3.1 Soft Starters

Soft starters shall have a microprocessor based thyristor control circuit for the control of induction motors operating on a three phase 400/415V 50Hz supply. They shall have a continuous rating, of not less than, the maximum input rating of the driven equipment after allowing for motor efficiency. Soft starters shall be selected for 3-wire connection only, utilisation category AC-53b and 12 starts per hour as a minimum duty.

Starters shall have two modes of starting, standard soft start and a current limiting soft start. In standard mode the terminal voltage shall be increased gradually over the selected ramp time. The peak motor starting current is a function of ramp time. In current limiting mode the peak current shall not exceed a user defined value. Starters shall have the provision for energy optimisation when the motor is running; i.e. the power factor is adjusted to suit the motor load conditions. The starters shall have provision for soft stop. Adjustable controls shall be provided for ramp time, acceleration, deceleration, current limit and stalled current.

The starter shall include protection for microprocessor error, phase loss, open circuit thyristor, short circuit thyristor, motor disconnected, controller temperature, locked rotor and thyristor transient voltage. Motor protection features shall include thermistor, undercurrent, and overcurrent. The starter is to include three CT's for accurate motor current measurement. An auxiliary trip input shall be provided to allow connection of external protection devices such as seal failure. Relay outputs shall be provided for run, fault and top of ramp. It shall be possible to reset a fault trip either via a local reset pushbutton or from a remote reset pushbutton. An analogue output shall be provided when specified in the job specification.

Where called for in the job specification the starter shall have a display panel that can be remotely mounted on the escutcheon door. The panel is to include LED's indicating motor status, starter status, trip status and output relay status. The panel shall also include pushbuttons for local motor control and parameter programming. The starter shall be suitable for local or remote control as selected via a control input.

Soft starters shall be wired via a line contactor to provide positive line isolation. A bypass contactor shall be wired to operate when the motor is up to speed. These contactors shall be controlled via outputs from the soft starter. Particular attention is to be paid to the current and voltage ratings of the starters control relays. Use interposing relays or CR circuit or diodes for inductive loads as recommended by the manufacturer. Where a starter incorporates an integral internal bypass, a separate bypass contactor is not required.

In certain applications the use of less featured soft starters may be considered. Written approval from the Superintendents Representative is required for the use of such equipment.

10.3.2 Variable Speed Drives (VSD)

Variable speed drives shall be of the solid state electronic type with pulse width modulated output suitable for use with squirrel cage induction motors. VSD's shall be suitable for operation from a 240/415V 50Hz mains supply. VSD's must comply with AS/NZS 61800 and AS/NZS 61000 in terms of EMC and harmonic performance.

The VSD shall offer selectable control methods including V/Hz, sensorless vector control and field oriented control. The drive shall have the ability to model the thermal capacity of the motor in order to calculate the motor temperature.

The VSD shall be C-Tick approved for use within Australia. EMC filters shall be integral to the drive and be in accordance with AS61800. Unless otherwise specified the VSD shall comply with the limits specified for installation in the First Environment. Harmonics shall be limited to the levels specified in AS61000. Special attention is required to applications where regeneration will occur. The use of active front ends or similar will be required. Output

chokes shall be used on installations where motor cable length exceeds the drive manufacturer's recommendation or the motor is not rated for use on a VSD.

The drive shall have a keypad for display of status information, fault messages, parameter programming, drive control and monitoring. It shall be possible to remote mount this keypad on the escutcheon door. It shall be possible to control the drive either locally from the keypad or remotely from a PLC, communications network, operator station or the like. Switching to / from local and remote shall be bumpless. The drive shall also have an integral status display visible when the keypad is removed.

The drive shall have the following I/O as a minimum requirement:

- 1 x Analogue input for speed reference – 4-20mA, 0-10V or -10V/+10V. It shall be possible to set reference speed via keypad, remote potentiometer and analogue signal from PLC;
- 2 x Analogue output – 4-20mA. Programmable for output speed, output current, torque, power;
- 8 x Digital inputs programmable for control signals or external trip signals (e.g. seal failure);
- 2 x Relay outputs programmable for fault or status conditions. Relays to have changeover contact available so they can be used as NO or NC; and
- Thermistor input – for monitoring motor temperature.

It shall be possible to add internal expansion cards to increase the I/O of any type above the minimum requirements. Analogue I/O shall generate an alarm for loss of signal or signal outside of range.

The VSD shall include comprehensive fault monitoring and protective functions. This shall include but not limited to:

- Hardware fault;
- Software fault;
- Phase failure;
- Over current;
- Over voltage;
- Over temperature;
- Cooling fan failure;
- Motor overload; and
- Motor over temperature.

A fault history shall record the last eight faults with a log detailing the operational status at the time of each fault. It shall be possible to reset fault conditions either locally or remotely.

The VSD shall have communications capability and support the following protocols:

- Modbus;
- Profibus DP; and
- Ethernet IP.

The use of an internally mounted option card would be acceptable if the protocol is not included in the basic unit.

It shall be possible to program the drive from a PC via suitable software and connection lead (USB connection preferred over serial). It is preferred that the software does not require the use of a software licence token or dongle. If the software is not available for free download, then a licensed copy shall be provided. The connecting lead shall also be supplied with the drive. The software shall provide the ability to upload, download, modify, store and print a full parameter list and be capable of full monitoring and control of the drive. The software must be downward compatible with earlier versions of the drive firmware.

In a switch room type environment, VSD's shall generally be mounted separate from the switchboard cubicle. The IP rating of the VSD enclosure is to be suitable for the environment but shall not be lower than IP44. Smaller drives (e.g. ≤ 7.5kW) may be installed within a segregated, screened compartment of the switchboard provided generous space provisions are made and an effective cooling system is installed. Where it is not possible to install drives in a switch room type environment they shall be enclosed within a cubicle constructed as per Section 8 of this specification with due consideration given to ventilation requirements. It is generally expected that such cubicles will be fitted with an air-conditioner unit.

Variable speed drives are not to be installed in any external cubicles that may be subject to direct sunlight, without prior written approval of the Superintendents Representative.

Care shall be taken to segregate power, control and motor cables. Motor cables for VSD's shall be of the screened type, designed for use with variable frequency motors and be terminated using correct gland types. Screened cables shall be continuous from the motor terminals to the VSD terminals. All wiring and termination is to strictly comply with the manufacturers recommendations.

Where VSD's are used to control sewage pumps, the initial start shall be at 100% to assist with moving potential blockages. After a 30 sec time delay the VSD shall ramp to the required control point as dictated by the control logic.

10.4 Autotransformer Starters

Written approval from the Superintendents Representative is required for the use of autotransformer starters.

Autotransformer starters are to be of the closed transition type. The autotransformer is to be isolated from the circuit once the motor has started. Autotransformers are to be copper wound, 3-coil type and have tapings at 50%, 65% and 80%. Manually reset over-temperature protection shall be provided for the transformer and shall be separately indicated on the switchboard escutcheon. The autotransformer is to be installed in a separately mounted enclosure remote from the switchboard. Where this is not practical the transformer shall be housed in a totally segregated section of the switchboard lined with fire resistant sheeting and have a separate access door. Adequate ventilation shall be provided to prevent excessive heat build-up in the autotransformer enclosure. All wiring between the autotransformer and the starter shall be insulated with fireproof material.

11 Motor Protection

All motors up to 45kW shall be protected by a thermal overload relay (TOL). The TOL shall provide single phasing protection as well as overload protection. The full load current of the protected motor shall be between 30 - 80% of the current range of the TOL. The TOL shall be ambient temperature compensated, have both N/O and N/C auxiliary contacts and shall be capable of both manual and automatic reset. On motors fitted with a soft starter the TOL shall remain in circuit when the starter is bypassed.
Motors with a rating of 45kW or greater shall be protected by an electronic motor protection relay. The MPR shall provide protection for thermal overload, thermistor, single phasing and asymmetry. The MPR shall have N/O and N/C auxiliary contacts, LED indication and be capable of both manual and automatic reset.

All motors shall be provided with over-temperature protection via sensors embedded in the motor windings, e.g. thermistors. The sensors shall be wired in series and connected to a monitoring relay. The monitoring relay shall have N/O and N/C auxiliary contacts and be capable of both manual and automatic reset. The monitoring relay shall incorporate a time delay function to mitigate unreliable operation on power up. The sensors shall be wired on an

ELV circuit. For motors with an electronic starter, separate monitoring relays need not be provided if the starter incorporates suitable inputs and monitoring functionality.

Submersible pumps (either wet or dry mounted) shall be provided with a means of detecting failure of the mechanical seal and/or ingress of moisture. This protection shall stop/inhibit pump operation via the motor fault circuit. A separate indication lamp shall be provided but it shall be common with other motor protection for telemetry signalling of motor fault.

Unless otherwise specified, conductivity type sensors such as Water In Oil (WIO) are to be used as a local warning indication only. Refer to job specification.

Where equipment is supplied with integral protection devices (e.g. thermal switches, moisture switches, insulation monitors etc.) these devices are to be wired in to the motor protection circuit as recommended by the equipment manufacturer.

Where pump monitoring relays (e.g. Grundfos IO111 or similar) are used, they shall be mounted so that the indicating lights are visible and controls are accessible without the need to open escutcheon doors and expose live parts.

All motor protection circuits shall be arranged for fail-safe operation. Generally, the protective devices will be wired in series to a common, maintained fault relay. Should any device trip, the fault relay would be de-energised and signal a fault condition. The motor would be unavailable for further operation until reset. The protective devices would generally be set for automatic reset but the fault relay shall require manual resetting by the operator. A reset pushbutton shall be provided on the escutcheon door. In addition to the reset pushbutton it shall also be possible to reset motor faults remotely via an output from the telemetry unit.

All circuits shall reset automatically after a power failure unless there is a genuine fault present.

For certain installations additional protection may be required for water void, undercurrent etc. Refer to job specification and consult with the suppliers of mechanical equipment to ensure all control and protection elements required for equipment warranty are incorporated.

Motor control circuits shall incorporate a timer function to prevent excessive, frequent starting of the motor. The time delay between successive start attempts shall be based on the duty rating of the motor (ie number of starts per hour). Where the motor is normally controlled via logic within the telemetry unit or PLC (ie system mode) this timer function will be provided by the control software. The start delay timer does not function in manual control mode.

Each motor shall be provided with an available relay which shall be energised when all protective devices are healthy, supply circuit breaker and motor isolator switch are closed and any process or operational interlocks are true.

12 Control Circuits

For basic Form 2 type pumpstation switchboard, there shall be one common control circuit that shall typically operate at 240VAC.

For an MCC style switchboard, Form 3 or Form 4, each motor shall have an independent control circuit that operates at ELV, typically 24VDC.

Circuits that interface to PLC systems shall operate at 24VDC.

A typical motor control circuit shall consist of:

- Duty or Mode selector switch;

- Auto / off / manual selector switch (where required);
- Manual pushbuttons for start, stop and reset;
- Indicator lights for run and common fault;
- Manually reset fault relay;
- Motor available relay;
- Hours run meter (where required);
- Ammeter reading current in each phase (where required); and
- Motor isolator (padlockable).

13 Mounting of Equipment

Equipment is to be arranged to prevent inadvertent contact with live terminals during normal operation of switches, resetting circuit breakers or the like.

All door mounted equipment is to have finger-proof terminals or be fitted with insulating boots / covers. Alternatively, the equipment can be completely screened by a clear, removable cover. Equipment mounted on doors shall be positioned so that the door can be fully opened without damage to the equipment. Adequate space shall be left between equipment for wiring and labelling. A minimum of 30mm shall be provided between ducting and equipment terminals.

All equipment shall be grouped in a logical order.

The term escutcheon shall also refer to the external door in an indoor cubicle.

The following equipment is to be fitted on the mounting pan on the rear wall of the cubicle:

- Main Switch*;
- Circuit breakers*;
- Isolator switches*;
- Motor starters;
- Motor protection relays;
- Control relays, timers etc;
- Current transformers, control transformers, power supplies;
- Neutral link, earth link; and
- Terminal strips.

* The operating handles / tags for switches and CB's are to be accessible from the front of the escutcheon door. Extension shafts are not to exceed 100mm in length. Where hat sections or similar are used they shall be manufactured from the same material and the same surface finish as the mounting pans.

When mounting the main switch and neutral link consideration is to be given to the size of the incoming mains cables. Sufficient space is to be provided for termination. Generally, no equipment is to be mounted within 150mm of the floor of a plinth mounted cubicle.

The following equipment is to be mounted on the escutcheon door:

- Voltmeters, ammeters and associated selector switches;
- Hours run meters;
- Selector switches;
- Pushbuttons;
- Indicator lights;
- GPO;
- Light switch; and
- Any other operating equipment that may be specified, e.g. level control relay.

It shall be possible to reset all protective devices from the escutcheon without the need to access compartments containing live terminals.

A minimum of 20% spare space is to be provided on all escutcheon doors and mounting pans for future equipment. This space is to be in a single, contiguous area and not achieved by multiple small areas.

All equipment is to be fixed with metal thread screws in drilled and tapped holes. Where panel thickness may not provide adequate thread depth to support the equipment then stainless steel threaded inserts may be used.

Use of non-conductive screws (e.g. nylon) will be permitted where insulated fixings are required.

14 Cabling

The circuitry, in conjunction with the components and accessories used, shall be arranged to prevent recycling and feedback and shall generally be fail-safe. Power and control wiring within the cubicle shall be minimum 0.6/1kV stranded copper conductor insulated with V75 grade PVC. Conductors shall be sized to suit the application in accordance with AS 3008. Minimum size shall be 7/050 or 30/025 where flexible conductors are required. Wiring from CT's shall be minimum 2.5mm^2 unless otherwise specified. Instrumentation wiring shall be screened twisted pairs – Olex Dekoron or equivalent. Communications wiring shall be suitable for the particular application. I/O wiring, instrumentation wiring and communications wiring shall be segregated from all LV wiring.

Wiring will generally be enclosed within slotted PVC ducting or neatly loomed using nylon cable ties. PVC ducts shall be adequately sized for the number of circuits within and shall be filled to no more than 75% of its capacity. Lids for ducts shall be neatly cut and mitred at corners. Cable looms shall be supported with PVC saddles as necessary. Where wiring is bundled together in either duct or loom all wiring shall be insulated for the highest voltage present. Wiring to equipment mounted on doors or hinged panels shall be of the flexible type and enclosed in PVC spiral wrap adequately fastened at each end.

Wiring from a circuit fitted with a surge reduction filter shall not be loomed with wiring from unfiltered circuits.

Wiring shall be colour coded as follows:

Function		Colour	Abbreviation
AC Power	3 phase	Red, White, Blue	R, W, B
	1 phase	Red	R
	Neutral	Black	Bk
DC Power	Positive	Brown	Br
	Negative	Orange	O
Control	240V Control	White	W
	ELV Control	Grey	Gr
	Analogue Signals	Black, White scr. pair	Bk, W
	Thermocouple	To suit T/C type	
Earth		Green/Yellow	G/Y

Every control wire is to be identified with a wire number that completely encircles the wire, Legrand Memocab or equivalent system shall be used. The correct sized sleeve shall be

used so that the ferrule is firm on the wire. The wire numbering shall match that shown on the electrical schematics and shall read from left to right, top to bottom. The wire numbering for each drive or device shall be unique.

Power wiring will be terminated on to equipment using suitably sized crimp lugs. Control wiring will be terminated with correctly sized bootlace pins crimped using the manufacturers recommended tool. Each core shall have sufficient length at each termination to allow a fresh connection to be made.

All field wiring, with the exception of power cables 10mm^2 or greater, shall be terminated at a terminal strip comprised of din rail mounted tunnel type screw terminals. A minimum of 10% spare terminals shall be provided at each terminal strip.

Wiring or 10mm^2 or greater can be terminated directly to switchgear using appropriate crimp lugs or similar.

15 Labelling

All equipment shall be identified with an engraved label of a rigid plastic laminate such as Twoplex. The labels shall be screw fixed. Self-adhesive labels or double-sided tape is not acceptable. Labels are to be positioned so that they are not obscured by equipment or wiring. Labels are not to be fixed to removable duct lids.

Labels will generally be black letters on a white background. Warning labels shall be white letters on a red background. Letter height will be selected to suit the particular equipment but as a guide the following shall apply:

Switchboard identification label	25mm
Major equipment labels	10mm
Equipment identification	5mm

The main switch and motor isolators are to be clearly labelled with 10mm white letters on red background. The OFF position shall be clearly marked.

Each item of equipment shall have a unique tag name and the label shall match the tag names shown on the electrical schematics.

Where a switchboard has multiple sources of supply or contains circuits supplied from other locations (e.g., control circuit interlocks) prominent warning labels are to be installed.

16 Fastenings

All bolts, nuts and washers shall be ISO metric complying with the relevant Australian Standards and be manufactured from 316 SS.

Bolts and studs used for constructional purposes shall be provided with a full nut and lock washer. The use of self-locking nuts would be permitted if they are of an approved type that can be used several times without deterioration and the connection is not one that would require frequent undoing. Electrical connections using bolts or studs shall be fitted with flat washer, lock washer and a full nut. Electrical connections using screws shall be fitted with a flat washer and a lock washer.

Screws and bolts shall project a minimum of one thread pitch and not more than three thread pitches beyond the nut or panel. Cover retaining screws shall be of the captive type.

Self-tapping or self-drilling screws shall not be used in any part of the switchboard.

Double-sided tape shall not be used in any part of the switchboard.

17 Electronic Equipment

Electronic circuits and components shall be high grade solid state discrete or integrated circuit devices having been substantially derated for the duty required. All components shall be assembled on high quality fire resistant epoxy fibreglass laminate or similar non-hygroscopic printed circuit boards. Each PCB shall be varnished or similarly protected for use in tropical and corrosive environments. Circuit board components shall be liberally spaced and shall have test points and links provided to assist with fault finding.

All equipment shall be suitable for operation in the vicinity of other electrical equipment and have a high degree of immunity to electrical transients and noise.

17.1 Telemetry Equipment

Where telemetry equipment is specified in the job specification then it shall be supplied, installed and wired by the contractor. Note that telemetry is required on every sewerage pumpstation switchboard. Unless otherwise specified, WRC technicians will carry out the software configuration and integration into the SCADA system. WRC technicians require a minimum of 6 weeks' notice prior to commissioning to allow for scheduling of tasks in to their works program.

A listing of approved telemetry equipment is provided in Appendix B2. Note that certain equipment is mandatory and no alternatives will be accepted. Possible suppliers are also listed but this does not imply they are the only suppliers that can be used.

WRC is progressively implementing a digital radio network to replace the old analogue radio network. It is expected that all new sites will be digital. Only under extenuating circumstances will new sites be added to the analogue network. In such cases, the job specification will detail requirements.

When telemetry equipment is to be located within the switchboard it shall be located in a dedicated section, preferably with a separate internal access door. The telemetry compartment shall be sized and equipment positioned so that it shall be possible to accommodate the future retrofitting of a Schneider Electric SCADAPack ES P500 telemetry unit or a Serck eNet type telemetry unit (including an additional din rail, terminals and wiring duct for the topside I/O connections). Approximate dimensions of this section would be 800mm x 800mm.

All telemetry equipment is to be wired through a terminal strip located in the telemetry section. Sufficient space shall be left on din rails and in wiring ducts to permit the future wiring of 50% additional of I/O of each type (DI, DO, AI and AO).

The signals would be voltage free contacts or analogue signals. If the analogue signal is part of a loop with several devices, it is to be wired via a signal isolator and the telemetry input shall be the last device on the instrument loop. Telemetry digital outputs would be wired through 12VDC interposing relays. A problem currently exists with SCADAPack P334 units. If the P334 losses power or fails, the analogue current loops will also fail. To ensure the integrity of critical instrument loops, a precision 255Ω resistor is to be wired across the analogue input on the P334. As an example, this will be required on the pump well level input on any sewerage pumpstation RTU.

The 240VAC supply to telemetry equipment power supply is to be supplied via a dedicated circuit breaker wired through a surge reduction filter.

When telemetry equipment is to be mounted in a remote cubicle the required signals shall be wired to a segregated section of the field cables terminal strip. The remote cubicle will be a

stainless steel type of appropriate IP rating, approximately 800 x 800 x 300. The cubicle shall be generally constructed in accordance with Clause 8. Sun protection as per Clause 8.3 is required on all external mounted telemetry cubicles.

The job specification will contain details of scope and location of equipment.

Appendix C contains tables showing the required I/O signals and address assignment for several sewerage pumpstation telemetry scenarios. These assignments are not to be varied without written permission of a Whitsunday Regional Council Electrical or Control Systems Engineer. For other telemetry installations the I/O signals and address assignment shall be detailed in the job specification.

Refer to drawings in Appendix A for a typical telemetry schematic for a sewerage pumpstation.

Note that for pumpstations incorporating more than two pumps, dual RTU's may be required. Refer to job specification.

Refer to Clause 28.2 for additional information relating to installation works associated with telemetry equipment.

17.2 HMI Screen

A HMI screen may be requested for an installation at the discretion of Whitsunday Regional Council. Where an HMI screen has been requested, it shall be programmed to show the status of all analogue and digital I/O, status of the PLC and status of the telemetry communications link. All programming delays, counters, offsets and totalisers shall be adjustable from the HMI with the use of a supervisory password, otherwise these parameters will be read only.

In the event where council deems an HMI unnecessary for any installation, spare space shall be provided within the switchboard escutcheon, mounting plane, marshalling, cable entries and door space for an HMI to be retrofitted at a later date. This extra capacity shall be additional to the spare space necessary to fulfil the requirements of the other sections of this specification.

17.3 PLC Equipment

PLC equipment shall only be used where complex control functions warrant. **The job specification will contain specific details if a PLC is required.**

When called for in the job specification the following general requirements must be satisfied.

PLC equipment shall be housed in a segregated section of the switchboard, preferably with a separate internal access door. This can be a shared compartment with telemetry equipment.

The PLC and I/O power shall be supplied through an approved surge reduction filter.
The PLC shall be programmed via an IBM compatible PC. A licensed copy of the programming software, a software manual and the correct programming lead shall be supplied as part of the works, unless the PLC is of an approved type and Whitsunday Regional Council Electrical or Control Systems Engineer gives written direction that it is not required.

A minimum of one complete set of PLC documentation shall be supplied including a descriptive functional specification, ladder diagram (anointed with ample notes, labels and comments to fully describe code), full label listing and full cross reference table. A backup copy of the PLC code shall be provided on CD-ROM.

17.4 Pump Control Relay

Refer to Clause 18 below for a discussion of pump control strategies. For installations where a pump control relay is required the following shall apply.

The preferred pump control relay is a Yokogawa UM33A Digital Indicator (with alarms). This relay will accept a 4 - 20mA signal from the level sensor and provide outputs to drive relays for pump control. Ensure that manufacturer's instructions are followed with regard to freewheel diodes or CR networks on outputs. The UM33A incorporates a digital display and is to be mounted on the escutcheon door.

17.5 Sump Pump Control Relay

In certain applications, such as sump pump control, electrode type level sensors shall be used in conjunction with an electrode relay to control the starting and stopping of the pump. The preferred type of electrode relay is a Multitrode MTR series.

18 Pump Control

This clause is mainly aimed at a sewerage pumpstation installation but could also be applied to other installations. The discussion refers to a typical pumpstation with 2 pumps. For stations with more than two pumps the job specification will detail the pump control requirements.

18.1 Pump Control Strategy

18.1.1 Telemetry Control with Local Control Backup

Unless otherwise specified in the job specification, this strategy would be the default method of controlling pumps at sewerage pumpstations.

A four-position selector switch shall be used to select between System / Off / Local Manual / Local Auto. This switch is to be of a distinct colour or have a distinctively coloured escutcheon plate so that it is readily identifiable to operations staff.

When System is selected the motors would be controlled via logic within the PDS telemetry unit. The logic would monitor the well level analogue signal and start / stop the motors by energising digital outputs. The selection of motor duty and level set points would be via remote SCADA system. All motor starter functions and motor protection functions will be incorporated in the system mode control circuit. Faults would be reset by either an escutcheon mounted reset pushbutton or remotely via the SCADA system. Programming of PDS logic and remote SCADA system would be carried out by WRC unless otherwise specified in the job specification. System would be the normal operating mode for a pumpstation.

When Local Manual is selected the motors will be under local manual control via escutcheon mounted start and stop pushbuttons. There will be no automatic or remote control in this mode however remote monitoring via telemetry would be active. All motor starter functions and motor protection functions will be incorporated in the local (manual) control circuit. Faults would be reset via an escutcheon mounted reset pushbutton. It is intended that this mode of control would only be used during maintenance activities or if there was a critical failure of the telemetry or the auto control equipment.

When Local Auto is selected, pump operation would be controlled by a Pump Control Relay (refer to Clause 17.4). Starting and stopping of pumps would be determined by the wet well level and the set points in the pump control relay. The pump control relay will energise interposing relays to operate in the pump control circuits. Duty selection would be via an escutcheon mounted selector. The duty selector is to have an adjacent label stating that it is

only for use in the Local Auto mode. There will be no remote control in this mode however remote monitoring via telemetry would be active. All motor starter functions and motor protection functions will be incorporated in the Local Auto control circuit. Faults would be reset via an escutcheon mounted reset pushbutton. The duty selector, pump control relay outputs and associated control relays will only be active when the selector switch is in the Local Auto position. A time delay is to be incorporated in the Local Auto mode to ensure that pump available relays and other circuitry has operated before the control mode becomes active.

It is only intended that this mode of control is used if there is a critical failure of the telemetry equipment.

18.2 Pump Operation Methods

This clause describes two (2) common methods of pump operation employed in WRC sewerage pumpstations. Other methods may be employed to meet the requirements of a particular pumpstation. (refer to the job specification).

18.2.1 Pump Operation Method 1

The pumps are configured to operate in a standard duty / standby arrangement. Typically, the two (2) pumps would be the same size. Duty selection is effected via SCADA in System Mode or by an escutcheon mounted selector switch in Local Auto Mode. This discussion assumes that Pump 1 has been selected for duty and Pump 2 for standby. The same principle applies if Pump 2 was selected as duty pump.

When the level in the pump well rises to the duty start level, Pump 1 will start and pump down to the stop level. If the level continues to rise and reaches the standby start level, Pump 2 will start and both pumps will operate in parallel until the stop level is reached. If the duty pump becomes unavailable, then the standby pump will be enabled to operate off the duty start level.

It shall not be possible for both pumps to start simultaneously, e.g. after a power fail when well level may be high.

In some circumstances it is not desirable to have the pumps operate in parallel. In these cases, the duty pump would be stopped at the standby level and after a short time delay the standby pump would start. If the standby pump becomes unavailable, then the duty pump would be re-enabled.

The job specification will detail if parallel operation is required or not.

18.2.2 Pump Operation Method 2

This method applies to stations where pumps are of different sizes. Typically, one pump would be sized for 2 x ADWF and would be the main duty pump. The second pump would be sized for 5 x ADWF and would only run during high flow periods (e.g. rainfall events) or when specifically selected by the operator. Pump 1 is always the small pump and Pump 2 is the large pump. Duty selection is effected via SCADA in System Mode or by an escutcheon mounted selector switch in Local Auto Mode. In normal operation Pump 1 is selected for duty. Pump 2 is only selected for duty for a short period each month to exercise the pump.

Normal operation is with Pump 1 selected for duty. When the level in well rises to the duty start level, Pump 1 will start and pump down to the stop level. If the inflow is greater than Pump 1's capacity and the level continues to rise to the standby level, Pump 1 will stop and after a short time delay Pump 2 will start. Pump 2 will pump down to the stop level and turn off. When the level next rises, Pump 1 will resume normal operation. Should Pump 2 fail after operation has initiated then Pump 1 must be re-enabled and start operation immediately. If Pump 1 becomes unavailable, then Pump 2 will operate off the standby level.

It shall not be possible for both pumps to start simultaneously, e.g. after a power fail when well level may be high.

When Pump 2 is selected for duty, Pump 1 will not run under normal conditions. Pump 2 will operate off the duty level. Should Pump 2 become unavailable then Pump 1 must be enabled to operate off the duty start level.

19 Miscellaneous Equipment

The equipment discussed in the following Clauses is generally only applicable to sewerage pumpstation installations however it can also be called for other types of installation.

19.1 Level Sensor

All sewerage pumpstations are to be fitted with a level sensor. For other facilities it shall only be provided when specifically detailed in the job specification.

Level sensors will be of the hydrostatic pressure measuring type. The housing shall be stainless steel with a capacitive ceramic sensor element and stainless steel diaphragm. This sensor connects to a separately mounted transmitter incorporating zero and span adjustments. Unless otherwise specified the sensor shall be ranged 0 -10m. The sensor shall be supplied with a minimum 12m of cable and a strain clamp for suspension in the pumpwell. In turbulent wells, a stilling tube or suspended weight may be necessary for a satisfactory installation. The transmitter is generally mounted in the switchboard. The transmitter will output a 4 - 20mA/HART signal in proportion to the level in the pumpwell. The preferred type of level sensor is a Vega Vegawell 52 with a VegaDis 62 Transmitter. Typical catalogue number for a Vegawell 52 with HART protocol, 0-10m range and 27m of cable is Vegawell 52.XXA4AMD1DD1X. The part number of the Vega transmitter is DIS62.XXKMCSX (with display). The Vega transmitter shall be positioned in such a way as to allow easy removal / replacement of the cover during installation and calibration work.

19.2 High Level Alarm (HL)

All sewerage pumpstations are to be fitted with a high level alarm.

A float switch shall be installed in the wet well to provide a high level alarm signal. The float switch will be a mechanical switch enclosed in a polypropylene ball, suspended by its own cable. The float switch contact shall be a change-over type. The float would operate on a battery backed 12VDC supply (typically the telemetry system power supply) and be an input into the telemetry system. In certain specific applications it may be used to initiate an alarm light as detailed below.

The preferred well High Level float switch is Flygt model ENM 10. The float switch shall be configured fail safe such that a normal well level is a closed input. This input shall be wired directly to the RTU.

19.3 Critical High Level Alarm (HHL)

All sewerage pumpstations are to be fitted with a critical high-high level alarm.

A float switch shall be installed in the wet well to provide a critical high-level alarm signal. The float switch will be a mechanical switch enclosed in a polypropylene ball, suspended by its own cable. The float switch contact shall be a change-over type. The float would operate on a battery backed 12VDC supply (typically the telemetry system power supply) and be an input into the telemetry system. In certain specific applications it may be used to initiate an alarm light as detailed below.

The preferred well High High Level float switch is Flygt model ENM 10. The float switch shall be configured fail safe such that a normal well level is a closed input. This input shall be wired directly to the RTU.

The flexible cables shall be capable of supporting the weight of the ball float and cable without the need for additional support. The ball bloat cable length shall be sized to allow position adjustment within the well entirety. This ball float shall be installed in accordance with the manufacturer's installation instructions at the RL of 300mm below the overflow for the station.

19.4 Alarm Light

This shall only be provided when specifically detailed in the job specification.

A flashing alarm light shall be installed to indicate high wet well level. This alarm light shall be a weatherproof (IP66D) and vandal proof fitting mounted on top of the cubicle (or external to building). A wire guard shall be fitted. It shall be connected to a flashing relay activated by the float switch detailed above and shall be manually reset by an escutcheon mounted pushbutton. The lamp shall be clearly visible from a distance of several hundred metres.

The alarm light shall operate off either 240VAC or 24VDC as specified in the job specification. Where a DC supply is specified it shall be supplied via a separate battery backed power supply (ie not the telemetry supply).

19.5 Diesel Pump

This shall only be provided when specifically detailed in the job specification.

A diesel pump is installed at some pumpstations to provide emergency pumping capacity when Ergon supply has failed. The diesel pump will have its own dedicated level sensors and control panel and will operate independently of the electric pumps.

A dedicated 240V 10A circuit breaker is to be provided in the switchboard for the diesel pump battery charger.

The following voltage free input signals are to be wired to telemetry terminal strip:

- Diesel pump started (1 x DI);
- Diesel pump failed to start (1 x DI);
- Diesel pump fault (1 x DI);
- Diesel pump flow (from limit switch on reflux valve) (1 x DI); and
- Starting battery low voltage (1 x DI via suitable relay).

The starting battery low voltage signal can be provided by a process relay similar to APCS PA201. The relay monitors the battery voltage and if it falls below the trip set point (e.g. 10.5V) then an output contact will be used to provide the signal to the telemetry system.

19.5 Disconnection Chamber

This shall only be provided when specifically detailed in the job specification.

The disconnection chamber shall be an extension of the switchboard cubicle and shall be fabricated from the same materials. The chamber will be fitted with a lockable door and would generally be located at the very bottom of the switchboard. It shall be completely segregated from the rest of the switchboard. The chamber would have no bottom but a gland plate would be fitted between the chamber and the cubicle proper. Cables from the sockets into the switchboard proper shall be fitted with a secure cable gland at the gland plate. The disconnection chamber will require ventilation openings as per Clause 8.5.

The chamber will house decontactor type sockets to allow the disconnection of pumps by non-electrical personnel. The sockets are to be Marechal or equivalent. Matching plug tops are to be supplied for fitting to pump cables. Ensure that the conduit access into the well can accommodate the plug size and can be easily pulled through with all cabling installed.

For some sites it may be preferable to have the pump disconnection chamber separate from the switchboard (e.g., where the switchboard is installed remote from the pumpwell). It would be acceptable to utilise an URD type distribution pillar or a 316 stainless steel cubicle to house the decontactor sockets.

19.6 Pumpstation Ventilation Fans

This shall only be provided when specifically detailed in the job specification.

The ventilation fans in pumpstation buildings shall have an Auto – Off – Manual selector switch. In manual they shall operate continuously. In auto they shall be controlled via a 24hour time clock such that they operate for a 30-minute period twice a day, once at 6AM and once at 6PM.

20 Emergency Power

Provision is to be made for emergency power at all WRC facilities. At critical sites a permanent standby generator will be installed. The full requirements for a permanent generator will be detailed in the job specification. Clause 20.1 below serves only to highlight some particular requirements. For other sites, provision is to be made for the easy connection of a transportable generator set – refer to clause 20.2 for requirements. There may also be a requirement to allow for future connection of a permanent generator at an installation, at the discretion of WRC. In this case, the switchboard modifications required for future connection of a permanent generator shall be outlined in the job specification, including all applicable parts of section 20.1 below.

20.1 Permanent Standby Generator

When a permanent standby generator is to be provided, the job specification will fully detail all requirements. The following are some of the general items required for a diesel generator installation:

- Generators will be supplied with a fuel tank with sufficient capacity for minimum 24 hours running at full load;
- The generator will have a circuit breaker to protect the output cable;
- An automatic transfer switch and logic panel is to be provided to detect loss / restoration of Ergon supply and switching to/from the generator supply. The transfer switch can utilise circuit breakers or contactors to suit the installation requirements. The logic panel is to be a commercially available type. A single switch shall be provided to allow operations personnel to test the generator and change-over function. This switch shall simulate a mains failure, start the generator and transfer site loads on to the generator. A contact from this switch shall be wired to a telemetry input for monitoring purposes;
- Due to the cyclic nature of pump operation it may be necessary to have an automatically switched load bank to prevent the generator running under light load situations. The load bank would typically comprise resistor elements mounted within the exhaust air ducting. The load bank shall be controlled by a load sensing controller. The load bank controller shall have facility to accept a disable signal from the site control system, e.g. this may be used to drop out the load bank prior to large loads coming on line;
- For installations where an internal load bank is not practical, the job specification may call for provision to be made for connection of a transportable load bank. In this case, connection to the switchboard shall be made via a 3-phase 150A decontactor inlet socket (e.g. Proconect 3PS9A3NE01) via a suitably rated circuit breaker;

- For other sites a stand-alone external load bank may be required. The job specification will detail requirements;
- A dedicated 240V 10A circuit breaker is to be provided in the switchboard for the generator battery charger; and
- The following voltage free signals to be made available at a terminal strip for wiring to the telemetry equipment:
    - Generator running;
    - Generator fault;
    - Generator failed to start;
    - Generator low fuel warning (approx. 2 hours' run-time left);
    - Generator starting battery voltage low (1 x DI via suitable relay);
    - Generator circuit breaker closed;
    - ATS Mains supply position;
    - ATS Generator supply position;
    - Generator test switch active; and
    - Load bank healthy.

If the generator control panel does not provide a starting battery voltage low alarm directly then a process relay as described in clause 17.4 above can be used.

- Where the generator is to be installed external to a building the following requirements shall apply:
    - The unit shall be fully enclosed in a vandal-proof, acoustic enclosure. The top of the enclosure is to be manufactured from stainless steel and painted;
    - The enclosure shall have no glass or perspex panels;
    - Lockable covers shall be provided for all access hatches including radiator filler and fuel filler – to suit WRC padlock system;
    - There are to be no exposed hot surfaces;
    - A cage shall be fitted over the exhaust cap; and
    - Noise rating is not to exceed 70dB at the boundary of the facility.

20.2 Mobile Generator Connection

For facilities where a permanent standby generator is not installed and the maximum demand is less than 110kVA (with due consideration for motor starting requirements) provision shall be made for the connection of a mobile generator set. Contact WRC's Electrical Technical Officer to verify what generator connection is required for any given site.

For sites with a maximum demand of less than 110kVA (with due consideration to motor starting requirements) a 150A decontactor type inlet socket is to be provided either fitted to the switchboard (for an external board) or, where the switchboard is located inside a building, mounted in an accessible, external location. The socket is to be a Marechal DS9-3198017, Cutler Hammer CH9A3NE01 or Proconect 3PS9A3NE01 and is to be mounted in a suitable wall box and fitted with an inlet cap.

For sites with a maximum demand of less than 65kVA (with due consideration to motor starting requirements) a 90A decontactor type inlet socket is to be provided either fitted to the switchboard (for an external board) or, where the switchboard is located inside a building, mounted in an accessible, external location. The socket is to be a Marechal DS6-3168017, Cutler Hammer CH6A3NE01 or Proconect 3PS6A3NE01 and is to be mounted in a suitable wall box and fitted with an inlet cap.

The following requirements are common to all sites to be fitted with a mobile generator connection:

- A suitably rated circuit breaker is to be fitted downstream of the inlet socket to limit the generator current to suit the switchboard wiring. This circuit breaker is to be suitable for a

fault level of 18kA minimum. The circuit breaker shall comply with Clause 9.5 and also Clause 9.1 in terms of mounting, extension shafts, locking and labelling;

- A manual change-over switch, rated to the generator full load current, is to be provided in the switchboard to select between Ergon supply, off or generator supply. It shall not be possible for both supplies to be selected at the same time. All line side terminals (Ergon and Generator) are to be shrouded to IP4X. The change-over switch shall also comply with Clause 9.1.1 in terms of mounting, extension shafts, locking and labelling;
- A set of three indicator lights are to be wired to the Ergon line side of the change-over switch via a suitably rated isolatable fuse-carriers. The purpose of these lights is to alert operators that Ergon power has been restored. A suitable warning label is required to show these indicators are not isolated by the main switch or change-over switch. Refer also to clause 9.13 regarding the provision of a phase failure relay on the Ergon line side;
- In addition to the inlet socket, a set of terminals shall be provided behind the escutcheon panel as an alternative generator connection point. This is to accommodate generators that do not have an outlet plug compatible with the inlet sockets stated above. Refer to drawing WRC24-R13-03. The cable connecting the generator inlet to the changeover switch, neutral link and earth link shall be flexible cable. The conductors on the socket end shall be terminated with bootlace pins. The cable shall be long enough to allow easy disconnection and reconnection between the inlet socket and the inlet terminals; and
- Provision shall be made in the side of the changeover section for temporary generator cable entry. Any holes or doors provided must not compromise the IP rating of the panel. The cable entry shall incorporate means to support the incoming cable (e.g. gland or clamp).

For certain installations it would be acceptable to have the transfer switch, circuit breaker and decontactor inlet socket mounted in a separate enclosure. The enclosure would be IP56, fabricated from 316 SS, have a blank external door (padlockable or require a special tool to open) and an internal escutcheon door. The inlet socket is to be mounted on side of cubicle and changeover switch and circuit breaker operable from the escutcheon. There shall be no exposed live parts when the external door is open.

20.3 Other Facilities

For facilities where a permanent standby generator is not installed and the total demand is in excess of 110kVA (with due consideration to motor starting requirements) or when specified in the job specification, generator connection links are to be provided. The purpose of the links is to permit the quick and easy connection of a transportable generator via a trailing cable. For an outdoor switchboard the connection links are to be housed in a dedicated section of the switchboard. For an indoor switchboard the connection links are to be housed in an IP65 stainless steel enclosure mounted in an accessible, external location.

The generator connection link shall be designed so that the cable termination is adequately protected and supported and all doors, covers and the like can be closed and secured with the trailing cable connected.

The trailing cable shall terminate on to copper busbar with brass studs, stainless steel threaded inserts or bolted connections. All necessary hardware is to be supplied including bolts / studs, flat washers, spring washers and nuts. Stud / bolt size is to suit the size of connected cables but shall be not less than M8. The terminations and busbar are to be shrouded to prevent inadvertent contact with live parts.

The busbar links are to be connected to a manual change-over switch via a circuit breaker using suitably rated cable. The circuit breaker is intended to limit the generator current to match the switchboard design specification and shall have a minimum breaking capacity of 35kA. The circuit breaker shall comply with Clause 9.5 and also Clause 9.1 in terms of mounting, extension shafts, locking and labelling. The connection links and wiring to the circuit breaker are to be rated for a minimum of 150% of the maximum demand of the switchboard.

The manual change-over switch shall be rated for the same current as the main switch. The change-over switch shall select between Ergon supply, off or generator supply. It shall not be possible for both supplies to be energised at the same time. All line side terminals (Ergon and Generator) are to be shrouded to IP4X. The change-over switch shall also comply with Clause 9.1.1 in terms of mounting, extension shafts, locking and labelling.

A set of three indicator lights are to be wired to the Ergon line side of the change-over switch via a suitably rated isolatable fuse-carriers. The purpose of these lights is to alert operators that Ergon power has been restored. Refer also to clause 9.13 regarding the provision of a phase failure relay on the Ergon line side.

For certain installations where the generator connection links are mounted in an external enclosure it would be acceptable to also have the transfer switch and circuit breaker located externally. The enclosure would be IP65, fabricated from 316 SS, have a blank external door (padlockable or require a special tool to open) and an internal escutcheon door. The changeover switch and circuit breaker would be operable from the escutcheon. There shall be no exposed live parts when the external door is open.

21 Inspection and Testing

During the construction of the switchboard every facility shall be accorded the Superintendents Representative to inspect the works in progress at any time. The following stages are mandatory inspections:

- Completion of sheet metal fabrication prior to installation of equipment; and
- Completion of construction prior to workshop testing.

Works shall not proceed past these stages until the Superintendents Representative has been advised and inspections completed or written confirmation is received from the Superintendents Representative that an inspection is not required. Note that inspections shall not take place until adequate workshop drawings have been submitted - refer clause 22.

The switchboard shall be thoroughly tested at the contractor's workshop at the completion of construction works. The Superintendents Representative shall attend, to witness the workshop testing (or shall notify the contractor in writing that witness testing is not required). All equipment and personnel necessary for carrying out the tests shall be provided by the contractor. A schedule of proposed testing shall be submitted to the Superintendents Representative for approval seven (7) days prior to the date of workshop testing.

The Superintendents Representative shall be given seven (7) days' notice in writing of the need for inspections and testing. The cost of the Superintendents Representatives' attendance will be borne by the Principal except where return visits are necessary due to the failure of equipment on the initial visit. In these cases, the costs incurred would be deducted from monies owed to the contractor.

Workshop test shall include but not be limited to:

- All routine tests to relevant Australian Standards;
- Operational test of all devices including interlocks, PLC's (Field I/O shall be simulated during these tests);
- Insulation resistance (excluding electronic equipment); and
- Earth continuity.

Where called for in the job specification, Type Test assemblies shall be used and certificates shall be provided on request.

The passing of inspections and tests at the workshop shall not prejudice the right of the

Superintendents Representative to reject whole or part of the switchboard if it does not comply when erected on site.

After completion of site erection, the installation shall be thoroughly tested. The Superintendents Representative shall attend to witness the site testing (or shall notify the contractor in writing that witness testing is not required). All equipment and personnel necessary for carrying out the tests shall be provided by the contractor. A schedule of proposed testing shall be submitted to the Superintendents Representative for approval seven days prior to the date of workshop testing.

The Superintendents Representative shall be given seven (7) days' notice in writing of the need for inspections and testing. The cost of the Superintendents Representatives' attendance will be borne by the Principal except where return visits are necessary due to the failure of equipment on the initial visit. In these cases, the costs incurred would be deducted from monies owed to the contractor.

Site tests to include but not be limited to:

- Check tightness of all electrical connections;
- Electrical safety tests as per AS3000;
- Insulation Resistance (excluding electronic equipment);
- Earth continuity;
- Operational tests of all circuits and devices including interlocks and fault circuits; and
- Analogue signal calibration at five points on scale (rising & falling inputs).

Where the Principal is required to carry out programming of telemetry equipment or control system elements a minimum of 6 weeks written notification of the anticipated date of commissioning is to be given to WRC's Electrical Systems Engineer to allow works to be scheduled.

Where required by the job specification a thermoscan shall be carried out of the switchboard at the completion of commissioning and 2 weeks prior to the end of the defects liability period.

The results from all tests are to be recorded on approved forms and included in the Operating and Maintenance Manuals.

22 Drawings

Electrical schematics are to be prepared in accordance with AS 4383 and preferably be of horizontal orientation. Symbols are to be in accordance with AS 1102, designated as per AS 3702 and be complete with line number cross-references for coil and contacts. Cubicle construction drawings are to be prepared in accordance with AS 1101. Drawings are to include provision for Council document number. The drawings included in Appendix A can be used as a guide for the standard of drafting required.

Each component or item of equipment used in a project shall have a unique tag name and wire numbers. The use of a unique prefix in front of the tag name or wire number is acceptable for multi-cell MCC type switchboards.

Workshop drawings are to be submitted to the Superintendents Representative for review prior to construction. Workshop drawings are to include sufficient detail of switchboard components to allow design check including but not limited to:

- Design parameters for switchboard including ratings of mains, sub-circuits, motors etc;
- Make and model of key components, e.g. circuit breakers, contactors, motor starters, protective devices, isolators etc;
- Rating of power wiring / bus;

- Settings of protective devices; and
- Parameter settings for soft starters / VSD's.

The contractor shall allow a period of 14 days in their program for design review by Superintendents Representative. Construction of switchboard is not to proceed until design review has been completed.

After the completion of workshop construction/testing the drawings are to be revised to "As-built" status and a copy forwarded to the Superintendents Representative prior to commencement of site installation / commissioning. Once the site installation works are completed and commissioned the drawings shall be revised to "As-installed" status. Unless otherwise specified three copies of the as-installed drawings are required in addition to those included in the manuals described below. One set is to be laminated and be suitable for keeping in the switchboard cubicle on site.

In addition to the hard copies specified above the as-installed drawings shall also be supplied on CD-ROM as a vector file in *.dwg format that can be edited in AutoCAD 2012. All x-refs, fonts, linetypes etc. used in the drawings shall be included on the disk. To assist with plotting of drawings *.pcp files shall also be included.

(Note: Where the contract is for supply only of switchboard then the requirements for as-installed drawings shall apply to the as-built drawings.)

23 Manuals

Unless specified otherwise, three hard copies of an Operation and Maintenance Manual shall be provided. The manual shall be a hard covered plastic four ring binder and shall include as a minimum the following:

- Electrical schematics (enclosed in plastic envelopes);
- Equipment list detailing item designation, type, manufacturer, catalogue numbers, ratings and local supplier;
- Manufacturers literature all equipment supplied (in English language);
- Listing of all settings/set points for all protective and control devices including timers, relays etc.;
- Detailed, step by step, programming instructions for all devices;
- PLC documentation where applicable;
- Test results (workshop and site);
- Equipment warranties - in name of Principal;
- Circuit design data including breaker selection, cable sizing etc.;
- Electrical installation test results; and
- Maintenance instructions for all equipment including a schedule for when maintenance tasks are to be carried out.

Draft Operation and Maintenance (O&M) Manuals are to be submitted to the Superintendents Representative for approval six (6) weeks prior to commissioning. Within two (2) weeks of commissioning, the manuals are to be revised to as-constructed status and submitted for final approval. Practical Completion will not be granted until approved Operation and Maintenance Manuals have been received by the Superintendents Representative.

In addition to the hard copies specified above, one digital copy of the Operation and Maintenance Manual shall also be provided. The digital copy shall be supplied on CD-ROM and consist of pdf files, word documents, excel files etc. that can be opened with standard software programs such as Adobe Reader and Microsoft Office.

24 Certification by RPEQ

Where required by the job specification the whole of the electrical installation shall be inspected and certified by a Registered Professional Engineer (Queensland). Unless otherwise specified the certification is to confirm:

- Compliance with the Electrical Safety Act;
- Compliance with applicable Australian Standards;
- Compliance with the contract documentation;
- Correct function of all circuits and equipment; and
- Suitability of installation test results and settings of protective devices.

It is recommended that a staged approach be used for RPEQ certification including:

- Review of workshop drawings and design information;
- Inspection of switchboard prior to delivery to site; and
- Site inspection and test review prior to final commissioning.

The RPEQ certification report is to be submitted to the Superintendents Representative prior to final commissioning and a copy included in the Operation & Maintenance Manuals.

Note that regardless of the requirement in the job specification, RPEQ certification may be required for other elements of the works to comply with Codes of Practice, Supply Authority requirements etc.

25 Preferred Suppliers

Appendix B contains a list of preferred equipment suppliers. This listing is provided to ensure that equipment supplied will be compatible with our existing plant and to minimise our stock holding of spare parts.

All equipment supplied should be available from Mackay suppliers who maintain stock so that replacement parts can be obtained at short notice in an emergency situation.

26 Spare Parts

Unless otherwise specified in the job specification the following spare parts shall be supplied with the switchboard as a minimum requirement:

- One contactor (complete assembly) of each size and voltage rating used;
- 4 off Thermistor relay;
- 1 off thermal overload relay;
- 2 off phase failure relay;
- 1 off seal failure relay;
- Six off control relay of each type and voltage rating used (including base);
- One timer of each type and voltage rating used (including base);
- Ten spare indicator lamps of each type / colour and voltage rating used, for LED indicators only four of each colour and voltage are required; and
- Six spare fuse cartridges of each type and rating used (including semi-conductive fuses).

27 Warranties

All equipment warranties, registrations etc. shall be made out in the name of the Principal and submitted in accordance with the supplier's instructions. Copies of all documents are to be included in the manuals.

28 Installation Considerations

This section is not a complete installation specification. It serves only to highlight certain issues that require consideration or have been recurring problems with recent contracts.

28.1 Electrical Installation

28.1.1 Electrical Work

All electrical work shall be performed by qualified electrical workers holding an appropriate certification / licence issued by the Electrical Safety Office, Queensland.

The person or firm responsible for the electrical work shall hold an Electrical Contractors Licence issued by the Electrical Safety Office, Queensland.

28.1.2 Design Information

The contractor is to supply full design information in regard to the electrical installation. This is to include but not limited to:

- Site power supply calculations including maximum demand and fault level;
- Cable calculations for all cables including current carrying capacity, voltage drop, short circuit and earth fault loop impedance. Spare cable capacity is also to be noted;
- Cable schedule showing size, type, route length, installation method, design load; and
- Circuit breaker selection data including cascade, discrimination, trip times, settings.

This information is to be supplied to the Superintendents Representative for review 2 weeks before the commencement of works / placement of orders.

28.1.3 Electricity Supply

Unless specifically excluded in the job specification the contractor is prepare the application for electricity supply, lodge the application with the supply authority and pay all associated fees. WRC will sign the form as required.

The point of supply can be either a URD type pillar or a property pole as required to meet supply authority requirements and/or site flood levels. If a property pole is used it must be positioned so that aerial cables are not installed across entrance roads, pump wells or vehicle working areas. Property poles and installation is to be certified by an RPEQ in accordance with Ergon requirements.

Where riser brackets are utilised they are to be certified by an RPEQ in accordance with Ergon requirements.

Where underground conduits are installed for Ergon's use, their position is to be accurately marked up on a site plan and certified by an RPEQ.

28.1.4 Consumer Mains

Consumer mains are to be designed with a minimum of 30% spare capacity over and above the calculated site maximum demand.

Consumer mains are to be installed underground to the point of supply. Under no circumstances are aerial cables to be installed across entrance roads, pump wells or vehicle working areas.

28.1.5 Main Earth

The main earth is to be installed in an accessible position and be protected from damage by mowers, line trimmers and the like. The protection must provide adequate room to allow disconnection of the earth for testing purposes. A commercial earth pit is preferred. The earth stake is not to be installed in a location where it is likely to become embedded within a

concrete slab, bitumen or landscaping.

28.1.6 Switchboard Location

When a switchboard is to be located adjacent to a pumpwell / valve chamber it is to be installed so that the switchboard doors open away from any hatch openings. Access to the switchboard is not to be impeded by mechanical equipment, safety rails (which may not be a permanent installation), landscaping etc. A suitable concrete slab is to be provided in front of the switchboard as a work area for electricians when working on the switchboard. Often this slab is added after completion of installation works – refer to Clause 27.1.4 regarding earth stake location. The area in front of the switchboard is to be at one level – no step.

28.1.7 Conduits

Conduits are to be of an adequate size to suit the installation requirements. Particular attention is to be paid when sizing conduits between a switchboard and a pumpwell. If the pump cables are to be fitted with plugs, then conduit must be large enough to permit the passage of the plug top with all other cabling installed. The use of bends must be kept to an absolute minimum. All bends must be long radius type.

At sewerage pumpstations 2 off 25mm conduits are to be installed from the switchboard to the base of the vent pole. One conduit may be used for lighting or antenna cabling. The other conduit will be for a future security camera (to be installed by Council).

A non-corrodible draw wire is to be left in all conduits.

The ends of all conduits are to be sealed to prevent ingress of dirt, debris or vermin. Special attention is required for conduits going to a sewerage pumpwell to prevent ingress of sewerage gases into switchboard.

28.1.8 Underground Cable Routes

The routes of all underground cables (including the consumer mains) are to be accurately marked up on a site plan, complete with dimensions from permanent landmarks / features. A laminated copy of this plan is to be left in the switchboard and other copies included in the O&M manuals.

28.1.9 Submersible Pump Cables

Cables for submersible pumps are to be suspended in the pumpwell from SS hooks adjacent the hatch opening. Excess cable is to be neatly coiled (taking due notice of minimum bending radii of the cable) and tied to these hooks.

28.1.10 Level Sensor Installation

Level sensors are to be suspended in the pumpwell from SS hooks adjacent the hatch opening. Excess cable is to be neatly coiled (taking due notice of minimum bending radii of the cable) and tied to these hooks. It shall be possible to remove the level sensor from the pumpwell without any need to enter the well. Float switches are not to be installed in small diameter conduits fixed to the pump guide rails.

When installing the level sensors, measures must be taken to ensure that level sensors remain suspended vertically and are not affected by any turbulence within the pumpwell. The preferred method is to fix a smooth weight to a stainless steel cable and suspend this from a SS hook adjacent the hatch opening. The level sensor cable can then be tied to the stainless steel cable and lowered into the well. The whole assembly can be withdrawn from above the hatch opening. A large diameter stilling tube can also be employed however in sewerage wells these can become a trap for rags etc. and should be avoided except in extreme cases.

All level sensors shall be wired from an ELV power supply.

28.1.11 Documented Electrical Test results

At the completion of electrical installation works all circuits are to be tested for safe operation in accordance with the Electrical Safety Act and the requirements of this specification. The test instrument readings and results are to be recorded and documented in a report to be delivered to WRC's Electrical Technical Officer. The report is to include the electrical contractors licence number and be signed by the contractor.

The testing required will include but not be limited to:

- Earth continuity;
- Insulation resistance;
- Polarity;
- Earth fault loop impedance;
- RCD trip times; and
- Correct circuit connections.

Practical completion will not be granted until the documented test results are received by WRC's Electrical Technical Officer.

28.2 Telemetry Installation

28.2.1 Radio Path Survey

When telemetry equipment is to be installed the contractor shall be required to undertake a radio path survey to verify the suitability of the signal path and determine the requirements for antenna selection and masting. The radio path would be a line of sight from the facility location to one of the radio repeaters in WRC's existing network. Contact WRC's Electrical Systems Engineer to determine which radio repeater site is to be utilised.

An acceptable radio path would have a minimum fade margin of 25dB (with ALL attenuation and losses included). The Received Signal Strength Indication at the site is to be greater than -70dBm. If the signal is marginal it may be possible to improve the signal through the use of a higher gain antenna or increased antenna mast height. If an acceptable signal path cannot be established to the site, then the contractor must provide an acceptable alternative or contribute to the establishment of a new repeater site.

28.2.2 Antenna Installation

Typically, a 6dB Yagi type antenna is used at our telemetry sites. The Yagi type antenna is to be mounted with horizontal polarisation on a bracket that can swivel through 180° to allow correct alignment. Higher gain antenna may be required at some sites and additional consideration must be given to their mounting requirements as they are physically larger and have a higher wind loading.

Masting requirements will vary from site to site. In some cases, small goose-neck type brackets will suffice while others will require pole type masts. Where pole type masts are employed, structural certification from a registered RPEQ will be required in terms of footings, wind loadings etc.

Generally, antenna masts and fittings will be constructed from hot dipped galvanised materials. In coastal or corrosive environments stainless steel materials will be required (including SS antenna).

When designing masts and antenna mounts consideration is to be given to access by maintenance personnel. Where antenna cannot be safely reached from a step ladder then the design must incorporate a means of lowering the mast to a safe working level (without

exceeding the minimum bending radius of the antenna cable). The need of specialised access equipment such as EPV's should be avoided.

Consideration must also be given to vandalism. It shall not be possible for vandals to easily reach antenna or climb on masts. In some cases, the use of a concealed "whip" type antenna might present a viable solution.

28.2.3 Antenna Cable

Where the route length of antenna cables is less than 15m, RG213 coax is to be used to connect the antenna to the radio. If the route length exceeds this then a higher specification coax, such as LDF-4, shall be used. The contractor is to submit calculations demonstrating correct cable selection in terms of signal strength and dB loss.

All antenna cable connections are to be made by N type or similar connectors. The connectors shall be sealed to prevent ingress of moisture, e.g. 3M Scotch rubber tape or similar.

A suitable surge diverter is to be installed on the antenna cable to minimise the effects of lightning on the radio equipment.

28.2.4 Additional Notes

Refer to Appendix B2 for additional notes in relation to the supply and installation of telemetry equipment.

28.2.5 Commissioning

WRC's Electrical Systems Engineer is to be given a minimum of six (6) weeks written of the anticipated date of commissioning to allow the works to be scheduled.

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Appendix B1 - Preferred Suppliers List

Switchboard and Equipment

Item	Manufacturer
Cubicle Hardware	Emka, Lockwood
Door Limit Switch	Telemecanique XCKP2145P16
Vent Fan	Pacific HVAC WQE Series
Lights	Rexel MIN8
Isolator Switches	Clipsal, Sprecher and Schuh, Socomec, Schneider
Circuit Breakers	Terasaki, Merlin Gerin, Cutler Hammer, Schneider
Lightning Protection	NHP, Heinemann, Critec, Novaris
Transient Barriers	Critec, Novaris
Surge Reduction Filters	Novaris SL36
Surge Diverter	Critec DSD160-1S-275
Signal Isolators	APCS, Weidmuller
Analog Signal Conditioner	Weidmuller 7940005554
Selector Switches	ABB OT Series, Kraus & Naimer CA10AU80R1-600-FT2
Pushbuttons	Sprecher and Schuh D7 Series 22.5mm
Indicator Lights	Sprecher & Schuh D7 Series w. BA9S Style Multichip LEDs
Phase Failure Relay	Schneider RM17TA00 – Zillio Control
Meters	Alstom, NHP, Carlo Gavazzi
Current Transformers	Crompton, IME
Relays	Sprecher and Schuh, Finder, Omron
Timers	Schneider Acti 9 Series
Power Supplies	NHP 2402440 – 24VDC
Power Outlets	Clipsal 2025 & 90B
Contactors	Schneider LC1D TeSys Series
Thermal Overloads	Schneider LDR Series
Thermistor Relays	Schneider LT3SM00M
Motor Protection Relays	Schneider TeSys T
Soft Starters	Zener 6000 Series Smart Start
Variable Speed Drives	Schneider ATV630 Series
Terminals	Telemecanique AB1 Series
Wire Numbers	Grafoplast, Legrand
PLC	Siemens S7
Pump Controller	Yokogawa UM33A
Sump Pump Controller	Multitrode MTR
Level Sensor	Vega Vegawell 52 or 72
Float Switch	Flygt ENM-10
Decontactors	Marechal, Cutler Hammer, Proconect
Current Transducers	Greystone CS475
Voltage Monitoring Relay	APCS PA201
Magnetic Reed Switches	Schmersal BN80-10Z / BP10
Sump pump level control	Multitrode MTR
Generator Inlet Socket	Clipsal WB Series 5 pin
Generator Autochangeover	Schneider UA Controller + ACP 240V AV
Flowmeter & Display	E & H Promag W 4000
Thermostat	Stego KTS1141
Micro-switches	Schmersal, Telemecanique

Appendix B2 - Preferred Suppliers List

Telemetry Equipment – Digital Radio Network

Equipment	Manufacturer	Cat No.	Supplier
Telemetry I/O Module	Schneider	Scadapack 6601	Schneider
Telemetry Processor	Schneider	Scadapack 535E	Schneider
Radio	Schneider	Trio QR Series Licenced Band	Schneider
Antenna [8)]	RF Industries	Yagi YB6-61	RF Industries
Lightning Arrestor	RF Industries	IS-B50LN-C2	RF Industries
Surge Filter	Novaris	PSF105DIN	PowerCom Solutions
Power Supply	Schneider	ABL7RM24025 - 24Vdc 2.5Amp	Schneider
Fuse & Terminals	Weidmuller	Z-Series	Ramelec
DC Converter		APK60-1224	Power House Qld
Battery	Yuasa	NP7.2-12	Battery World

Appendix C - Typical Telemetry I/O

Sewerage Pumpstation – I/O States

The On/Off states of telemetry I/O shall have the following meaning:

I/O Description	ON State	OFF State
AC power fail	Bus supply healthy	Bus supply failed
Intruder switch	Door closed	Door opened
Wet well level high	Well level normal	Well level high
Station system mode	System mode selected	Not in system mode
Station local manual mode	Local manual mode selected	Not in local manual mode
Station local auto mode	Local auto mode selected	Not in local auto mode
Pump run	Pump is operating	Pump is off
Pump healthy	Pump protection is healthy	Pump protection has tripped
Pump available	Pump is available	Pump is not available
Generator running	Generator set is operating	Generator set is off
Generator fault	Generator healthy	Generator faulted
Generator failed to start	Generator normal	Generator failed to start
Generator low battery	Battery voltage normal	Battery voltage is low
Generator low fuel	Fuel level normal	Fuel level is low
Ergon Supply Status	Mains supply healthy	Mains supply failure
ATS Ergon supply	ATS in mains position	ATS not in mains position
ATS Generator supply	ATS in generator position	ATS not in generator position
Generator Circuit Breaker	Generator CB closed	Generator CB open
Load bank healthy	Load bank OK	Load bank faulted

Note: I/O functionality is not to be changed without written approval from WRC's Electrical Systems Engineer.

Appendix C – Typical Telemetry I/O

Sewerage Pumpstation – Two pumps, no generator

Schneider Electric SCADAPack P334

I/O No	Description
DI1	Bus power fail
DI2	Intruder switch (where specified else spare)
DI3	Wet well high level (from ELV float switch)
DI4	Station system mode
DI5	Station local manual mode
DI6	Station local auto mode
DI7	Pump 1 run
DI8	Pump 1 healthy
DI9	Pump 1 available
DI10	Pump 2 run
DI11	Pump 2 healthy
DI12	Pump 2 available
DI13	spare
DI14	C/O switch in Ergon supply position
DI15	C/O switch in Generator supply position
DI16	Ergon supply status
DO1	Pump 1 system start
DO2	Pump 1 remote reset
DO3	Pump 2 system start
DO4	Pump 2 remote reset
DO5	spare
DO6	spare
DO7	spare
DO8	spare
DO9	spare
DO10	spare
AI1	Wet well level
AI2	Discharge pressure (where installed)
AI3	Pump 1 motor current
AI4	Pump 2 motor current

Note: I/O assignments are not to be changed without written approval from WRC's Electrical Systems Engineer.

Appendix C – Typical Telemetry I/O

Sewerage Pumpstation – Two pumps, with generator

Schneider Electric SCADAPack P500

I/O No	Description	I/O No	Description
DI1	Bus power fail	DI17	spare
DI2	Intruder switch (where specified)	DI18	spare
DI3	Wet well high level (from float sw)	DI19	spare
DI4	Station system mode	DI20	spare
DI5	Station local manual mode	DI21	spare
DI6	Station local auto mode	DI22	spare
DI7	Pump 1 run	DI23	spare
DI8	Pump 1 healthy	DI24	spare
DI9	Pump 1 available	DI25	spare
DI10	Pump 2 run	DI26	Load bank healthy
DI11	Pump 2 healthy	DI27	Generator CB closed
DI12	Pump 2 available	DI28	Generator running
DI13	Generator test switch	DI29	Generator fault
DI14	ATS Ergon supply position	DI30	Generator fail to start
DI15	ATS Generator supply position	DI31	Generator low battery
DI16	Ergon supply status	DI32	Generator low fuel
DO1	Pump 1 system start	DO9	spare
DO2	Pump 1 remote reset	DO10	spare
DO3	Pump 2 system start	DO11	spare
DO4	Pump 2 remote reset	DO12	spare
DO5	spare	DO13	spare
DO6	spare	DO14	spare
DO7	spare	DO15	spare
DO8	spare	DO16	spare
AI1	Wet well level	AI7	spare
AI2	Discharge pressure (where installed)	AI8	spare
AI3	Pump 1 motor current	AI9	spare
AI4	Pump 2 motor current	AI10	spare
AI5	spare	AI11	spare
AI6	spare	AI12	Discharge flow (where installed)
AO1	spare	AO3	spare
AO2	spare	AO4	spare

Note: I/O assignments are not to be changed without written approval from WRC's Electrical Systems Engineer.

Appendix C – Typical Telemetry I/O

Sewerage Pumpstation – Three pumps, with VSD and generator

Schneider Electric SCADAPack P500

I/O No	Description	I/O No	Description
DI1	Bus power fail	DI17	Pump 3 run
DI2	Intruder switch (where specified)	DI18	Pump 3 fault
DI3	Wet well high level (from float sw)	DI19	Pump 3 available
DI4	Station system mode	DI20	spare
DI5	Station local manual mode	DI21	spare
DI6	Station local auto mode	DI22	spare
DI7	Pump 1 run	DI23	spare
DI8	Pump 1 fault	DI24	spare
DI9	Pump 1 available	DI25	spare
DI10	Pump 2 run	DI26	Load bank healthy
DI11	Pump 2 fault	DI27	Generator CB closed
DI12	Pump 2 available	DI28	Generator running
DI13	Generator test switch	DI29	Generator fault
DI14	ATS Ergon supply position	DI30	Generator fail to start
DI15	ATS Generator supply position	DI31	Generator low battery
DI16	Ergon supply status	DI32	Generator low fuel
DO1	Pump 1 system start	DO9	spare
DO2	Pump 1 remote reset	DO10	spare
DO3	Pump 2 system start	DO11	spare
DO4	Pump 2 remote reset	DO12	spare
DO5	Pump 3 system start	DO13	spare
DO6	Pump 3 remote reset	DO14	spare
DO7	spare	DO15	spare
DO8	spare	DO16	spare
AI1	Wet well level	AI7	Pump 1 motor speed PV
AI2	Discharge pressure (where installed)	AI8	Pump 2 motor speed PV
AI3	Pump 1 motor current	AI9	Pump 2 motor speed PV
AI4	Pump 2 motor current	AI10	spare
AI5	Pump 3 motor current	AI11	spare
AI6	spare	AI12	Discharge flow (where installed)
AO1	Pump 1 VSD set point	AO3	Pump 3 VSD set point
AO2	Pump 3 VSD set point	AO4	spare

Note: I/O assignments are not to be changed without written approval from WRC's Electrical Systems Engineer.

Appendix D – Abbreviations Listing

The table below contains a listing of the abbreviations used in this document.

AC	Alternating Current
ADWF	Average Dry Weather Flow
AI	Analogue Input
AO	Analogue Output
CB	Circuit Breaker
CFS	Combination Fuse Switch
CT	Current Transformer
DC	Direct Current
DI	Digital Input
DO	Digital Output
DOL	Direct On-Line
ELV	Extra Low Voltage
EMC	Electromagnetic Compatibility
GPO	General Purpose Outlet
HMI	Human Machine Interface
HRC	High Rupture Capacity
I/O	Input / Output
LED	Light Emitting Diode
MOV	Metal Oxide Varistor
MPR	Motor Protection Relay
N/C	Normally Closed Contact
N/O	Normally Open Contact
PCB	Printed Circuit Board
PFR	Phase fail relay
PLC	Programmable Logic Controller
PV	Process Variable
PVC	Polyvinyl Chloride
RCD	Residual Current Device
RPEQ	Registered Professional Engineer (Queensland)
RTU	Remote Terminal Unit
SCADA	Supervisory Control and Data Acquisition
SPD	Surge Protection Device
SRF	Surge Reduction Filter
WRC	Whitsunday Regional Council
TOL	Thermal Overload
VSD	Variable Speed Drive

Appendix E - Revision Record

Number	Date	Clauses Altered
12	30.11.09	New clauses added - 9.29, 19.6, 24, 28.1.0, 28.1.1, App E, subsequent clauses renumbered. Revised clauses – 1, 3, 4, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 20, 21, 22, 23, 26, 28, App A, App B, App C,
12.1	21.01.10	Minor revisions, Appendix D added, subsequent clauses renumbered
13	07.02.13	Major revision, alterations to most clauses and appendices

Appendix F – Summary of Document Submissions and Inspections

The following table is intended to summarise the requirements for submission of documentation through the switchboard project and tie in to inspections and progression of milestone dates.

Milestone	Document/Inspection	Clause	Comment
Tender submission	Technical Data	App G1 & G2	Required to allow assessment of what has been offered with tender. May also require drawings, supplier data and other information
Within * weeks of contract award	Detailed design calculations inc: Drive / load list • Maximum demand; • Load balance; • Cable schedule; • Circuit breaker selection; • Harmonic study (if applic); • Ventilation study (if applic); and • Radio survey (if applicable). Workshop drawings for switchboards RPEQ certified drawings (if applicable)	22, 28.1.2 10 8.5 28.2.1 22 24	Review of workshop drawings will not occur until full design information is provided. Allow 14 days for review
Switchboard Construction	Inspections required at: • Completion of sheetmetal • Completion of wiring		Minimum 7 days' notice required
Workshop Testing	Witnessed testing at place of swbd manufacture		Minimum 7 days' notice required
	As-built drawings for swbd		Required before commencement of site commissioning
Site Construction	Inspections during construction phase		As required
Site Testing	• Electrical safety testing; • Functional testing; • Commissioning of telemetry / control system; and • Thermoscan of swbd (if applicable).	28.1.11 21 17.1 21	Minimum 6 weeks' notice required
Practical Completion	• Electrical safety document; • As-constructed drawings; • Draft O&M manual; and • Supply of spares (if applic).	28.1.11 22 23 26	Practical completion will not be granted until satisfactory documentation has been received
Completion	• Final O&M manuals; and • CAD files for drawings.		
Final Completion	• Thermoscan (if applicable)		2 weeks prior to end of defects period

* Refer to contract document for submission dates.

Appendix G – Job Specification Checklist

1. Check operating conditions. Specify location (Indoor / Outdoor) ___
2. Specify Fault Level ___
3. Specify requirement for Supply Authority metering inc. tariff ___
4. Specify degree of segregation (i.e. Form 1, Form 2 etc.) ___
5. Specify how cubicle is to be mounted (i.e. pole, wall or plinth) ___
6. Specify material for cubicle, mounting pans & escutcheon door ___
7. Specify type of door handles and method of locking ___
8. Specify sunhood (if required) ___
9. Specify paint colours (if applicable) ___
10. Specify size and configuration of mains cables [1] ___
11. Specify lightning and surge protection requirements ___
12. Detail all electrical equipment that is to be connected
    - include current ratings of circuits, kW ratings of motors etc. ___
13. Specify how motors are to be controlled [1] ___
14. Specify requirements for motor starters and protection [1] ___
15. Detail any special control or instrumentation requirements [1] ___
16. Specify if telemetry is required and detail all required I/O signals ___
17. Specify telemetry installation requirements ___
18. Specify requirements for PLC (if applicable) [1] ___
19. Specify any other requirements (e.g. alarms, generator etc.) ___
20. Review preferred suppliers list and make alterations if necessary ___
21. Specify requirements for inspection and testing ___
22. Specify delivery address and time ___
23. Specify if RPEQ certification is required ___

[1] The design of these items may be the contractor's responsibility.
Refer to main project specification.

Appendix H1 - Technical Data Sheets

Switchboard and Equipment

The technical data sheets will detail the proposed switchboard equipment. The tenderer shall complete all sheets and submit with his tender/quotation.

==========

Switchboard Cubicle

Manufacturer _____

Place of Manufacture_____

Dimensions _____

Degree of Protection_____

Fault Rating _____

Material of Construction_____

Make of Cubicle Hardware _____

Main Switch

Make _____

Model_____

Fault Rating _____

Current Rating _____

Method of Mounting _____

Changeover Switch

Make _____

Model _____

Fault Rating_____

Current Rating _____

Lightning Protection

Make _____

Type_____

Rating_____

Busbars

Dimensions _____

Fault Rating _____

Current Rating _____

Type of Insulation _____

Active, Neutral & Earth Links

Make_____

Model _____

Rating_____

Fault Current Limiting Circuit Breakers

Make_____

Model _____

Fault Rating _____

Coordination Category _____

Distribution Circuit Breakers

Make _____

Model _____

Fault Rating _____

Coordination Category _____

Method of Mounting _____

Isolator Switches

Make _____

Model _____

Rating_____

Load Break Type (yes/no) _____

Method of Locking_____

Method of Mounting _____

Selector Switches

Make _____

Model _____

Pushbuttons

Make _____

Model _____

Indicator Lights

Make _____

Model _____

Lamp Type _____

Voltage Rating _____

Phase Failure Relay

Make _____

Model _____

Features _____

Voltmeter

Make _____

Model _____

Size/Scale _____

Ammeter

Make _____

Model _____

Size/Scale _____

Current Transformers

Make _____

Model _____

Rating _____

Current Transducer

Make _____

Model _____

Power Supply _____

Output Signal _____

Voltage Monitoring Relay

Make _____

Model _____

Power Supply _____

Output Signal _____

Hours Run Meter

Make _____

Model _____

Size/Type _____

Control Relays

Make _____

Model _____

Type _____

Timers

Make _____

Model _____

Type _____

Control Transformers

Make _____

Model _____

Primary/Secondary Voltages _____

Rating _____

Power Supplies

Make _____

Model _____

Output Voltage _____

Motor Starters

Type _____

Duty Rating and Class_____

Utilisation Category _____

No of Starts per Hour _____

Contactors

Make_____

Model _____

Duty Class and Rating _____

Utilisation Category _____

Soft Starters

Make _____

Model _____

Current Limiting Mode (yes/no) _____

Soft Stop Function (yes/no)_____

Features _____

_____

_____

_____

Thermal Overload

Make_____

Model _____

Current Range _____

Thermistor Relay

Make _____

Model _____

Seal Failure Relay

Make _____

Model _____

Motor Protection Relay

Make _____

Model _____

Features _____

_____

_____

Wiring

Materials and Grade of Insulation _____

Method of Termination _____

Make and Type of Ferrules _____

Make and Type of Terminals _____

Pump Controller

Make _____

Model _____

Digital Display _____

Signal Isolators

Make _____

Model _____

Rating _____

Transient Barriers

Make _____

Model _____

Rating _____

Decontactor

Make _____

Model _____

Rating _____

Name of Tenderer _____

Signature of Tenderer _____

Date _____

Appendix H2 - Technical Data Sheets

Telemetry Equipment

These technical data sheets will detail the telemetry equipment and associated works. The tenderer shall complete all sheets and submit with his tender / quotation.

==========

Telemetry Cubicle/Compartment

Integral to Swbd or Remote _____

Materials _____

Dimensions _____

Degree of Protection _____

Telemetry Unit

Make _____

Model _____

Type of Firmware _____

IsaGraf Targets _____

Telemetry I/O (List all signals)

DI _____

_____

_____

_____

DO _____

_____

AI _____

_____

AO _____

_____

Power Supply

Make _____

Model_____

Rating_____

DC Converter

Make _____

Model _____

Rating_____

Battery

Make _____

Model _____

Rating_____

Radio

Make _____

Model_____

Antenna

Type _____

Make _____

Model_____

Gain _____

Wind Loading _____

Dimensions _____

Antenna Cable

Make _____

Type _____

Rating_____

Coax Surge Diverter

Make _____

Model _____

Rating_____

Antenna Mast

Type _____

Materials _____

Mounting Height_____

Design Wind Loading _____

Other Details_____

_____

_____

Name of Tenderer _____

Signature of Tenderer_____

Date _____

ITP and PS Checklists

INSPECTION AND TEST PLAN – WATER/SEWAGE PUMP STATION

ITP to be completed by Consulting Engineer

Developer:	**Consultant Engineer:**	**Consultant Engineer Representative:**
Project:	**Contractor:**	**Contractor Site Representative:**
Description:	**Sub-contractor:**	**Witness, Hold & Surveillance points added to ITP**
	Field Tester:	
Location:	**ITP Prepared by:** **Reviewed by:**	**Council Representative**
	Date / / **Date / /**	**Date / /**

No	Construction/Inspection Activity	Inspection Procedure & Acceptance Criteria	Contractor	Consult. Engineer	Council*	Record	Comment
1	Pre-start/Site establish	Pre-Start Meeting Checklist. Site establishment visual check. Checklist completed. (PS1)	I	**H**	**H**	Checklist PS1	
2	Approved materials on Site/delivered	Visual check approved materials. Quantity and condition. Checklist completed (PS2)	I	I	S	Checklist PS2	
3	Excavation	Visual inspection to WRC standards. Checklist completed. (PS3)	I	I	S	Checklist PS3	
4	Foundations	Visual and dimensional check to WRC Standards.	I	W	W	Checklist PS4	
5	Base slab	Visual inspection to WRC Standards.	I	**H**	I	Checklist PS4	
6	Reinforcement and formwork	Visual inspection to WRC Standards.	I	**H**	W	Checklist PS4	
7	Anchor/Thrust Blocks	Visual and dimensional check to WRC Standards.	I	**H**	**H**		
8	Embedment and Backfill	Visual check and compaction to WRC Standards	I	**H**	**H**	Compaction test results	
9	Electrical/Scada	Review certification and visually check installation to WRC standards.	I	W	I	Certification	
10	Lifting Chain	Review certification.	I	I	I	Certification	
11	Surface fittings	Visual and dimension check to WRC Standards. Checklist completed (PS6)	I	I	S	Checklist PS5	
12	Disinfection	Disinfection to WRC Standards	I	**H**	**H**	Test Results	
13	Testing	Pressure test and Compaction test to WRC Standards	I	**H**	**H**	Test Results	
14	Pre-connection	Visual inspection to WRC Standards. Checklist completed (PS6)	**H**	**H**	**H**	Checklist PS6	
	inspection	Isolation procedure as per Job Specific Letter					
15	Commissioning of System	Visual and dimensional check to WRC Standards and, where required, removal of RPZD.	I	**H**	**H**	PS Commi Checklist	

Symbol	Legend	No	Amendment	Date	Reviewed	Validation
I	Inspection					I certify that the works have been constructed in accordance with WRC Standards and the Inspection and Test Plan
H	Mandatory Hold Point					
W	Witness Point					
S	Surveillance					…… Consulting Engineer Date / /

*** Council reserves the right to vary these requirements at any time** **** Council's written approval MUST be obtained prior to varying these requirements**

PUMP STATION CHECKLIST PS1
PRE-START AND SITE ESTABLISHMENT

PROJECT:								CONSULTING ENGINEER:							
Date from: to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:							
		SITE						DATE:	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**			**COMMENT**				**SIGNATURES**
1.1	Plan current and on site														
1.2	Pre construct report inc. photographs														
1.3	Property Entry Agreement														
1.4	Road opening requirements														
	Fees paid														
	Traffic mgt plan implemented														
1.5	Environmental Management Plan on site and implemented														
1.6	WH&S Plan on site and implemented														
1.7	Receiving sewer located														
1.8	Specification on site														
1.9	Footways to finished levels														
1.10	Survey pegs in place							Registered Surveyor							
1.11	Job set out														
1.12	All services located							'Dial Before You Dig', services search and Relevant Authorities							
1.13	All services marked														
1.14	Contractors holding relevant accreditation on site														

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS2

APPROVED MATERIALS ON SITE AND DELIVERED

PROJECT:					CONSULTING ENGINEER:						
Date from: to:		PIPE TYPE:		SIZE:	CLASS:	CONTRACTOR:					
		SITE				DATE:	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**		**COMMENT**		**SIGNATURES**
2.1	Delivery Inspection											
2.2	Types and sizes to current plan											
2.3	Marking tape											
2.4	Bedding material											
2.5	Trench fill											
2.6	Fittings											
2.7	Surface Fittings											
2.8	Pre Cast chambers											

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS3 – PAGE 1 OF 2

EXCAVATION

PROJECT:									CONSULTING ENGINEER:						
Date from: to:		PIPE TYPE:		SIZE:		CLASS:			CONTRACTOR:						
		DAY						DATE:	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**			**COMMENT**				**SIGNATURES**
3.1	Environmental Management Plan on site and implemented														
3.2	Traffic Management Plan on site and implemented														
3.3	Services exposed														
3.4	Clearance from Services														
3.5	Trench width ..... mm														
3.6	Trench depth ..... mm														
3.7	Trench shoring														
3.8	Excavation prior to placement of backfill														
3.9	Embedment														
	Compaction														
	Bedding														
	Surround														
	Overlay														
	Testing														

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS3 – PAGE 2 OF 2
EXCAVATION AND PIPE LAYING

PROJECT:								CONSULTING ENGINEER:							
Date from: to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:							
		DAY						DATE:	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**			**COMMENT**				**SIGNATURES**
3.10	Valves, Hydrants & Surface fittings installed														
	Shroud assembly														
	Valve anchorage														
3.11	Marking tape														
	Correct location														
	Connected to fittings														
3.12	Concrete														
	Trench stops in place														
	Bulkheads in place														
	Thrust blocks in place														
	Embedment & Encasement in place														
3.13	Trench fill														
	Material														
	Compaction														
	Compaction Testing							NATA Certified Lab							

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS4 – PAGE 1 OF 2

CHAMBERS

PROJECT:				CONSULTING ENGINEER:
Date from: to:	PIPE TYPE:	SIZE:	CLASS:	CONTRACTOR:

	CHAMBER						DATE:	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6

ITEM	DESCRIPTION	1	2	3	4	5	6	MINIMUM STANDARD	COMMENT	SIGNATURES
4.1	Finished Surface Levels Supplied									
4.2	Base									
	Placement									
	Channels									
	First shaft section									
4.3	In-situ chamber									
	Formwork – correct sizing									
	Formwork – correct levels									
	Reinforcement									
	Cover									
	Concrete type to Specification									
	Step iron location and spacing									
	Dimension check									
	Cover and frame									
	Conduits							Plan Specification		
4.4	Pre cast chamber									
	Shaft assembled in correct order									
	Step iron location and spacing									
	Sealing									
	Offset cone located correctly									
	Minimum one make up ring									
	Cover and frame									

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS4 – PAGE 2 OF 2

CHAMBERS

PROJECT:								CONSULTING ENGINEER:							
Date from: to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:							
		CHAMBER						DATE:	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**		**COMMENT**					**SIGNATURES**
4.5	Ladders / handrails / step irons														
4.6	Sealing							Manufacturer Specification							
4.7	Drainage														
4.8	Security Grate lid														
4.9	Plastering/rendering														
4.10	Benching														
4.11	Operational access														

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS5
SURFACE FITTINGS

PROJECT:					CONSULTING ENGINEER:						
Date from: to:		PIPE TYPE:		SIZE:	CLASS:	CONTRACTOR:					
		SITE				DATE:	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**		**COMMENT**		**SIGNATURES**
5.1	Surface boxes and surrounds to finished levels											
5.2	Surface box lids hinged in direction of traffic flow											
5.3	Shroud pipes assembled to Standards											
5.4	Fitting bolts protected to Standards											
5.5	Correct depth to Spindle tops											
5.6	Correct depth to Hydrant lugs											
5.7	Spindle retaining disc in place											
5.8	Indicator plates in place											

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

PUMP STATION CHECKLIST PS6
PRE-CONNECTION INSPECTION

PROJECT:								CONSULTING ENGINEER:							
Date from: to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:							
		SITE						DATE:	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	
ITEM	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**	**6**	**MINIMUM STANDARD**			**COMMENT**				**SIGNATURES**
6.1	WAC compiled														
6.2	Compaction and concrete tests														
6.3	Pressure test results														
6.4	Deflection Test Results														
6.5	CCTV Inspection														
6.6	Marking tape in place & tested														
6.7	Surface boxes and surrounds level														
6.8	Indicator plates in place														
6.9	Chambers sized to Standard														
6.10	Chamber ladder or step irons to Standards														
6.11	Chamber drainage adequate & to Standards														
6.12	Benching to Standard														
6.13	Sealing to Standard														
6.14	Scour outlet protected from erosion														
6.15	Site restored satisfactorily														

VARIATIONS AND CHANGES:	**SITE INSTRUCTIONS:**

COMMENT:

Attachment 3 – State Interest Review Statement

State Interest Review Statement

Mackay, Isaac and Whitsunday Regional Plan 2012

The State Planning Policy 2017 interests have been met through the drafting of this major amendment, and as a result it is considered the relevant state interests of the regional plan have also been sufficiently integrated.

State Planning Policy July 2017

On 19 June 2017 The Minister for Infrastructure and Planning wrote to the Whitsunday Regional Council to confirm that the *State Planning Policy (April 2016)* was integrated in the Whitsunday Regional Council Planning Scheme.

The below state interest review statement addresses the amendments within the Proposed Major Amendment and compliance with the updated State Planning Policy (July 2017).

State Interest	State Interest Policy	Major Amendment Changes
Housing Supply and Diversity **Diverse, accessible and well-serviced housing, and land for housing, is provided and supports affordable housing outcomes.**	(1) Land for housing development and redevelopment in areas that are accessible and well-connected to services, employment and infrastructure is identified.	The ROL code & PSP have been updated to ensure structure plans are followed or created where required.
	(2) The development of residential land is facilitated to address and cater for all groups in the current and projected demographic, economic and social profile of the local government area, including households on low to moderate incomes.	Affordable housing will be mentioned within the Strategic Framework.
	(3) A diverse, affordable and comprehensive range of housing options in accessible and well-serviced locations, is facilitated through:	Affordable housing will be mentioned within the Strategic Framework and definitions of ‘affordable housing’ and ‘social housing’ will be added to Schedule 1:Definitions.

	(a) appropriate, responsive and proactive zoning (b) supporting an appropriate mix of lot sizes and dwelling types, including housing for seniors and people requiring assisted living (c) considering incentives to promote affordable and social housing outcomes, particularly in areas in close proximity to services and amenities.	
	(4) Best practice, innovative, and adaptable housing design and siting is provided for and encouraged.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(5) Sufficient zoned land for housing is provided in appropriate locations to support the projected non-resident workforce population associated with approved large-scale mining, agriculture, industry or infrastructure projects.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
Liveable Communities **Liveable, well-designed and serviced communities are delivered to support wellbeing and enhance quality of life.**	(1) High quality urban design and place making outcomes are facilitated and promote: (a) affordable living and sustainable and complete communities (b) attractive, adaptable, accessible and inclusive built environments (c) personal safety and security (d) functional, accessible, legible and connected spaces (e) community identity through considering local features, character, needs and aspirations.	Sufficiently regulated within Reconfiguring of a Lot (ROL), Business activities and Multi-unit code. This interest has a greater focus within the Bowen and Airlie Beach Local Plans, also in codes relating to the local plans.

	(2) Vibrant places and spaces, and diverse communities that meet lifestyle needs are facilitated by: (a) good neighbourhood planning and centre design (b) a mix of land uses that meet the diverse demographic, social, cultural, economic and lifestyle needs of the community (c) consolidating urban development in and around existing settlements (d) higher density development in accessible and well-serviced locations (e) efficient use of established infrastructure and services (f) supporting a range of formal and informal sporting, recreational and community activities.	Strategic Framework alludes to hierarchy of centres but does not detail higher densities around the centres despite zoning maps operating in this manner. The Major amendment makes changes to 3.2.1.2 (1) in the Strategic Intent to specify higher densities around major centres. A Building Heights Overlay Code, associated Mapping and an administrative definition of Average Building Height have been created to consolidate all building height requirements across the Region.
	(3) Development is designed to: (a) value and nurture local landscape character and the natural environment (b) maintain or enhance important cultural landscapes and areas of high scenic amenity, including important views and vistas that contribute to natural and visual amenity (c) maintain or enhance opportunities for public access and use of the natural environment.	Additional provisions are proposed to protect key scenic corridors identified by the Whitsunday Scenic Amenity Study 2017. Protection of key scenic gateway PO's have been added to the Airlie Beach Local Plan, the Bowen Local Plan, the Rural zone code, Advertising devices code, Short-term and Multi-unit use code and Telecommunications facility code.
	(4) Connected pedestrian, cycling and public transport infrastructure networks are facilitated and provided.	This state interest has been developed within the Bowen and Airlie Beach Local Plans, focusing on connections between all networks, and provision of new networks where applicable. Administrative definitions have been added through the Airlie Beach Local Plan.

		Additional amendments are also proposed within the Transport and Parking code to provide end of trip facilities for cyclists in high trip generating developments.
	(5) Community facilities and services, including education facilities (state and non-state providers), health facilities, emergency services, arts and cultural infrastructure, and sport, recreation and cultural facilities are well-located, cost-effective and multi-functional.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(6) Connection to fibre-optic telecommunications infrastructure (e.g. broadband) is supported in greenfield areas.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(7) All development accessed by common private title is provided with appropriate fire hydrant infrastructure and has unimpeded access for emergency service vehicles to protect people, property and the environment.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
Agriculture **The resources that agriculture depends on are protected to support the long-term viability and growth of the agricultural sector.**	(1) Agriculture and agricultural development opportunities are promoted and enhanced in important agricultural areas (IAAs).	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(2a) Agricultural Land Classification (ALC) Class A and Class B land is protected for sustainable agricultural use by: a) avoiding fragmentation of ALC Class A or Class B land into lot sizes inconsistent with the current or potential use of the land for agriculture.	No changes are proposed in the major amendment in relation to this state interest. Mapping updates have been incorporated into the Agricultural Land Overlay.

	(2b) Agricultural Land Classification (ALC) Class A and Class B land is protected for sustainable agricultural use by: b) avoiding development that will have an irreversible impact on, or adjacent to, ALC Class A or Class B land.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(2c) Agricultural Land Classification (ALC) Class A and Class B land is protected for sustainable agricultural use by: c) maintaining or enhancing land conditions and the biophysical resources underpinning ALC Class A or Class B land.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(3) Fisheries resources are protected from development that compromises long-term fisheries productivity, sustainability and accessibility.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(4a) Growth in agricultural production and a strong agriculture industry is facilitated by: a) promoting hard to locate intensive agricultural land uses, such as intensive animal industries, aquaculture, and intensive horticulture in appropriate locations	Changes to the Strategic Framework to reflect Aquaculture development areas and respond to SPP Agriculture guidance material's biosecurity concerns. Mapping updates for Aquaculture Development Areas have been incorporated into the Agricultural Land Overlay.
	(4b) Growth in agricultural production and a strong agriculture industry is facilitated by: b) protecting existing intensive agricultural land uses, such as intensive animal industries, aquaculture, and intensive horticulture, from encroachment by development that is incompatible and/or	Changes to the Strategic Framework to reflect Aquaculture development areas and respond to SPP Agriculture guidance material's biosecurity concerns.

	would compromise the safe and effective operation of the existing activity.	
	(4c) Growth in agricultural production and a strong agriculture industry is facilitated by: c) locating new development (such as sensitive land uses or land uses that present biosecurity risks for agriculture) in areas that avoid or minimise potential for conflict with existing agricultural uses through the provision of adequate separation areas or other measures	Changes have been made to Rural Zone Code regarding renewable energy facilities on good quality agricultural land to ensuring current and future productivity is not compromised.
	(4d) Growth in agricultural production and a strong agriculture industry is facilitated by: d) facilitating opportunities for co-existence with development that is complementary to agricultural uses that do not reduce agricultural productivity (e.g. on-farm processing, farm gate sales, agricultural tourism etc).	Amendments include a Rural tourism code, which promotes Agri and Nature based tourism in Rural areas, ensuring environmental integration and managing impacts upon Rural amenity.
	(4e) Growth in agricultural production and a strong agriculture industry is facilitated by: e) considering the provision of infrastructure and services necessary to support a strong agriculture industry and associated agricultural supply chains.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(4f) Growth in agricultural production and a strong agriculture industry is facilitated by: f) ensuring development on, or adjacent to, the stock route network does not compromise the network's primary use for moving stock on foot, and other uses and values including grazing, environmental,	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme. Updates to the Stock Route network mapping have been incorporated into the Agricultural Land Overlay.

	recreational, cultural heritage, and tourism values.	
Development and Construction **Employment needs, economic growth, and a strong development and construction sector are supported by facilitating a range of residential, commercial, retail, industrial and mixed use development opportunities.**	(1) A sufficient supply of suitable land for residential, retail, commercial, industrial and mixed use development is identified that considers: (a) existing and anticipated demand (b) the physical constraints of the land (c) surrounding land uses (d) the availability of, and proximity to, essential infrastructure required to service and support such development.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(2) Appropriate infrastructure required to support all land uses is planned for and provided.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(3) Mixed use development is achieved by appropriately zoning the land.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(4) An appropriate mix of lot sizes and configurations for residential, retail, commercial, mixed-use and industrial development is provided for in response to the diverse needs of these uses and ancillary activities.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(5) Efficient delivery of development is facilitated by the adoption of the lowest appropriate level of assessment that is consistent with the purpose of the zone.	Amendments to the Tables of Assessment for Major centre zone permit a greater mix of Entertainment uses as-of-right. Other Tables of Assessment triggers for various uses in appropriate zones have also been clarified to ensure lowest appropriate level of assessment applies.

		Various changes have also been made to reduce level of assessment for Rural tourism uses, microbreweries, coffee roasteries, Renewable energy (solar farm) and boundary re-alignments. Bowen Local Plan and Airlie Beach Local Plan have been developed to facilitate development in central business districts within the region. They aim to encourage sustainable tourism, business and accommodation. Class 10 building may trigger a higher level of assessment to address community concerns over 'liveable sheds'.
	(6) Land uses are consistent with the purpose of the zone.	Amendments involve the inclusion of design controls within the Dwelling house and Dual occupancy code to limit the size of sheds in urban areas and prevent the creation of houses that look like sheds to ensure development integrates into the surrounding uses. Various other amendments to the Tables of assessment relate to uses that are consistent with the purpose of the zone.
	(7) State development areas and Priority Development Areas are: (a) identified and appropriately considered in terms of their planning intent (b) supported by compatible and complementary land uses and services on surrounding land.	Aquaculture development areas have been incorporated into the Planning Scheme. No other changes are proposed in the major amendment in relation to this state interest.
	(8) Public benefit outcomes on state-owned land are achieved by appropriately zoning the land.	A review has been completed by Council with DNRME to ensure state owned land has the correct zoning. Several zoning amendments were made as a result.
Mining and Extractive Resources	(1) Extractive Resources Key resource areas (KRAs) are identified, including the resource/processing area,	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.

Extractive resources are protected and mineral, coal, petroleum and gas resources are appropriately considered to support the productive use of resources, a strong mining and resource industry, economical supply of construction materials, and avoid land use conflicts where possible.	separation area, transport route and transport route separation area.	
	(2) Extractive resources: KRAs are protected by: (a) maintaining the long-term availability of the extractive resource and access to the KRA (b) avoiding new sensitive land uses and other incompatible land uses within the resource/processing area and the related separation area of a KRA that could impede the extraction of the resource (c) avoiding land uses along the transport route and transport route separation area of a KRA that are likely to compromise the ongoing use of the route for the haulage of extractive materials (d) avoiding new development adjacent to the transport route that is likely to adversely affect the safe and efficient transportation of the extractive resource.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(3), (4) and (5) Mineral, coal, petroleum and gas resources: (3) The importance of areas identified as having valuable minerals, coal, petroleum and gas resources, and areas of mining and resource tenures are considered. (4) Opportunities for mutually beneficial co-existence between coal, minerals, petroleum and gas resource development operations and other land uses are facilitated. (5) The location of specified petroleum infrastructure is considered.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.

Tourism **Tourism planning and development opportunities that are appropriate and sustainable are supported, and the social, cultural and natural values underpinning tourism developments are protected.**	(1) The findings of state endorsed tourism studies and plans are considered and reflected where relevant.	Proposed amendments including changes to the Strategic Framework and various changes, incorporating State endorsed tourism plans. The Airlie Beach Local Plan, Bowen Local Plan, Short-term and Multi unit code, and Rural Tourism Code effectively integrate these plans.
	(2) Existing and potential opportunities, localities or areas appropriate for tourism development are identified and protected.	Amendments include a Rural tourism code, which promotes Agri and Nature based tourism in Rural areas, ensuring environmental integration and managing impacts upon Rural amenity. Short term accommodation within dwelling houses has been included, through amendments to the Multi Unit Uses Code and a definition for 'Short-term accommodation (Dwelling)'. 'Party houses' have been restricted within the entire Planning Scheme area. Specific limits have been introduced in Industry thresholds for mico-brewery and coffee roasting and added to the Tables of Assessment to encourage potential tourism opportunities. Bowen Local Plan and Airlie Beach Local Plan have been developed to facilitate development in central business districts within the Region. They aim to encourage sustainable tourism, education, business and accommodation.
	(3) The delivery of sustainable tourism development is facilitated where it: (a) is complementary to and compatible with other land uses, including sensitive land uses (b) promotes the protection or enhancement of the character, landscape and visual amenity, and the economic, social, cultural and environmental values of the natural and built assets associated with the tourism development.	Amendments include a Rural tourism code, which promotes Agri and Nature based tourism in Rural areas, ensuring environmental integration and managing impacts upon Rural amenity

	4 Appropriate infrastructure to support and enable tourism development is planned for.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
Biodiversity **Matters of environmental significance are valued and protected, and the health and resilience of biodiversity is maintained or enhanced to support ecological processes.**	(1) Development is located in areas to avoid significant impacts on matters of national environmental significance and considers the requirements of the Environment Protection and Biodiversity Conservation Act 1999.	A Biodiversity, Waterways and Wetlands Overlay Code and Mapping has been produced, from SPP Biodiversity Guidance, and a merge of the removed Environmental Significance Overlay and the Waterways and Wetlands Overlay Codes. Land use planning, complying with the Overlay Code meets this State interest.
	(2) Matters of state environmental significance are identified and development is located in areas that avoid adverse impacts; where adverse impacts cannot be reasonably avoided they are minimised.	A Biodiversity, Waterways and Wetlands Overlay Code and Mapping has been produced, from Biodiversity Guidance, and a merge of the removed Environmental Significance Overlay and the Waterways and Wetlands Overlay Codes. Definitions of 'Matters of environmental significance', 'riparian buffer' and 'Areas of environmental significance' have been added or amended in accordance with the Biodiversity Guidance Material. Table of assessment for the aforementioned Overlay Code has been amended to ensure appropriate planning assessment where not complying.
	(3) Matters of local environmental significance are identified and development is located in areas that avoid adverse impacts; where adverse impacts cannot be reasonably avoided, they are minimised.	With the exception of the Proserpine Rock Wallaby Habitat, Matters of Local Environmental Significance have not been added to the Planning Scheme at this point in time.
	(4) Ecological processes and connectivity is maintained or enhanced by avoiding fragmentation of matters of environmental significance.	A Biodiversity, Waterways and Wetlands Overlay Code and Mapping has been produced, from Biodiversity Guidance, and a merge of the removed Environmental Significance Overlay and the Waterways and Wetlands Overlay Codes.

	(5) Viable koala populations in South East Queensland are protected by conserving and enhancing koala habitat extent and condition.	N/A
Coastal Environment **The coastal environment is protected and enhanced, while supporting opportunities for coastal-dependent development, compatible urban form, and maintaining appropriate public use of and access to, and along, state coastal land.**	1(a) Protection of the coastal environment: Coastal processes and coastal resources statewide, including in the Great Barrier Reef catchment, are protected by: (a) concentrating future development in existing urban areas through infill and redevelopment	The major amendment introduces the following amended Codes: • Amended Coastal Hazard Overlay Code and Mapping; • Healthy Waters Code; and • Biodiversity, Waterways and Wetlands Overlay Code and Mapping. The above codes have been introduced or amended to meet the Coastal Environment State Interests. Council commissioned a study of Storm Tide and Coastal Erosion taking into account climate change to the year 2100, this study was called the 'Coastal Refinement Study' by BMT WBM March 2018. The study has informed changes to the Coastal Hazard Overlay Code and the Mapping has been updated to 2100 levels as per the SPP Guidance. A Healthy Waters Code has been introduced to the Planning Scheme to adopt Stormwater Quality Guidelines to better protect water quality in our local waterways and the Great Barrier Reef.
	1(b) Protection of the coastal environment: Coastal processes and coastal resources statewide, including in the Great Barrier Reef catchment, are protected by: (b) conserving the natural state of landforms, wetlands and native vegetation in the coastal management district	
	1(c) Protection of the coastal environment: Coastal processes and coastal resources statewide, including in the Great Barrier Reef catchment, are protected by: (c) maintaining or enhancing the scenic amenity and aesthetic values of important natural coastal landscapes, views and vistas	
	2 Protection of the coastal environment: Development of canals, dry land marinas, artificial waterways or marine infrastructure avoids adverse impacts on coastal resources and processes.	Development of artificial waterways will be protected through a trigger of operational works and additional performance criteria in the Construction Management Code. The amended Coastal Hazard Overlay Code also meets this State interest.

	3 Protection of the coastal environment: Reclamation of land under tidal water is avoided other than for the purpose of: (a) coastal-dependent development, public marine development or community infrastructure, where there is no reasonable alternative; or (b) strategic ports, priority ports, boat harbors or strategic airports and aviation facilities in accordance with a statutory land use plan, or statutory master plan; or (c) coastal protection works or work necessary to protect coastal resources or coastal processes.	The AO4.1 and AO10.1 within amended Coastal hazard overlay will ensure such development is only within identified Maritime development areas.
	4 Development in the coastal environment: Coastal-dependent development in areas adjoining tidal water is facilitated in preference to other types of development.	Met by the amended Coastal Hazard overlay code and the Bowen Local Plan.
	5 Development in the coastal environment: Opportunities for public use of and access to, and along, state coastal land is maintained or enhanced in a way that protects or enhances public safety and coastal resources.	Met by the amended Coastal hazard overlay code Acceptable outcome AO9.1, the Bowen Local Plan and the Airlie Beach Local Plan.
Cultural Heritage **The cultural heritage significance of heritage places and heritage areas, including**	1 Aboriginal and Torres Strait Islander cultural heritage: Matters of Aboriginal cultural heritage and Torres Strait Islander cultural heritage are appropriately conserved and considered to support the requirements of the Aboriginal Cultural Heritage Act 2003 and the Torres Strait Islander Cultural Heritage Act 2003.	Work was conducted to include Cultural heritage within the Strategic Framework as per the SPP Guidance, in collaboration with local Aboriginal groups.

places of Aboriginal and Torres Strait Islander cultural heritage, is conserved for the benefit of the community and future generations.	2 World and national cultural heritage: Adverse impacts on the cultural heritage significance of world heritage properties and national heritage places prescribed under the Environmental Protection and Biodiversity Conservation Act 1999 are avoided.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	3 State cultural heritage: Adverse impacts on the cultural heritage significance of state heritage places are avoided.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	4 Local cultural heritage: Local heritage places and local heritage areas important to the history of the local government area are identified, including a statement of the local cultural heritage significance of the place or area.	Work was conducted with local Aboriginal groups to identify heritage sites to be included in the local heritage register. It was concluded that due to the sensitivity of significant local Aboriginal places, it was better to continue using the DATSIP Register, however, notes were added as a reminder to check the register. Specific reference to Aboriginal cultural heritage is included within the Strategic Framework.
	5 and 6 Local cultural heritage: 5) Development of local heritage places or local heritage areas does not compromise the cultural heritage significance of the place or area by: a) avoiding adverse impacts on the cultural heritage significance of the place or area, or b) minimising and mitigating unavoidable adverse impacts on the cultural heritage significance of the place or area 6) The conservation and adaptive re-use of places of local cultural heritage significance and local heritage areas are	There have been the following changes to the Heritage Register. Additions to the Local Heritage Register: I. Mt Coolon State School Mine Street, Mt Coolon Lot 1 M7218 Removals from the Local Heritage Register: II. Proserpine Plumbing 23 Chapman Street Proserpine 2RP711965

	facilitated so that the cultural heritage significance of the place or area is retained.	III. Bowen Uniting Church 35-37 Kennedy Street Bowen 83B663 IV. Hook Island Underwater Observatory Hook Island 4HR1022 V. Proserpine War Memorial 14 Main Street Proserpine 208HR1473 VI. Palace Hotel 29-31 Main Street Proserpine 17RP724069 A trigger for demolition, relocation or removal involving building works has been added to the Heritage Overlay Tables of Assessment (TOA) to ensure all circumstances trigger the relevant assessment. The Heritage overlay code has been updated to accord with SPP requirements.
Water Quality **The environmental values and quality of Queensland waters are protected and enhanced.**	(1) Development facilitates the protection or enhancement of environmental values and the achievement of water quality objectives for Queensland waters.	A Healthy Waters Code has been introduced to the Planning Scheme to adopt Stormwater Quality Guidelines to better protect water quality management in our local waterways and the Great Barrier Reef. Stormwater quality controls are also included within the Construction management code and aligned throughout the Planning Scheme.
	(2) Land zoned for urban purposes is located in areas that avoid or minimise the disturbance to: (a) high-risk soils	The Biodiversity, Waterways and Wetlands overlay code and Coastal overlay code provides buffers to protect high ecological value aquatic ecosystems. State interest is suitably incorporated in land use planning.

	(b) high ecological value aquatic ecosystems (c) groundwater dependent ecosystems (d) natural drainage lines and landform features.	
	(3) Development is located, designed, constructed and operated to avoid or minimise adverse impacts on the environmental values of receiving waters arising from: (a) altered stormwater quality and hydrology (b) waste water (other than contaminated stormwater and sewage) (c) the creation or expansion of non-tidal artificial waterways (d) the release and mobilisation of nutrients and sediments.	A Healthy Waters Code has been introduced to the Planning Scheme to adopt Stormwater Quality Guidelines to better protect water quality management in our local waterways and the Great Barrier Reef. Amendments have been made to the Business Activities Code, Industrial Activities Code, and Multi-unit uses code for the effective treatment and containment of trade waste. Non-tidal waterway benchmarks have been added to the Construction Management Code for the creation of new waterways and an administration definition has been included for 'non-tidal artificial waterway'.
	(4) At the construction phase, development achieves the applicable stormwater management design objectives in table A (appendix 2).	Construction Phases are captured within Infrastructure code at present. This has been amended to post construction and construction phase design objectives within the Construction Management Code and aligned throughout the Planning Scheme including the LGIP.
	(5) At the post-construction phase, development: (a) achieves the applicable stormwater management design objectives on-site, as identified in table B (appendix 2); or (b) achieves an alternative locally appropriate solution off-site that achieves an equivalent or improved water quality outcome to the relevant stormwater management design objectives table B (appendix 2).	

	(6) Development in water resource catchments and water supply buffer areas avoids potential adverse impacts on surface waters and groundwaters to protect the drinking water supply environmental values.	Water supply buffers not yet identified within State interactive mapping within Whitsunday Region.
Emissions and Hazardous Activities **Community health and safety, and the natural and built environment, are protected from potential adverse impacts of emissions and hazardous activities. The operation of appropriately established industrial development, major infrastructure, and sport and recreation activities is ensured.**	(1) Industrial development, major gas, waste and sewerage infrastructure, and sport and recreation activities are located, designed and managed to avoid or mitigate adverse impacts of emissions on sensitive land uses and the natural environment.	No changes are proposed in the major amendment in relation to this state interest.
	(2) Protection from emissions and hazardous activities: Activities involving the use, storage and disposal of hazardous materials and prescribed hazardous chemicals, dangerous goods, and flammable or combustible substances are located and managed to minimise the health and safety risks to communities and individuals.	Appropriate measures have been incorporated into the Flood hazard overlay code to ensure hazardous materials are not released into floodwaters.
	(3) Protection from emissions and hazardous activities: Prescribed hazardous chemicals, stored in a flood hazard area (where exceeding the hazardous chemicals flood hazard threshold), are located to minimise the risk of inundation and dispersion.	Appropriate measures have been incorporated into the Flood hazard overlay code to ensure hazardous materials are not released into floodwaters.

	(4) Protection from emissions and hazardous activities: Sensitive land uses are protected from the impacts of previous activities that may cause risk to people or property including: (a) former mining activities and related hazards (e.g. disused underground mines, tunnels and shafts) (b) former landfill and refuse sites. (c) contaminated land.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(5) Protection of industrial development, major infrastructure, and sport and recreation facilities from encroachment: Protect the following existing and approved land uses or areas from encroachment by development that would compromise the ability of the land use to function safely and effectively: (a) Medium-impact, high-impact and special industries (b) Extractive industries (c) Hazardous chemical facilities (d) Explosives facilities and explosives reserves (e) High pressure gas pipelines (f) Waste management facilities (g) Sewage treatment plants. (h) Industrial land in a state development area, or an enterprise opportunity area or employment opportunity area identified in a regional plan. (i) Major sport, recreation and entertainment facilities. (j) Shooting facilities.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.

	(k) Motor sport facilities.	
	(6) Mitigation of adverse impacts from emissions and hazardous activities: Development that is incompatible with the existing and approved land uses or areas included in policy 5 above, is located to avoid any adverse impacts of environmental emissions, or health and safety risks, and where impacts cannot be practicably avoided, development is designed to minimise the impacts.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(7) Acid sulfate soil affected areas: Protect the natural and built environment, and human health from potential adverse impacts of acid sulfate soils by: (a) identifying areas with high probability of containing acid sulfate soils (b) providing preference to land uses that will avoid, or where avoidance is not practicable, minimise the disturbance of acid sulfate soils (c) including requirements for managing the disturbance of acid sulfate soils to avoid or minimise the mobilisation and release of acid, iron or other contaminants.	Acid sulfate mapping has been included for the entire Region, considering local studies and reference from SPP guidance. Triggers within the Tables of Assessment have also been included. The detailed studies are: • Hardy, S 2003, *Soils and land use suitability of the Whitsunday Coast;* • Muller, P 2006, *Acid sulphate soils of Bowen, North Queensland;* • Muller, P 2007, *Acid sulphate soils, Airlie Beach Area; and* • Muller, P 2007, *Acid sulphate soils, Proserpine Area.*
Natural Hazards, Risk and Resilience **The risks associated with natural hazards,**	1 Natural hazards areas are identified, including: (a) bushfire prone areas (b) flood hazard areas (c) landslide hazard areas (d) storm tide inundation areas	Climate change factors have been included within Administrative definitions for Flood hazard area, Defined flood event, Defined flood level and Coastal hazard area. The following Natural Hazards Overlay Codes have been amended and include amended Mapping and Tables of Assessment:

including the projected impacts of climate change, are avoided or mitigated to protect people and property and enhance the community's resilience to natural hazards.	(e) erosion prone areas.	• Coastal Hazard Overlay Code and Mapping; • Flood Overlay Code and Mapping; • Bushfire Overlay Code and Mapping; and • Landslide Overlay Code and Mapping. The following reports inform the mapping amendments: • Town of Whitsunday Drainage Study, December 2017, BMT WBM • Bowen Water Hazards Assessment Stage 1: Storm Tide Modelling Basis Report, December 2017, BMT WBM • Coastal Hazard Mapping Refinement, March 2018, BMT WBM; and • Whitsunday Landslide Study, May 2019, Cardno.
	2 A fit-for-purpose risk assessment is undertaken to identify and achieve an acceptable or tolerable level of risk for personal safety and property in natural hazard areas.	Risk assessment benchmarks have been included within the: - Flood overlay code and mapping; - Coastal hazard code and mapping; - Landslide overlay code and mapping; and - Acid sulfate soil overlay code and mapping. The studies mentioned below have informed risk assessments. • Town of Whitsunday Drainage Study, December 2017, BMT WBM • Bowen Water Hazards Assessment Stage 1: Storm Tide Modelling Basis Report, December 2017, BMT WBM • Coastal Hazard Mapping Refinement, March 2018, BMT WBM; and • Whitsunday Landslide Study, May 2019, Cardno.
	3 Land in an erosion prone area is not to be used for urban purposes, unless the land is located in: (a) an urban area in a planning scheme; or (b) an urban footprint identified in a regional plan.	Amended Erosion Prone Mapping for the entire Region, referenced from the Coastal Hazard Mapping Refinement Study (March 2018, BMT WBM) and appropriate benchmarks have been included within the Coastal Hazard overlay code.

	4 Development in bushfire, flood, landslide, storm tide inundation or erosion prone natural hazard areas: (a) avoids the natural hazard area; or (b) where it is not possible to avoid the natural hazard area, development mitigates the risks to people and property to an acceptable or tolerable level.	This has been reflected in each applicable overlay code.
	5 Development in natural hazard areas: (a) supports, and does not hinder disaster management capacity and capabilities (b) directly, indirectly and cumulatively avoids an increase in the exposure of severity of the natural hazard and the potential for damage on the site or to other properties (c) avoids risks to public safety and the environment from the location of the storage of hazardous materials and the release of these materials as a result of a natural hazard (d) maintains or enhances the protective function of landforms and vegetation that can mitigate risks associated with the natural hazard.	This has been reflected in each applicable overlay code. Specific Developments with greater flood immunity requirements have been captured in changes to the Infrastructure Code and updates have been made to the Table for Flood Immunity for Essential Community Infrastructure and Services.
	6 Community infrastructure is located and designed to maintain the required level of functionality during and immediately after a natural hazard event.	This has been reflected in each applicable overlay code.
	7 Coastal protection work in an erosion-prone area is undertaken only as a last resort where coastal erosion or inundation	This has been reflected in the amended Coastal Hazard Overlay Code.

	presents an imminent threat to public safety or existing buildings and structures, and all of the following apply: (a) The building or structure cannot reasonably be relocated or abandoned. (b) Any erosion control structure is located as far landward as practicable and on the lot containing the property to the maximum extent reasonable. (c) Any increase in coastal hazard risk for adjacent areas from the coastal protection work is mitigated.	
	8 Erosion prone areas within a coastal management district: Development does not occur unless the development cannot feasibly be located elsewhere and is: (a) coastal-dependent development; or (b) temporary, readily relocatable or able to be abandoned development; or (c) essential community infrastructure; or (d) minor redevelopment of an existing permanent building or structure that cannot be relocated or abandoned.	This has been reflected in the amended Coastal Hazard Overlay Code.
	9 Erosion prone areas within a coastal management district: Development permitted in policy 8 above mitigates the risks to people and property to an acceptable or tolerable level.	This has been reflected in the amended Coastal Hazard Overlay Code.
Energy and Water Supply **The timely, safe, affordable and**	(1) Existing and approved future major electricity infrastructure locations and corridors (including easements and electricity substations), and bulk water	The alignment of the bulk water pipeline from Proserpine to Airlie Beach has been identified within the Infrastructure Overlay map. Minor amendments to the Infrastructure overlay code provide a risk-based setback benchmark for dwelling

reliable provision and operation of electricity and water supply infrastructure is supported and renewable energy development is enabled.	supply infrastructure locations and corridors (including easements) are protected from development that would compromise the corridor integrity, and the efficient delivery and functioning of the infrastructure.	houses near a bulk water supply line. Amendments comply with the State interest.
	(2) Major electricity infrastructure and bulk water supply infrastructure such as pump stations, water quality facilities and electricity substations, are protected from encroachment by sensitive land uses where practicable.	State interest is already incorporated within the Planning Scheme. A substation has been included on Strathmore Road, Collinsville, within the Infrastructure overlay map.
	(3) Development of major electricity infrastructure and bulk water supply infrastructure avoids or otherwise minimises adverse impacts on surrounding land uses and the natural environment.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(4) The development and supply of renewable energy at the regional, local and individual scale is enabled in appropriate locations.	A Renewable Energy Development Code & Planning Scheme Policy (Renewable Energy Facility Visual Impact Assessment) has been included in the amendment.
	Mapping Updates	Yes
Infrastructure Integration **The benefits of past and ongoing investment in infrastructure and**	1 The outcomes of significant infrastructure plans and initiatives by all levels of government are considered and reflected, where relevant.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.

facilities are maximised through integrated infrastructure and land use planning.	2 Development achieves a high level of integration with infrastructure planning to: (a) promote the most efficient, effective and flexible use of existing and planned infrastructure (b) realise multiple economic, social and environmental benefits from infrastructure investment (c) ensure consideration of future infrastructure needed to support infill and greenfield growth areas (d) optimise the location of future infrastructure within communities to provide greater access to facilities and services and enable productivity improvements.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	3 Development occurs: (a) in areas currently serviced by state and/ or local infrastructure and associated services; or (b) in a logical and orderly location, form and sequence to enable the cost effective delivery of state and local infrastructure to service development.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	4 Existing and planned infrastructure is protected from development that would compromise the ability of infrastructure and associated services to operate safely and efficiently.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
Transport Infrastructure	(1) All transport infrastructure:	An amended definition of ‘future state transport corridor’ has been added to Schedule 1: Definitions.

The safe and efficient movement of people and goods is enabled, and land use patterns that encourage sustainable transport are supported.	Transport infrastructure and existing and future transport corridors are reflected and supported through compatible land uses.	
	(2) All transport infrastructure: Development is located in areas currently serviced by transport infrastructure, and where this cannot be achieved, development is facilitated in a logical and orderly location, form and sequence to enable cost-effective delivery of new transport infrastructure to service development.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(3) All transport infrastructure: Development achieves a high level of integration with transport infrastructure and supports public passenger transport and active transport as attractive alternatives to private transport.	Additional amendments are also proposed within the Transport and Parking code to provide end of trip facilities for cyclists in high trip generating developments.
	(4) All transport infrastructure: Development is located and designed to mitigate adverse impacts on development from environmental emissions generated by transport infrastructure.	Updated mapping for railways and state controlled roads has been included within the Infrastructure overlay map.
	(5) All transport infrastructure: A road hierarchy is identified that reflects the role of each category of road and effectively manages all types of traffic.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(6) State transport infrastructure: Development in areas surrounding state transport infrastructure, and existing and future state transport corridors, is	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.

	compatible with, or support the most efficient use of, the infrastructure and transport network.	
	(7) State transport infrastructure: The safety and efficiency of existing and future state transport infrastructure, corridors, and networks is not adversely affected by development.	The Airlie Beach Local Plan protects the integrity of Waterson Way by identifying future internal road corridors and the direction of internal traffic to the Raintree Place round-a-bout.
Strategic Airports and Aviation Facilities **The operation of strategic airports and aviation facilities is protected, and the growth and development of Queensland's aviation industry is supported.**	(1) Strategic airports and aviation facilities are identified, including the associated Australian Noise Exposure Forecast (ANEF) contours, obstacle limitation surfaces or height restriction zones, public safety areas, lighting area buffers, light restriction zones, wildlife hazard buffer zones, and building restricted areas.	The Wildlife Hazard Buffer Zone has been altered slightly at the Proserpine Whitsunday Airport; this has been amended in the Airport Environs mapping.
	(2) The safety, efficiency and operational integrity of strategic airports are protected. Development and associated activities: (a) do not create incompatible intrusions, or compromise aircraft safety, in operational airspace (b) avoid increasing risk to public safety in a public safety area (c) are compatible with forecast levels of aircraft noise within the 20 ANEF contour or greater [as defined by Australian Standard 2021–2015: Acoustics—Aircraft noise intrusion—Building siting and construction (AS 2021), adopted 12 February 2015] and mitigate adverse impacts of aircraft noise.	Amendment to PO7 of Airport environs overlay code that presently only refers to sensitive land uses, to ensure noise provisions apply to all development. Low Impact Industry has been added to the ANEF Contours 'compatible and incompatible uses' table, and to the 'desirable indoor design sound levels' to align with the SPP.

	(3) Development complements the role of a strategic airport as an economic, freight and logistics hub, and enhances the economic opportunities that are available in proximity to a strategic airport.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(4) Aviation facilities are protected by avoiding development and associated activities within building restricted areas that may affect the functioning of the aviation facilities.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	(5) Key transport corridors (passenger and freight) linking strategic airports to the broader transport network are identified and protected.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
Strategic Ports **The operation of strategic ports and priority ports is protected and their growth and development is supported.**	1 All strategic ports: Strategic ports, and associated strategic port land and core port land, are identified.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	2 All strategic ports: Development complements the role of a strategic port as an economic, freight and logistics hub, and enhances the economic opportunities that are available in proximity to a strategic port.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	3 All strategic ports: Strategic ports are protected from development that may adversely affect the safety, viability or efficiency of existing and future port operations.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.

	4 All strategic ports: Development is located and designed to mitigate adverse impacts on the development from environmental emissions generated by port operations.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	5 All strategic ports: Key transport corridors (including freight corridors) linking strategic ports to the broader transport network are identified and protected.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	6 All strategic ports: Statutory land use plans for strategic ports and the findings of planning and environmental investigations undertaken in relation to strategic ports are considered.	No changes are proposed in the major amendment in relation to this state interest. State interest is already incorporated within the Planning Scheme.
	7 Priority ports: For priority ports, development is also consistent with the requirements of priority port master plans and priority port overlays as these are approved under the Sustainable Ports Development Act 2015.	No changes are proposed in the major amendment in relation to this state interest as no Port Masterplans or Overlays have been developed for the Abbot Point Priority Port to date.

Other changes not directly referencing the State Interests:

Part 1 About the Planning Scheme

- Determining the category of development and categories of assessment:
    - The overlay/local plan/zone will only affect the premises footprint affected by that overlay/local plan/zone.

Part 5 Tables of Assessment

- Amendments have been made to the Waterfront and Marine Industry Table of Assessment:
    - Seafood processing is now assessed against the Industry Activities Code, not the Rural Activities Code.
- Amendments have been made to a number of categories of development to ensure more efficient determination in a level of assessment.
- Amendments to Airport Environs Overlay, Biodiversity, Waterways and Wetlands Overlay, Extractive Resources Overlay, and Infrastructure Overlay to enable code assessment where development does not meet the accepted requirements of the overlay.
- List Bulk Landscape Supplies to be under Business Uses, not Industrial Uses.
- Addition of wording in Landslide Overlay to ensure all slope greater than 15% is captured when not mapped.

Part 6 Zone Codes

- Amendments to Rural Zone Code:
    - Deletion of development not occurring over land with a slope of greater than 15%.
- Tourism Accommodation Zone Code:
    - Deletion of double up in zone code for vehicle movements regarding state controlled roads.

Part 7 Local Plan Codes

- Amendments to the Hamilton Island Heights Plan:
    - The Storeys have been converted into Metres, to ensure consistency across the Planning Scheme.

Part 8 Overlay Codes

- Amendments to Biodiversity, Waterways and Wetlands overlay:
    - Include accepted development benchmarks.
- Amendments to Infrastructure Overlay:
    - Requirements for dwelling houses near water supply pipelines and buffers.
- Replace within the Coastal Environmental Hazard Overlay ‘dune crest’ with ‘coastal dune’ as it has a definition in state legislation.

Part 9 Development Codes

- Amendments to the Business Activities Code:
    - Greater control of scale and intensity of a business activity in the tourist accommodation zone.
- Amendments to the Dwelling House Code and Dual Occupancy Code:
    - Greater control over domestic outbuildings design including size and height;
    - The provisions for the QDC have been deleted within the Planning Scheme; and
    - Greater building design in habitable dwellings including roof pitch, eaves requirements and articulation, and front façade treatments.
- Amendments have been made to the Reconfiguring a Lot Code:
    - Lowering levels of assessment for certain types of subdivisions;
    - Limiting the creation of multiple rear lots, having certain standards for rear lots and minimum building envelope requirements;
    - Amendments to realignment requirements to ensure within rural areas sensitive uses are protected;
    - Minimum requirements for access handle standards; and
    - Administrative definitions of ‘rear lot’ and ‘access handle’ have been added.
- Amendments have been made to the Transport and Parking code:
    - Dispensations have been given to developments that demonstrate cross utilization by up to 30% reduction in car parking rates:
    - Where to find the service vehicle definition has been referenced in the Code; and
    - Ambulance parking being exempt for Health Care Services where they are not required e.g. optometrist.
- Amendments have been made to the Infrastructure code:
    - To ensure development outside the PIA that is not a dwelling house has adequate potable water supply onsite; and

    - A PO and AO have been added to require a Waste Management Plan for developments over a certain size.
- Legislation references have been updated throughout the Planning Scheme.
- Amendment to the Rural Activities code:
    - Amend the buffer distance for sensitive uses within the code for consistency.
- Amendments to the Advertising Devices code.

Schedule 1 Definitions

- Administrative Definitions
    - Definition for 'engineering work', to assist in clarification for the Table of Assessment 'Operational Work';
    - Definition for 'landscaping work', to assist in clarification for the Table of Assessment 'Operational Work';
    - Reinstate the Total Use Area definition; and
    - Definition for 'multi-unit use' included to assist in clarification time of stay for premises.

Schedule 4

- Update Preliminary Approvals throughout the Region for inclusion under Section 89 of the Act.

Schedule 6 Planning Scheme Policies

- Planning Scheme Policy SC6.4 Landscaping Planning Scheme Policy - SC6.4.5 Planning List:
    - Removal of *Murraya paniculata* 'Mock Orange' as it is a weed.
- Planning Scheme Policy Waste Management Policy included.

Schedule 2 Mapping

All Mapping amendments are found under the Map Project 'Planning Major Amendments' in the Online Mapping of the Whitsunday Regional Council.
https://mapping.whitsundayrc.qld.gov.au/connect/analyst/mobile/#/main?mapcfg=Planning%20Major%20Amendments

Map Title	Map Title Amendments	Changes to Content
Local government Planning Scheme area and context	Local government Planning Scheme area and context	None
Strategic Framework Map	Strategic Framework Map	Settlement patterns updated as per zoning changes
Zoning Maps		Numerous Amendments
Hamilton Island Local Plan: Heights Map	Deleted	Heights merged into Building Heights Overlay Map
Bowen Local Area Plan *new*	Bowen Local Area Plan	New Map 3 Precincts • Precinct 1 – Marine Industry • Precinct 2 – Low Impact Marine Services • Precinct 3 – Tourism Building Heights added to BH Overlay Map Zones added to Zoning Map
Airlie Beach Local Area Plan *new*	Airlie Beach Local Area Plan	Precinct Map • Precinct A • Precinct B • Precinct C • Precinct D • Precinct E • Precinct F • Precinct G • Plazas Transport Map • Internal road layouts • Existing and future pedestrian routes • Existing and future laneways
Acid Sulfate Soils Overlay	Acid Sulfate Soils Overlay	Entire New Mapping taken from below studies:

		• Hardy, S 2003, Soils and land use suitability of the Whitsunday Coast; • Muller, P 2006, Acid sulphate soils of Bowen, North Queensland; • Muller, P 2007, Acid sulphate soils, Airlie Beach Area; and • Muller, P 2007, Acid sulphate soils, Proserpine Area
Agricultural Lands Overlay	Agricultural Lands Overlay	Update from SPP layers: • Agricultural land classification A & B • Stock Route Network • Aquaculture
Airport Environs Overlay	Airport Environs Overlay	Update from SPP layer: • Wildlife hazard buffer zone
Biodiversity, Waterways and Wetlands Overlay	Biodiversity, Waterways and Wetlands Overlay	Update from SPP layers: • MSES Protected Areas – Nature Refuge • MSES Protected Areas – Estate • MSES Marine Parks • MSES Declared Fish Habitat Area • MSES – High ecological significance wetlands • MSES – Regulated Vegetation – 100m from wetland • MSES – Wildlife Habitat – special least concern • MESE – Wildlife Habitat – endangered or vulnerable • MSES – High Ecological Value Waters (Watercourse) • MSES High Ecological Value Waters (Wetlands) • MSES – Regulated Vegetation – Essential Habitat

		• MSES – Regulated Vegetation – Vegetation Category B • MSES – Regulated Vegetation – Vegetation Category C • MSES – Regulated Vegetation – Vegetation Category R GBR Riverine • MSES – Regulated Vegetation (intersection a watercourse) • High Ecological Value Water Areas – Slightly disturbed waters ecological value water areas Inclusion of existing Climatic Regions layer
Building Heights Overlay *new*	Building Heights Overlay	Heights across Region shown on mapping or otherwise refers to the Code.
Bushfire Hazard Overlay	Bushfire Hazard Overlay	Update from SPP for Bushfire: • Medium Risk • High Risk • Very High Risk • Hazard Buffer Deletion of specific mapping within Proserpine
Coastal Protection: Storm Tide Inundation Overlay	Coastal Hazard Overlay – Storm Tide	Entire New Mapping taken from below studies: • Coastal Hazard Mapping Refinement, March 2018, BMT WBM
Coastal Protection: Erosion Prone areas and Permanent Inundation Overlay	Coastal Hazard Overlay – Erosion Prone and Permanent Inundation	Entire New Mapping taken from below studies: • Coastal Hazard Mapping Refinement, March 2018, BMT WBM
Environmental Significance Overlay	Deletion of layer Merged with Waterways and Wetlands	

	Renamed Biodiversity, Waterways and Wetlands.	
Extractive Resources Overlay	Extractive Resources Overlay	Update to layers from SPP: • Local Resource Areas • Mining Leases • Mineral Development Licence
Flood Hazard Overlay	Flood Hazard Overlay	Update to layer from SPP: • Queensland Flood Mapping Program Flood Investigation Burdekin Basin 2015 • Queensland Flood Mapping Program Flood Investigation Don Basin 2015 New Council studies informing layers include: • Bowen Local Catchment Flood Study 2015 • Don River Flood Risk and Mitigation Study 2014 • Town of Whitsunday Drainage Study 2017
Heritage Overlay	Heritage Overlay	Additions to the Local Heritage Register: • Mt Coolon State School Mine Street, Mt Coolon Lot 1 M7218 Removals from the Local Heritage Register: • Proserpine Plumbing 23 Chapman Street Proserpine 2RP711965 • Bowen Uniting Church 35-37 Kennedy Street Bowen 83B663 • Hook Island Underwater Observatory Hook Island

		4HR1022 • Proserpine War Memorial 14 Main Street Proserpine 208HR1473 • Palace Hotel 29-31 Main Street Proserpine 17RP724069
Infrastructure: Transport Overlay		• Removal of Bowen Cokeworks railway line • New railway noise corridor mapping • Updated state controlled road noise corridor mapping • Amended Passenger transport facility extents in Port of Airlie to remove from 115SP260215
Infrastructure: Utility Infrastructure Overlay		• Addition of substation on Strathmore Road, Collinsville • Additional bulk water supply line around Mt Julian
Landslide Hazard Overlay	Landslide Hazard Overlay	Updated Mapping taken from below studies: • Whitsunday Landslide Study, May 2019, Cardno • Lidar Mapping 2016 RPS to refine 15% slope in former Bowen Shire.
Waterways and Wetlands Overlay	Deletion of layer Merged with Waterways and Wetlands Renamed Biodiversity, Waterways and Wetlands.	
Waterways and Wetlands: Climatic Region Overlay	Deletion of layer Merged with Waterways and Wetlands Renamed Biodiversity, Waterways and Wetlands.	

Attachment 4 – Letter to DSDILGP

Contact: Shane Neville – Manager Strategic Planning
Direct dial no.: 4945 0683

[Insert Date]

The Honourable Steven Miles MP
Deputy Premier and Minister for State Development,
Infrastructure, Local Government and Planning.
Department of State Development, Infrastructure,
Local Government & Planning.
PO Box 15009
City East, QLD 4002

info@dsdmip.qld.gov.au

Dear Deputy Premier

RE: Proposed Amendments (V4.0) to the Whitsunday Planning Scheme 2017

Whitsunday Regional Council is writing to give notice to the Chief Executive, pursuant to Section 20 of the *Planning Act 2016,* of a Planning Scheme Major Amendment, in accordance with the *Minister's Guidelines and Rules 2020* (MGR).

Whitsunday Regional Council is also writing to give notice to the Chief Executive, pursuant to Section 21 of the *Planning Act 2016,* of an Administrative Local Government Infrastructure Plan (LGIP) Amendment, in accordance with the MGR.

The following documents have been attached to comply with Chapter 2, Part 4, Section 16.5 of the MGR:

1. the Council decision to amend its Planning Scheme:

   Refer to **Attachment 1** – **Council Resolution**; and

2. the required material for a Proposed Major Amendment, as prescribed in Schedule 3, including:

   a) An electronic copy of the Proposed Amendment:

      Refer to **Attachment 2** - **Proposed Major Amendment (V4.0)**;

   b) A statement addressing the State Interests in the relevant Regional Plan and State Planning Policy (SPP), which includes:

      i. how the State Interests are integrated in the amendment;

      ii. reasons why any State Interests have not been integrated in the amendment; and

      iii. any State Interests that are not relevant:

      Refer to **Attachment 3** - **State Interest Review Statement**;

   c) A statement about how the key elements of a Planning Scheme mentioned in section 16(1) of the Act have been addressed and if the amendment is consistent with the regulated requirements:

   The Proposed Major Amendment is consistent with regulated requirements, as it clearly identifies strategic outcomes for the Local Government Area; includes measures, in the form of Development

and Overlay Codes, that facilitate the achievement of these strategic outcomes; and coordinates and integrates State and Regional aspects of these matters, as identified in Section 16 (1) of the *Planning Act 2016*.

d) A communications strategy:

   Refer to **Attachment 4** – **Community Engagement Plan**;

e) An indicative timeframe for the completion of the amendment process:

   Refer to **Attachment 5** – **Indicative Timeframe**;

f) Any background studies or reports that informed the preparation of the amendment:

   Refer to Attachments:

   - **Attachment 6** - **Town of Whitsunday Drainage Study**;
   - **Attachment 7** - **Bowen Water Hazard Study (Stage 1 and 2)**;
   - **Attachment 8** - **Coastal Hazard Mapping Refinement Study**;
   - **Attachment 9** - **Whitsunday Landslide Study**;
   - **Attachment 10** - **Scenic Amenity Study 2017**; and
   - **Attachment 11 – Acid Sulfate Reports;**

g) Any relevant mapping:

   Refer to **Attachment 12** – **Proposed Major Amendment Mapping (V4.0)**; and

h) Any other information considered relevant by the local government:

   Not applicable.

The Major Amendment has been compiled responding to State Planning Policy amendments, Planning Scheme submissions from the last round of consultation, functionality edits and DSDILGP conditions of approval from 2017.

Whitsunday Regional Council requests the Department to commence the Major Amendment State Interest Review, in accordance with the MGR.

The Administrative LGIP Amendment requires no action from the State, however, will be necessary to ensure the Proposed Major Amendment fully functions. These two amendments will run concurrently, to be adopted and take effect at the same time.

Council looks forward to working with the State throughout the MGR process and receiving the Minister's notice of the outcome of the State Interest Review and approved communications strategy for the Proposed Major Amendment, pursuant to the MGR.

Yours faithfully

Neil McGaffin

Director Development Services

CC: mackay@dsdmip.qld.gov.au

Attachment 5 – Draft Community Engagement Plan

Whitsunday Planning Scheme 2017 V4.0 – Major Amendment and Administrative Local Government Infrastructure Plan Amendment

Community Engagement Plan

Date: 24/02/2021

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Document History

Title	Version No.	Date	Author	Reviewer	Approved by
Report	1.0	XX 2020	Complete	Joanne Vlismas; Greg Martin; Shane Neville; & Neil McGaffin	Complete

1. Introduction

1.1 Background

Whitsunday Regional Council commenced the *Whitsunday Planning Scheme 2017* (Planning Scheme) on 30 June 2017 with the intention of investigating future amendments in response to:

- Submissions from the 2015 and 2016 Planning Scheme public consultation period;
- Conditions of approval from the Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) State interest review;
- State Planning Policy 2017 amendments;
- Council strategic documents, such as the *Economic Development Strategy 2017 - 2021*;
- Comments from Development Assessment and Engineering branches; and
- Other general improvements to readability and functionality.

1.2 Purpose and Aim of the Community Engagement Plan

This Community Engagement Plan (Plan) is a mandatory requirement for making or amending a Planning Scheme under the *Planning Act 2016.* The Plan seeks to address the following aspects for the Planning Scheme Major Amendment and Administrative Local Government Infrastructure Plan (LGIP) Amendment:

- Legislative requirements in accordance with the *Ministers Guidelines and Rules 2020,* Chapter 2, Part 4 (Major Amendment) and Chapter 5, Part 1 (Administrative LGIP Amendment);
- Amendment preparation and risk management;
- Key messages for each consultation stage;
- Government stakeholder consultation (relevant State agencies) and Non-government stakeholder consultation;
    - Communication protocols (covering communication with both internal and external stakeholders);
    - Appropriate communication tools (including approved protocols and timing);
- Community engagement program and timelines;
- Submission evaluation and reporting requirements; and
- Examples of communication material.

This Communication strategy has been modelled upon guidance from the Minister's *Community Engagement Toolkit 2017*. Once adopted by Council and approved by the Minister, public consultation must be completed in accordance with this Plan.

1.3 Communication objectives

Open and transparent communication and stakeholder management plays a key role in enabling Council to engage effectively with the public. The key objectives of this Plan are to:

- Define consultation efforts, timelines and strategies for each stage of the Major Amendment and Administrative LGIP Amendment, including preparation, consultation and post-consultation;
- Create an inclusive consultation period that encourages the community and residents to engage with Council staff in a constructive manner;
- Set out key messages and consultation materials to build the communities capacity to understand proposed amendments and encourage engagement; and

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- Capture knowledge for refinements to proposed amendments and all aspects of the Planning Scheme to make better decisions about planning and development.

1.4 Communication Principles

To develop an effective Plan a number of key communication principles have been developed. These principles, summarised in **Table 1** below, will assist in guiding the preparation and implementation of community engagement across the Region.

Table 1: Summary of Communication Principles to guide Major Amendment and Administrative LGIP Amendment public consultation.

Principles
1. Integrity and transparency – Engagement involves trust and transparency. Council will carefully consider and accurately portray the community's role in decision-making and will ensure staff are aware of the scope of their influence on the decisions made.
2. Respect – Council will facilitate a safe and respectful consultation environment that values individual opinions and input. Council values the contributions made and time given and will facilitate consultation processes that respect all participants and their contributions.
3. Inclusive – Council will use a range of opportunities and techniques to encourage the participation and awareness of all people who may be affected by the outcome of this process.
4. Informative – Effective engagement will ensure all parties understand the relevant legal, statutory, strategic and local context of this project and the process being undertaken.
5. Well planned – Engagement requires informed judgement and planning in its approach and implementation in order to be effective, practical and suitably resourced.
6. Meaningful – The community will have opportunities to participate in engagement processes in relation to project constraints, the scope of influence, and Council's decision-making process.
7. Closing the loop – Providing feedback is important in maintaining an open and transparent process. Council needs to ensure the community understand the reasons for the final decision.

2. Statutory Consultation Requirements

2.1 Consultation Timeline

The *Ministers Guidelines and Rules 2020,* Chapter 2, Part 4, defines the mandatory consultation timeline for a Major Amendment. No consultation requirement exists for an Administrative LGIP Amendment, although it will be advertised alongside the Major Amendment:

Table 2: Statutory consultation requirements.

Step	Description	Undertaken by	Estimated timeframe (business days)
1. Planning and preparation	Decide to make a major amendment and give the proposed amendment to the Minister for State Interest Review (no early confirmation of state interests).	Whitsunday Regional Council (WRC)	(October 2017 – March 2021)
2. State Interest Review	Undertake State Interest Review.	Minister	Max. 60 b.d. (March 2021 – June 2021)

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3. Public consultation & Submission analysis *	Undertake 20 b.d. public consultation, assess submissions, make amendments (if necessary*) and lodge proposed amendment to the Minister for adoption.	WRC	Min. 20 b.d. public consultation (June – July 2021) Approx. 30 b.d. for analysis and adoption (July – August 2021)
4. Minister's consideration	Consider the proposed amendment and give a notice advising if the proposed amendment may be adopted.	Minister	Max. 40 b.d. (Aug- Oct 2021)
5. Adoption	Decide to adopt the proposed amendment and give public notice of the adoption.	WRC	Estimated 30 b.d. (Oct - Dec 2021)
6. Copy to chief executive	Give a copy of the amendment to the chief executive.	WRC	Max. 10 b.d. (December 2021)
		Total (excluding preparation)	190 b.d.

*Where non-administrative amendments are required after Public consultation at Step 3, WRC will be required to return to Step 2 – State interest review, restarting the 190 b.d. process. Given amendments are likely to be minor in nature, a second State interest review will likely be a shorter timeframe than 60b.d, focusing only on amendments consultation.

3. Stakeholder Identification

3.1 Level of stakeholder participation

To ensure the best results from this engagement process, a series of participation levels has been determined, based on the International Association of Public Participation (IAP2) guidelines.

Table 3: IAP2 Public Participation Spectrum.

INCREASING IMPACT ON THE DECISION →

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision. We will seek your feedback on drafts and proposals.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will work together with you to formulate solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

Based on the levels of engagement, outlined in **Table 3**, within the Major Amendment and Administrative LGIP Amendment, Council will:

- **Involve** major stakeholders in key amendments;
- **Inform** the public on the nature of the changes; and
- **Consult** to obtain feedback on the proposed changes.

3.2 Stakeholder analysis

A summary of potential stakeholders has been developed in **Table 4** below. This Table also demonstrates the level of consultation best suited to each stakeholder group, based upon impacts of amendments on each group, level of interest and the stakeholders likely influence.

Table 4: Project stakeholders and level of consultation.

Stakeholder Category	Level of consultation and timing
Internal	
Whitsunday Regional Council	**Involve** through consultations on amendments as relevant. **Consult** prior to formal consultation.
External	
State Government Departments	**Involve** through presentations of proposed amendments prior to, and during, State interest review. **Consult** during State Interest Review.
Key community interest groups, Airlie Beach Chamber of Commerce, Fight for Airlie and Save our Foreshore	**Involve** through presentation or discussion workshops of Airlie Beach Local Plan during formal consultation. **Consult** during formal consultation.
All known Industry stakeholders (Planning, Engineering, Building) (see Appendix A for list)	**Consult** during formal consultation.
Local Registered Aboriginal groups (see Appendix A for list)	**Involve** through workshops during Planning and preparation stage. **Consult** during formal consultation.
All interested Community stakeholders (see Appendix A for list)	**Consult** during formal consultation.

4. Consultation Context

The first round of public consultation for the Planning Scheme occurred between 21 August 2015 to 16 October 2015, with 693 submissions lodged referencing topic, such as:

- Building heights in Airlie Beach;
- Zone amendment requests;

- Bowen Marina activation; and
- Rural residential lot sizes.

Various zone amendment requests were made in response to this consultation period and building heights in Airlie Beach were reduced for the second round of consultation.

The second round of public consultation for the Planning Scheme occurred between 29 August to 14 October 2016, with 128 submissions lodged referencing topics, such as:

Predominant topics included:

- Building heights in Airlie Beach;
- Population growth in Airlie Beach;
- More building design elements and urban design focus within Airlie Beach;
- Zone amendment requests;
- More Mixed-use zones in Bowen Marina;
- Low-medium residential zone minimum lot sizes objected to for being too small; and
- Improved environmental protections.

Outcomes from the consultation helped inform amendments to be consulted upon within the Major Amendment and Administrative LGIP Amendment, including:

- Zone amendment requests;
- Airlie Beach Local Plan;
- Bowen Local Plan;
- Dwelling house design outcomes to mitigate the proliferation of liveable sheds or large sheds that impact upon residential amenity;
- Tighter amenity controls on Short-term accommodation in Residential zones;
- Outcomes to protect scenic road corridors from undesirable development;
- Renewable energy code to guide renewable energy development;
- Various amendments to the Strategic Framework regarding tourism development; and
- Improved environmental protections through the introduction of the Healthy Waters Code and the consolidation of Waterways and Wetlands code and Environmental Significance Code into a single Biodiversity, Waterways and Wetlands Code.

Region-wide and area specific consultation material outlined within **Section 6 – Action plan**, will seek to engage the community to understand amendments made in response to submissions from 2016, appreciate the purpose and intention behind amendments and focus on relevant priorities for each local area.

5. Communication risks

A communication risk or issue is any aspect, impact or result of a project that has potential to raise concerns or objections from stakeholders and adversely affect the progress and/or reputation of Council.

The risks identified in **Table 5** provide a breakdown of communication and consultation process risks that must be mitigated to achieve the objectives of the Plan.

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Table 5 – Major amendment and Administrative LGIP amendment communication risks.

Communication / Process risks	Level of impact (high, medium, low)	Risk management measure
If following public consultation changes must be made to the Major Amendment, the lengthy process must restart at State Interest Review, adding up to 190 b.d. to the process.	High	Non-mandatory informal pre-consultation will be conducted with key Government stakeholders for significant components, such as the Airlie Beach Local Plan, Bowen Local Plan, hazard mapping and zone amendments that have potential to conflict with State Interests. Pre-consultation tools are set out in more detail within **Section 7**.
Concerns regarding the length of time it has taken to respond to submissions and the length of the amendment process.	High	Key messaging and fact sheets will outline the volume of content prepared for the Major Amendment process in response to 2016 submissions and a timeline of the necessary steps legislated by the State Government for a Major Amendment.
Stakeholders perceiving that their views are not being heard.	High	Amendments made in response to 2016 submissions on the Planning Scheme will be communicated to stakeholders. All efforts will be made to identify and notify by email interested stakeholders, who may be affected by the proposed amendments to ensure that they engage in the consultation process.
Objection to building heights and re-iterating Airlie Beach anti-growth statements that were common within previous consultations.	High	Fact sheets and consultation efforts surrounding the Airlie Beach Local Plan will explain the vision of the plan and the balance it seeks to strike in maintaining the unique sense of place and sense of community whilst promoting growth in the tourism industry. The fact sheet will also highlight that building heights in Airlie Beach will not be increased as a result of the Major Amendment or Airlie Beach Local Plan.
Concern that particular aspects have not been included within the Airlie Beach Local Plan despite being raised by submissions.	Medium	
Public being unclear on what the Planning Scheme and the Planning Scheme Major Amendment or Administrative LGIP Amendment is.	Medium	Key messages and fact sheets will seek to explain the role of the Planning Scheme, the nature of the amendments in the context of previous Planning Scheme consultations, responses to local issues, and amendments to support economic growth, hazard resilience and improve environmental protections.
Query how Council has responded to issues raised by Planning Scheme consultation submissions from 2016.	Medium	Key messages and fact sheets will identify major issues identified during the 2016 consultation and provide an overview of amendments made in response to submissions.
Objections to individual zone amendment requests from 2016 consultation being refused.	Medium	Frequently asked questions (FAQs) explaining amendments made in response to consultation will include an explanation that zone amendments refused by Council were based upon sound planning grounds. Individual land owners whose zoning was not amended will received a tailored

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		letter with reference to the justification for why zoning was not amended.
Objections to individual zone amendment requests from 2016 consultation that have been changed.	Medium	The owner of a lot whose zone was amended and residents neighbouring the premises will be notified by mail to alert them of the proposed zone amendment to ensure they are aware and have the opportunity for comment in consultation.
Concerns over Flood hazard mapping identifying medium and high-risk areas on a premise, limiting development.	Medium	Online mapping will enable the community to engage and understand hazard mapping, whilst Fact sheets outlining what the mapping means in terms of outcomes from the code will be created to improve understanding.
COVID-19 restrictions may impact on Officers ability to carry out certain actions in this Plan.	Medium	All face-to-face interactions will observe current COVID-19 restrictions in place at the time and this Plan may be amended to respond to current conditions.

6. Communication Strategy

6.1 Communication Management

6.1.1. Internal Communication Tools

The following engagement tools will be used to facilitate effective communication with Council's internal stakeholders and manage potential issues:

- Email/phone;
- Meetings/briefings;
- Progress reports; and
- Project meetings.

6.1.2. External Communication Tools

The following engagement tools may be used to facilitate effective communication of proposed amendments and key messages with external stakeholders, as well as assisting the continued development of the consultation process. Details of each communication tool are elaborated on in the sections below:

Table 6: Mandatory and non-mandatory consultation tools to be utilised.

Mandatory consultation tools	Non-mandatory consultation tools

• Newspaper public notice;
• Displays in Customer service centres and Libraries, including:
  ○ Public notice advertisement;
  ○ viewing the amendment and online mapping;
  ○ submission receipt box;
• Consultation website - yoursay.whitsundayrc.qld.gov.au for:
  ○ Public notice advertisement;
  ○ viewing the amendment and online mapping;
  ○ explanatory materials;
	• Pre-consultation meetings with Government agencies and key stakeholders;
	• Fact sheets & FAQs;
	• 'Meet a planner' at Council service centres;
	• Emailing/mailing key stakeholders; and
	• Social Media Postings.

○ online submission; • Submission analysis report and submitter response mail-out; • Gazettal (at adoption)	

6.1.2.1.Your Say Whitsunday website (mandatory)

Your Say Whitsunday will be utilised as a central consultation hub that provides an avenue for the community to view amendments, public notices, up-coming consultation activities, consultation timelines, key messages, fact sheets and lodge submissions on the proposed amendments.

This consultation hub will also feature links to Council's online mapping system, enabling users to view all amended Planning Scheme mapping layers in a simple to use format, encouraging understanding and engagement. Proposed amendments will be placed online within a workspace, to enable the community to identify how proposed zone or overlay amendments may affect their premises.

6.1.2.2. Our Whitsunday community update - Newspaper advertisement (mandatory)

Advertisements within local newspapers will be utilised to inform residents of the launch and closure of formal public consultation periods. Paid advertisements will ensure that the full spectrum of the community is made aware of Planning Scheme consultations. A sample of the proposed newspaper advertisements created in accordance with Schedule 4 of the *Ministers Guidelines and Rules 2020* are attached in **Appendix C.**

Table 7: Major amendment and Administrative LGIP Amendment consultation.

Newspaper	Date	
Whitsunday News	Wednesday TBD	Consultation Start
Mackay and Whitsunday Life	Friday TBD	
Whitsunday News	Wednesday TBD	Consultation End
Mackay and Whitsunday Life	Friday TBD	

6.1.2.3.Council offices displays (mandatory)

At Council offices and libraries in Collinsville, Airlie Beach, Proserpine and Bowen, consultation material will be displayed in a visible area, including:

- Public notices as published within Newspapers;
- The Planning Scheme amendment in hard copy or available on laptop;
- Online mapping available on laptop;
- Explanatory material, such as fact sheets; and
- Submission templates and receival boxes.

6.1.2.4.Submission Analysis Report (mandatory)

At completion of public consultation, Council will receive a Submission Analysis Report providing an overview of key themes within the consultation period and recommended responses to individual submissions. Council will mail or email submitters to notify them of the public release of the report and how to view the response to their submission.

6.1.2.5.Gazettal (mandatory)

Following public consultation and Minister approval to adopt the proposed amendment, Council will notify the community of the adoption and commencement of the proposed amendment within the Queensland Gazette.

6.1.2.6.Pre-consultation meetings with Government agencies and key stakeholders

For stakeholders with significant interest in proposed amendments, both Government and non-Government, Council will conduct workshops during the preparation phase of the amendment to capture knowledge and gain a common understanding from relevant stakeholders for proposed amendments.
Table 8 outlines workshops already completed for the Major Amendment and Administrative LGIP Amendment.

Table 8: Pre-consultation activities with Government agencies and Non-government key stakeholders

Amendment	Stakeholder	Method
Airlie Beach Local Plan	Department Transport and Main Roads (DTMR).	Pre-consultation meeting (complete)
Acid sulfate soil mapping refinement	Department Natural Resources, Mines and Energy (DNRME)	Meeting, emails and pre-consultation workshop (complete)
State land zone amendment to reflect Reserve purpose	DNRME	Email, phone discussions and pre-consultation workshop (complete)
Zone amendment involving areas of Environmental significance	DNRME	Email, phone discussions and pre-consultation workshop (complete)
Inclusion of Aboriginal Cultural Heritage within Strategic Framework	- Juru Enterprises - Birriah Aboriginal Corporation; - Proserpine Indigenous Reference Group; - Jangga Operations; and - Traditional Owner Reference Group.	Planning Scheme preparation workshops (complete)
All other significant amendments	DSDMIP	Emails and pre-state interest review meetings

6.1.2.7.Fact sheets

Fact sheets including FAQs and infographics will be utilised to communicate key messages in a manner that focuses the consultation upon the objectives of this Plan. These fact sheets may also be utilised for handouts and social media postings to build awareness of the consultation and key messages. Fact sheets, to be developed closer to the consultation period, will include:

Table 9: Fact sheets to be developed to improve community understanding of components within the Major amendment and Administrative LGIP amendment.

Fact sheet	Content
Consultation overview	• Overview of consultation; • Timeline;

	• Amendments made in response to submissions; • How to make a submission; and • Key amendments relevant to priorities of each local area.
Frequently asked questions (FAQs)	Communication of key messages and response to expected community concerns.
Airlie Beach Local Plan	Overview of vision and intent within the Airlie Beach Local Plan.
Bowen Local Plan	Overview of vision and intent within the Bowen Local Plan.
Flood and Storm surge	Overview of flood risk mapping, storm surge mapping and refinements to the respective overlay codes.
Rural tourism	Communicate market opportunities for Nature-based and Agri-tourism within the Region.
Short-term accommodation in residential areas	Outline Short-term accommodation in residential areas policy position and amenity controls.
Environmental changes	Overview of codes for Biodiversity, waterways and wetlands and the Healthy waters code.
Landslide overlay map	Mapping for the Region to reduce red tape for development.
Acid sulfate soils overlay map	
Renewable energy	Levels of assessment and provisions guiding renewable energy development.
Shed houses and residential amenity	Dwelling house design provisions to mitigate impacts of liveable sheds on residential amenity.
Zone fact sheets, Material change of use and Reconfiguring a lot fact sheets	Utilise fact sheets for zones and development types to assist community understanding of the Planning Scheme.

6.1.2.8.Social media postings

Social media postings may be used at key points in the consultation process to educate, encourage participation, outline consultation activities and provide feedback to stakeholders on the outcomes of these activities. All media enquiries will be directed through Council's Communications and Marketing Manager. All other enquiries will be directed to Council's Director of Development Services.

6.1.2.9.Consultation – Meet a planner

In an effort to raise awareness and engagement from the community, meet a planner opportunities will be available at each customer service centre, throughout the consultation period as outlined by the **Table 10** below.

Note: All face-to-face interactions will observe current COVID-19 restrictions in place at the time and may affect the ability of officers to carry out some consultation methods.

Table 10: Meet a planner opportunity at local customer service centres.

Customer service centre	Week 1	Week 3
Bowen	Monday	Wednesday
Proserpine	Tuesday	Thursday
Cannonvale	Wednesday	Monday
Collinsville	Thursday	Tuesday

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6.1.2.10. *Emailing / Mailing key stakeholders*

Key stakeholders identified within *Appendix A – List of interested stakeholders* will be notified by mail or email of key amendments proposed within the Planning Scheme prior to the public consultation period beginning.

For landowners adjoining or subject to a proposed zone amendment, Council will notify of the amendment by mail or email. For landowners who requested a zone amendment but were declined on planning grounds, Council will notify of the planning grounds by mail or email.

6.1.3. Key messages

Key messaging seeks to respond to core consultation matters identified within **Section 5 – Consultation risks.** The following key messages have been drafted to communicate about the project, and will be updated regularly with new information, as required:

Table 11: Key messages for the Planning Scheme Major Amendment and Administrative LGIP Amendment consultation.

Theme	Key messages
What is a Planning Scheme?	• A Planning Scheme manages development within the Region to ensure that it occurs in a manner that does not adversely impact upon the amenity or expectations of a neighbourhood, enables economic development, promotes hazard resilience and preserves areas of natural or cultural significance. The Planning Scheme manages everything from impacts on waterways to the nature and design of development within various zones to ensure the Region as an ecosystem functions effectively and sustainably, in line with the expectations of the community and the State.
What is the Planning Scheme Major Amendment package?	• The Planning Scheme Major Amendment and Administrative LGIP Amendment is the first significant amendment since the adoption of the Planning Scheme in June 2017. Amendments are proposed in response to submissions identified for further investigation during 2016 consultations, community concerns, updated natural hazard studies, economic development initiatives and general fine tuning following 2 years in operation.
What is an LGIP Administrative Amendment	• The LGIP governs major infrastructure planning in the Region. Amendments made to the Planning Scheme in regard to water quality require minor changes to the LGIP to ensure consistency across the documents, albeit, the QLD Government legislates a different process for the Planning Scheme and LGIP. Hence, the title of the amendment specifies an '*Administrative LGIP Amendment*'.
How Council has responded to issues raised by Planning Scheme consultation submissions in 2016.	• In response to submissions from the 2016 consultation, Council has developed the following amendments: ○ Various zone amendments; ○ Addition of the Airlie Beach Local Plan; ○ Addition of the Bowen Local Plan; ○ Residential design controls to mitigate the proliferation of liveable sheds or large sheds that impact upon residential amenity;

	○ Amendments to the Strategic Framework; ○ Tighter amenity controls around Short-term accommodation in Residential zones; ○ Addition of a Renewable Energy Code; ○ Improvements to environmental protection through the Healthy Waters Code and Biodiversity, Waterways and Wetlands Code; ○ Updates to Local heritage mapping to remove irreversibly damaged heritage buildings; and ○ Improved planning for climate change through updated flood and storm surge mapping.
Concerns regarding the length of time it has taken to respond to submissions and the length of the amendment process.	• The Planning Scheme Amendment package includes a large amount of content that sought to establish best practice in tourism planning, hazard resilience, environmental protections, refine issues identified in the first years of operation and respond to community concerns identified within the 2016 Planning Scheme consultation.
Objections to individual zoning requests from 2016 consultation not being changed.	• Council officers investigated all zone amendment requests in the context of potential impacts they may have on surrounding residents and consistency with the strategic intent of the Planning Scheme. Where requests were approved, the landowner and adjoining landowners will be notified by mail or email. Where requests were not approved, the landowner will be notified by mail or email.
Objection to building heights and re-iterating Airlie Beach anti-growth statements that were common within previous consultations. Concern that particular aspects have not been included within the Airlie Beach Local Plan despite being raised by many submissions.	• Council received 611 submissions against Airlie Beach building height in 2015 consultations and 65 submissions in 2016. Therefore, it is considered the Planning Scheme has struck correct balance in incentivising development and maintaining the town's character. No changes to building heights are proposed in the Major Amendment. • Provisions within the Airlie Beach Local Plan seek to negate specific community concerns regarding building height, such as wind tunnelling and loss of pedestrian scale, through the building design elements. Building design provisions include vertical landscaping that promotes a tropical sense of place, podiums that reduce the perceived size of built form and laneways to provide view and movement corridors.
Stakeholders perceiving that their views are not being heard.	• Council has responded to predominant themes from the 2016 Planning Scheme consultation with policy changes that respond to submitter concerns. Council wishes to test these proposed changes with stakeholders to ascertain if their previously raised concerns have been met.
Concerns over flood hazard mapping identifying medium and high-risk areas on a premise, limiting development.	• The Town of Whitsunday Drainage Study has refined Flood hazard mapping between Cannon Valley and Jubilee Pocket. The highly detailed localised study, which takes into consideration projected increases in rainfall intensity at 2100 as a result of climate change, allocates risk areas based upon depth and velocity of flood waters. Risk modelling seeks to ensure the Town is developed resiliently, avoiding intensification within medium or high-risk areas in an effort to reduce the probability of damage to people and property.

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7. Action Plan

The public consultation program for the Major Amendment and Administrative LGIP Amendment is identified in **Table 14** below.

Table 12: Major Amendment and Administrative LGIP amendment Consultation Strategy.

Stage	Actions	Target Stakeholders	Consultation tool
Stage 1 - Planning and Endorsement	Meet with key Government stakeholders in relation to key amendments.	DSDMIP, DNRME, DTMR	Pre-consultation workshops and meetings.
	Gain endorsement from relevant State agencies regarding the concept of proposed amendments.		
	Adopt each proposed amendment by Council resolution, for inclusion into the Major amendment package.	WRC Managers, Council Executive, Councillors and Communications team	Pre-consultation workshops and meetings.
			Council briefing/meeting.
	Adopt consultation plan, key messages and associated material guiding Major Amendment and Administrative LGIP Amendment consultations.		
Stage 2 - Preparation	Notify DSDMIP of Council's decision to amend the Planning Scheme in accordance with the *Ministers Guidelines and Rules 2020,* Chapter 2, Part 4, including all 'required material' defined by Schedule 3 of the *Ministers Guidelines and Rules 2020.*	DSDMIP	Email.
	Prepare all consultation material and fact sheets based upon approved key messages.	Key WRC staff	Internal briefings.
	Provide WRC staff with briefings on proposed amendments, Consultation plan and key messages being used.		Briefings (Key staff) and Email.
Stage 3 - Initiate consultation	Ensure the Council understands proposed amendments, consultation risks and associated key messages.	WRC Councillors	Councillor Briefing.
	Inform WRC communities and key stakeholders of upcoming consultations, purpose of the consultations, where to access relevant information and opportunities available to make a submission.	Key stakeholder groups and WRC communities	Newspaper advertisements; Fact sheets; Social media posting; Email key stakeholders; Mail landowners affected by zone amendments; Online mapping; Yoursay website; and Amendments & fact sheets at Council offices.

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Stage 4 - Statutory Consultation	• Explain the rationale and context of the Major Amendment and Administrative LGIP Amendment consultation process for the Planning Scheme, including key dates; • Encourage community to access information that is available and participate in various engagement activities; • Conduct consultation activities at each Council office, considering content relevant to priorities of each Township; and • Effectively respond to inquiries and continue to communicate key messages.	Key stakeholder groups, Local industry and WRC Communities	Fact Sheets; FAQ's; Social media posting; Newspaper advertisements; Yoursay engagement portal; Consultation – meet a planner; Online mapping; and Amendments & fact sheets at Council offices.
Stage 5 - Submission Analysis	• Inform WRC communities that public consultation period has closed and when Submission Analysis Report is expected to be released; • Acknowledge receipt of submissions received in submissions register; • Advise community and submitters on Council's response to submissions made during the consultation period and proposed changes to be considered in future amendments; • Where changes are made in response to submissions, advise community of council decision, enact changes on feedback and prepare to re-consult if changes are considered 'significantly different' from what was consulted upon; and • Release Submission analysis report identifying key themes and notify submitters how to review submission response.	Councillors, Consultation submitters and WRC Communities	Social media posting; Submission Analysis Report; Website update; and Mail or email all submitters
Optional step – Amendment changes made in response to submissions	• Notify stakeholders of proposed changes and intention to undergo further consultation; and • Return to State Interest Review and renew Consultation strategy.	Key stakeholder groups, Councillors, Local industry and WRC Communities	Council Briefing and Meeting; Social media posting; Newspaper advertisements; Yoursay engagement portal; and Consultation Plan.
Stage 6 - Adopt Amendments	• Adopt Major Amendment and Administrative LGIP Amendment; • Begin analysis on key issues identified by submissions for consideration in future amendments; • Notify DSDMIP of adoption; and • Notify community of adoption via Gazette, Newspaper, Facebook post and on Council's website.	DSDMIP; WRC Communities; Councillors	Council Briefing and Meeting; Social media update; Gazette; and Newspaper.

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8. Roles and Responsibilities

The project team's roles and responsibilities have been outlined below in **Table 15:**

Table 13: Roles and responsibilities.

Project Team Role	Responsibilities
Whitsunday Regional Council	
Director Planning and Development	Provide final approvals for all major external communications during consultation. The Director will act as liaison between Councillors and the Project Team
Manager of Strategic Planning	Assist in the coordination of project deliverables, phases, communications material and act as a key project spokesperson.
Communications & Marketing Manager	Manage all media enquiries and issues, which may arise during the project. Approve all media communications and external communications.

9. Feedback and Integration

9.1 Next steps

Community Engagement materials will now be developed in preparation for the consultation activities to commence in June – July, subject to State Interest Review approval.

9.2 Feedback

Key Stakeholders and consultation participants will be contacted after the project is completed to advise them of the outcome and confirm their feedback, by distributing a copy of the Consultation Summary by email. The Consultation Summary is a summary document, which outlines the key results of the engagement process and indicates the next steps for the project.

Closing the loop with participants is one of the most important steps of an effective community engagement process. Once the community sees an outcome from the engagement process, they become more engaged and involved in future decision-making.

10. Conclusion

This Plan seeks to provide an overview and strategy for public and State agency consultation of the Major Amendment and Administrative LGIP Amendment to the Planning Scheme. The Plan seeks to promote engagement and understanding of the proposed amendments in an effort to enable informed discussion, understanding and submissions on the Planning Scheme. Engagement will be built using tools that promote awareness online, newspapers, but also in person within meet a planner. Key messages, fact sheets and FAQ's respond to the consultation context and key priorities from each Township to ensure that engagement is high.

The proposed Plan is in alignment with the requirements set out within the *Minister's Guidelines and Rules 2020*. Should any changes occur to the proposed amendments following formal consultations that are considered 'significantly different' from what was advertised, a new consultation plan will be prepared to guide an amended public consultation process on proposed amendments.

Appendix A – List of Interested Stakeholders

List of Community Stakeholders

Note: an option to unsubscribe from Planning Scheme Amendment consultation updates will be provided within each email update.

Note: Stakeholder list is subject to updates.

Abbot Point Bulkcoal (Adani)
Abell Point Marina
Abell Point Yacht Club
Airlie Beach Festival of Music
Airlie Beach Fire Station
Airlie Beach Men's Shed
Airlie Beach Race Week
Airlie Bowls Club Inc
Arabon Seafoods
Australian Stock Horse Association
Beachside Holiday Units
Bill Dreger Aluminium and Glass
Bloomsbury Primary School
Bowen and Collinsville Enterprise (BCE)
Bowen Business Chamber
Bowen Early Years Network Group
Bowen Gumlu Growers
Bowen Hospital
Bowen Independent
Bowen Lions Club
Bowen Meals on Wheels
Bowen Neighbourhood Centre
Bowen Plaza Pharmacy
Bowen Rotary Club
Bowen RSL
Bowen State High School
Bowen State Primary School
Bowen Tourism and Business
Bowen Transit
C&K Collinsville & Scottville Kindergarten
C&K Whitsunday Community Kindergarten
Canegrowers Proserpine
Cannonvale State School
Collinsville Community Association
Collinsville Connect
Collinsville Fire and Rescue Station
Collinsville Fire Station
Collinsville Historical Society
Collinsville Hospital
Collinsville Lions Club
Collinsville Pensioners
Collinsville Police Station
Collinsville State High School
Collinsville State School
Collinsville Visitor Information Centre
Collinsville Youth Coalition
Community Solutions (Airlie Beach)
Conway Beach Tourist Park
Coral Coast Barra
Coral Cove Apartments
Cruise Ship Ambassadors
Dingo Beach Progress Association
Endeavour Foundation
Glencore
Goodstart Early Learning
Goodstart Early Learning Bowen
Gumlu Primary School
Hamilton Island Primary School
Hayman Island Primary School
Horseshoe Bay Resort
Hydeaway Bay Progress Association
Le Sorelle Coffee House
Local Aboriginal Groups North Queensland Land Council; Proserpine Indigenous Reference Group; Juru Enterprises; Girudala Community Cooperative Society; Birriah Aboriginal Corporation; Proserpine Indigenous Reference Group; Jangga Operations; and Traditional Owner Reference Group.
Lowcock Construction
Mackay LASN (Local Ambulance Service Networks)
Merinda Primary School
North QLD Bulk Ports
Phantom Produce
Pilcher Industries
Port of Airlie
Proserpine BMX Club

Proserpine Chamber of Commerce
Proserpine Community Centre
Proserpine District Lawn Tennis Association
Proserpine Fire Station
Proserpine Girl Guides
Proserpine Golf Club
Proserpine Hack & Pony Club
Proserpine Historical Museum
Proserpine Hospital
Proserpine Information Centre
Proserpine Junior Cricket
Proserpine Junior League
Proserpine Ladies Bowls Club
Proserpine Ladies Squash Club
Proserpine Lions Club
Proserpine Masonic Lodge
Proserpine Police Station
Proserpine Pool
Proserpine Progress Association
Proserpine Progress Community Group
Proserpine Rodeo Association Inc
Proserpine Rugby League Football Club Inc
Proserpine Scouts Group
Proserpine State High School
Proserpine State School
Proserpine Taipans Junior Soccer
Proserpine Tourist Park
Proserpine Whitsunday Raiders Rugby Union
Proserpine Youth Space
Queens Beach State School
Reef Catchments
Reneken Accountants
Retired Miners Lodge
Rodney Barrett Graziers
Rose Bay Resort
Rotary Airlie Beach
RSL Airlie Beach Whitsunday Sub Branch
Sanoma Qcoal
Save Our Foreshore Inc
Scottville State School
SKAL International Whitsundays
Spice and Pepper Restaurant
St Catherine's Catholic College
St Catherine's Primary
St John Bosco Catholic School
St Mary's Catholic School
St Vincent de Paul Society
TAFE North QLD
TAFE Queensland North
The Cove Restaurant and Bar
Tourism Whitsundays
VMR Bowen
VMR Whitsundays
Whitsunday Christian College
Whitsunday Coast Chamber of Commerce
Whitsunday Early Years Network
Whitsunday Neighbourhood Centre
Whitsunday Neighbourhood Centre
Whitsunday PCYC
Whitsunday Police
Whitsunday Ratepayers Association
Whitsunday Reef Festival
Whitsunday Region Ratepayers Association
Whitsunday Running Club & Festival
Whitsunday Sands Resort
Whitsunday Transit
Whitsunday Writer's Festival
Whitsunday Zonta
Zonta Club of Bowen

List of Industry Stakeholders

AAA Building Consultants
Abell Builders
Agile Approvals
Airlie Beach and Whitsunday Real Estate
Airlie Beach Constructions
Airlie Beach Plumbing & Gasfitting
Airlie Builders
Airlie Plumbing
Alan Jamieson
Allen Build
Allen Trinder Building
Apex Home Constructions
BBS Developments
BC Constructions

Beachtech Designs
Ben - Blue Palm Property
Bernie McErlane
Berry Excavations
Blue Diamond Constructions
Bluewater Plumbing
Bob Bogie & Co Solicitors
Bob Thomson
Brad Penhallurick
Brahman Builders
Brazilbuilt
Brian Smith Constructions
Bruce Absolon
Cane Civil Constructions
Cannonvale Plumbing
Century 21
Century 21 Bowen
Chris Bailey Pools
Chris Russell Constructions
Clarkco Pty Ltd
Colin Hounsell
Colony Building Group
Coral Sea Carpentry
Crear Construction
Cumberland Homes
Dan McCormack
Department of Natural Resources, Mines and Energy (DNRME)
Department of Transport and Main Roads (Marine infrastructure)
Department State Development and Infrastructure Planning (DSDIP)
Derek Hansen
Dixon Homes
EcoDrill -
First National Real Estate Whitsunday Coast
Flanagans Engineering
Focus on Water
Front line Constructions
Gary Goddard Engineering
Gary Molloy Building
Gary Taylor
GJ Gardner Homes
Greg Dibben
Greg Matthews

GT Homes
Hermsa Constructions
Hutchinson Builders
Hydeaway Plumbing & Gas Fitting Service
Ideal Gas & Plumbing
Integral Building
Jaremus Constructions
Jason Bartz
Jeff Day Plumbing
Jeremy Smith Constructions
Jim Stace Carpentry & Construction
JM Constructions
John Harris - PRD Whitsunday
Justin Daley
Kegsawers
Kendall Nash
Laser Plumbing
Latitude 20 Homes
Laurie Smith
Lawto's Barefoot Real Estate
Leith Michell Builder
Lindsay Bates Building
LJ Hooker Bowen
LJ Solid Constructions
Lowcock Builders
Macrossan & Amiet Solicitors Proserpine
Marco Deboni
Matt Kelly
McNeill Building
Merrick Constructions
Milford Planning
Moloko Homes
Morton Plumbing
Neil Sempf
Northarm Constructions
O'Connor Plumbing
Paragon Engineering
Paul Smith
PD Law
Peter Town Homes
Petos Constructions
Piccinelli Builders
Pichers Industries
PRDnationwide Whitsunday

Premise
Premise
Professional Whitsundays
Queensland Parks and Wildlife Service
Queensland Rail
Ray White Whitsunday
Real Estate for Sale
Reece Milburn
Reece Plumbing
Ricciardi Builders
Rob Jeffrey
Rob Taylor
Ross Smith
RPS Group
Rudd Constructions
Sandra Hansche
SMEC Engineering
Spannys Real Estate
Splash Pools
STA Engineering
Steve Knight
Steve Paine Builder
Steve Williams
Stewart Lester
Sunstate Shed

Sunsteel Homes
Tap Out Plumbing
Taylors Property Specalists
Terry Kemp
Terry Peach
Think Water
Titan Homes
Totally Drained Plumbing
Town & Country Builders
Trevor Glasson Engineering
Trevor Harrison
Trevor Yuskan
Veris
Vision Surveys
Wakefield Plumbing
Wayne Borellini
Whaleback Plumbing
Whit Spec
Whitsunday Law
Whitsunday Reality
Winterburn Constructions
Winterburn Pools
Wynne Planning & Development

Appendix B – Communication guidelines

Communication Protocol

The following protocols will be followed throughout each consultation process:

- All media enquiries will be directed through Council's Communications & Marketing Manager and Manager of Strategic Planning;
- All other enquiries will be directed to the Manager of Strategic Planning who will notify the Council's Director of Development Services, if necessary;
- All formal external communication materials will be reviewed and approved by both the Director of Development Services and Communications Manager; and
- All incoming communication to Council from external stakeholders and the responses to these enquiries will be recorded and tracked using Enterprise Content Management (ECM) and Customer Request Management (CRM). Key information to be recorded will include name of person, contact details, query, action required, response and any other comments required.

Recording Informal and Formal Correspondence

When Council receives phone calls or front counter enquires, the following process is to be undertaken for CRMs:

1. Any contact with Customer Service Centres that can be recorded as a CRM will be recorded (i.e. phone calls, front counter enquiry);
2. All CRMs for the Major Amendment and Administrative LGIP Amendment consultations will be allocated to ECM;
3. CRMs will initially be tasked to Strategic Planning Administration who will then allocate enquiries to a Project Manager within the Strategic Planning Branch;
4. If there are questions about the Plan that Customer Contact can address, the task will be closed out by this team. Key talking points will be provided to Customer Contact for use;
5. As much detail as possible will be recorded to ensure quality of information; and
6. A report will be run of all CRMs to allow for registration to ECM.

When Council receives written correspondence via submissions@whitsundayrc.qld.gov.au or yoursay.whitsundayrc.qld.gov.au

1. Submissions to yoursay.whitsunday are automatically forwarded to submissions@whitsundayrc.qld.gov.au;
2. All submissions for the Major Amendment and Administrative LGIP Amendment consultation will be allocated to ECM;
3. Strategic Planning ADMIN: once registered, move into "Registered – [Officer] – Draft" folder in email;
4. Strategic Planning ADMIN: enter Submitter details into the submissions database to create the new user;
5. Strategic Planning ADMIN: once email is assigned to an officer and details are entered into the submissions database, forward the email to the allocated officer for actioning;
6. Strategic Planning OFFICER: enter submission into the submissions database and assign issue;
7. Strategic Planning OFFICER: populate the details/create response; and
8. Strategic Planning ADMIN: Export file into formal Submission analysis report.

When Council receives written correspondence by post, the following process will be undertaken for ECM:

1. Any written correspondence is to be registered to the relevant Strategic Planning consultation folder by Records;

2. Tasks will be added to the Planning task list;
3. Planning Administration will allocate any consultation related tasks to the Strategic Planning team to action; and
4. All responses to any incoming enquiries or submissions will be recorded to ECM via registration.

Appendix C - Newspaper advertisement (examples)

Consultation start ##DATE ##

WHITSUNDAY PLANNING SCHEME 2017 MAJOR AMENDMENT AND ADMINISTRATIVE LOCAL GOVERNMENT INFRASTRUCTURE PLAN AMENDMENT CONSULTATION START

Whitsunday Regional Council is seeking public comment on the Major Amendment and Administrative Local Government Infrastructure Plan Amendment (LGIP) of the Whitsunday Planning Scheme 2017 from xx Date xx – xx Date xx.

The Major Amendment and Administrative LGIP Amendment to the Planning Scheme has the following purpose and general effect relating to the entire local government area:

- Inclusion of the Bowen Local Plan;
- Inclusion of the Airlie Beach Local Plan;
- Inclusion of Biodiversity, Waterways and Wetlands Overlay Code and Mapping to replace the Environmental Significance Overlay Codes and Mapping, and the Waterways and Wetlands Overlay Codes and Mapping;
- Amendments to the Heritage Overlay Code and Mapping;
- Various Zoning Amendments throughout the Region;
- Regulation of urban sheds;
- Inclusion of Healthy Waters Code and subsequent Stormwater Management Planning Scheme Policy;
- Inclusion of trade waste requirements;
- Amendments to the Reconfiguring a Lot Code;
- Amendments to the Bushfire Overlay Code and Mapping;
- Amendments to the Strategic Framework including incorporation of Cultural Heritage;
- Amendments to the Dwelling House and Dual Occupancy Code;
- Inclusion of a Renewable Energy Code;
- Amendments to the Landslide Overlay Code and Mapping;
- Amendments to the Acid Sulfate Soils Code and Mapping;
- Amendments to the Coastal Overlay Codes and Mapping;
- Amendments to the Flood Overlay Codes and Mapping;
- Inclusion of a Building Heights Overlay Code and Mapping to replace the Building Works Table of Assessment;
- Inclusion of requirements for Short-Term Accommodation in the Multi Unit Use Code;
- Banning of Party Houses within the Region;

- Inclusion of a Rural Tourism Code;
- Amendments to the Home-Based Business Code;
- Inclusion of a Waste Management Planning Scheme Policy;
- Amendments to the Advertising Devices Code;
- Inclusion of administrative definitions;
- Clarity in levels of assessment in the Tables of Assessment;
- Improved workability of the Overlays in the Tables of Assessment;
- Amendments to the Planning Scheme to achieve compliance with the State Planning Policy;
- Operational works for driveways removed;
- Mapping updates in accordance with the State Planning Policies and Qspatial; and
- Minor amendments throughout the document.

To view the proposed amendments to the Planning Scheme, including supporting fact sheets, how to make a submission instructions and FAQs, please visit Council's consultation website at Yoursay.whitsundayrc.qld.gov.au or visit a Council office to view or purchase a copy of the Major and Administrative LGIP Amendment at:

BOWEN
67 Herbert Street,
Bowen QLD 4805

COLLINSVILLE
Cnr. Stanley and Conway Streets,
Collinsville QLD 4804

CANNONVALE
Shop 23 Whitsunday Plaza,
Cannonvale QLD 4802

PROSERPINE
83 - 85 Main Street,
Proserpine QLD 4800

To make a submission on any aspect of the amendments, please register and lodge online at Yoursay.whitsundayrc.qld.gov.au, email Council on submissions@whitsundayrc.qld.gov.au, deliver by mail to PO Box 104, Proserpine QLD 4800 or deliver in person to Council offices.

A properly made submission may be made by any person, which must be lodged during the public consultation period and include:

- your name;
- residential or business address;
- facts or grounds of the submission;
- postal address or email; and
- your signature.

Enquiries on this matter should be directed to the Strategic Planning Branch on ☎ 07 4945 0263.

Rod Ferguson

Chief Executive Officer

Consultation End ##DATE ##

WHITSUNDAY PLANNING SCHEME 2017 MAJOR AMENDMENT AND ADMINISTRATIVE LOCAL GOVERNMENT INFRASTRUCTURE PLAN AMENDMENT CONSULTATION END

Whitsunday Regional Council is seeking public comment on the Major Amendment and Administrative Local Government Infrastructure Plan Amendment (LGIP) of the Whitsunday Planning Scheme 2017 from xx Date xx – xx Date xx.

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- Amendments to the Heritage Overlay Code and Mapping;
- Various Zoning Amendments throughout the Region;
- Regulation of urban sheds;
- Inclusion of Healthy Waters Code and subsequent Stormwater Management Planning Scheme Policy;
- Inclusion of trade waste requirements;
- Amendments to the Reconfiguring a Lot Code;
- Amendments to the Bushfire Overlay Code and Mapping;
- Amendments to the Strategic Framework including incorporation of Cultural Heritage;
- Amendments to the Dwelling House and Dual Occupancy Code;
- Inclusion of a Renewable Energy Code;
- Amendments to the Landslide Overlay Code and Mapping;
- Amendments to the Acid Sulfate Soils Code and Mapping;
- Amendments to the Coastal Overlay Codes and Mapping;
- Amendments to the Flood Overlay Codes and Mapping;
- Inclusion of a Building Heights Overlay Code and Mapping to replace the Building Works Table of Assessment;
- Inclusion of requirements for Short-Term Accommodation in the Multi Unit Use Code;
- Banning of Party Houses within the Region;
- Inclusion of a Rural Tourism Code;
- Amendments to the Home-Based Business Code;
- Inclusion of a Waste Management Planning Scheme Policy;
- Amendments to the Advertising Devices Code;
- Inclusion of administrative definitions;
- Clarity in levels of assessment in the Tables of Assessment;
- Improved workability of the Overlays in the Tables of Assessment;
- Amendments to the Planning Scheme to achieve compliance with the State Planning Policy;
- Operational works for driveways removed;
- Mapping updates in accordance with the State Planning Policies and Qspatial; and
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COLLINSVILLE
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Collinsville QLD 4804

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Shop 23 Whitsunday Plaza,
Cannonvale QLD 4802

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To make a submission on any aspect of the amendments, please register and lodge online at Yoursay.whitsundayrc.qld.gov.au, email Council on submissions@whitsundayrc.qld.gov.au, deliver by mail to PO Box 104, Proserpine QLD 4800 or deliver in person to Council offices.

A properly made submission may be made by any person, which must be lodged during the public consultation period and include:

- your name;
- residential or business address;
- facts or grounds of the submission;
- postal address or email; and
- your signature.

Enquiries on this matter should be directed to the Strategic Planning Branch on ☎ 07 4945 0263.

Rod Ferguson

Chief Executive Officer

Attachment 6 – Indicative Timeframe for the Major Amendment

Whitsunday Planning Scheme 2017 Major Amendment Indicative Timeframe

The *Ministers Guidelines and Rules 2017,* Chapter 2, Part 4, defines the mandatory consultation timeline for a Major amendment. The following table defines the estimated timeline for the Major amendment.

Table 1: Indicative Whitsunday Planning Scheme 2017 Major Amendment project timeline.

Step	Description	Undertaken by	Estimated timeframe (business days)
1. Planning and preparation	Decide to make a major amendment and give the proposed amendment to the Minister for state interest review (no early confirmation of state interests).	Whitsunday Regional Council (WRC)	(October 2017 – March 2021)
2. State interest review	Undertake State Interest Review.	Minister	Max. 60 b.d (March 2021 – June 2021)
3. Public consultation & Submission analysis *	Undertake 20b.d public consultation, assess submissions, make amendments (if necessary*) and lodge proposed amendment to the Minister for adoption.	WRC	Min. 20 b.d public consultation (June – July 2021) Estimated 30 b.d for analysis and adoption (July – August 2021)
4. Minister's consideration	Consider the proposed amendment and give a notice advising if the proposed amendment may be adopted.	Minister	Max. 40 b.d (Aug- Oct 2021)
5. Adoption	Decide to adopt the proposed amendment and give public notice of the adoption.	WRC	Estimated 30 b.d (Oct - Dec 2021)
6. Copy to chief executive	Give a copy of the amendment to the chief executive.	WRC	Max. 10 b.d (December 2021)
	Total (excluding preparation)		190 b.d

*Where non-administrative amendments are required after Public consultation at Step 3, WRC will be required to return to Step 2 – State interest review, restarting the 190b.d process. Given amendments are likely to be minor in nature, a second State interest review will likely be a shorter timeframe than 60b.d, focusing only on changes amendments consultation.

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Attachment 7 – Background Studies (hyperlink attachments):

- **Town of Whitsunday Drainage Study;**
- **Bowen Water Hazard Study Stage 1 and 2;**
- **Coastal Hazard Mapping Refinement Study;**
- **Whitsunday Landslide Study – Landslide Susceptibility Investigation;**
- **Scenic Amenity Study;**
- **Soils and land use suitability of the Whitsunday Coast;**
- **Acid sulphate soils of Bowen, North Queensland;**
- **Acid sulphate soils, Airlie Beach Area; and**
- **Acid sulphate soils, Proserpine Area.**

Attachment 8 – Version 4.0 Mapping

All mapping is online under 'Planning' on the Whitsunday Regional Council Website, see link below.
Map Project – Planning Major Amendments.
https://mapping.whitsundayrc.qld.gov.au/connect/analyst/mobile/#/main?mapcfg=WRC%20Planning%20Scheme%202017