Whitsunday Regional Council

Notice of Meeting

Notice is hereby given that the **Ordinary Council Meeting** of the **Whitsunday Regional Council** will be held at the Council Chambers, 83-85 Main Street, Proserpine on **Wednesday 13 July 2022,** commencing at **9:00 AM** and the Agenda is attached.

Councillors: Jan Clifford, Al Grundy, John Collins, Michelle Wright, Gary Simpson and Michael Brunker.

Local Government Regulation 2012

254.(C) (1) Notice of each local government meeting or adjourned local government meeting must be given to each councillor or committee member at least 2 days before the day of the meeting, unless it is impracticable to give the notice before that time.

(2) The written notice must state:

(a) state the day and time of the local government meeting; and
(b) for a special meeting—state the business to be conducted at the meeting; and
(c) include the agenda for the local government meeting.

(3) A **special meeting** is a meeting at which the only business that may be conducted is the business stated in the notice of meeting.

Rodney Ferguson

CHIEF EXECUTIVE OFFICER

Agenda of the **Ordinary Council Meeting** to be held at

Council Chambers, 83-85 Main Street, Proserpine on Wednesday 13 July 2022 commencing at **9:00 AM**

Council acknowledges and shows respect to the Traditional Custodian/owners in whose country we hold this meeting.

9:00 AM

- Formal Meeting Commences

10:00 am - 10.30 am

- Morning Tea

  - Best Communications Digital Professional Award Presentation
  - Elite Athlete Presentations

Whitsunday Regional Council
Agenda of the **Ordinary Council Meeting** held at
Council Chambers, 83-85 Main Street, Proserpine on
Wednesday 13 July 2022 commencing at **9:00 AM**

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1 APOLOGIES/LEAVE OF ABSENCE

This item on the agenda allows Council the opportunity to receive apologies/leave of absence from Councillors unable to attend the meeting.

2 CONDOLENCES

2.1 - Condolences Report

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Tailah Jensen - Governance and Administration Officer

RESPONSIBLE OFFICER: Rodney Ferguson - Chief Executive Officer

PRESENTED FOR: Information

ATTACHMENTS

Nil

PURPOSE

To acknowledge and observe a minute silence for the recently deceased throughout the Whitsunday Region.

OFFICER'S RECOMMENDATION

That Council observe one (1) minute's silence for the recently deceased.

CONCLUSION

Councillors, committee members, staff, general public and anyone participating in the meeting are to stand and observe a minute silence for the recently deceased.

3 DECLARATIONS OF INTEREST

This item on the agenda allows Councillors the opportunity to declare a conflict of interest, in accordance with the *Local Government Act 2009* (the Act), in a matter that is to be discussed at this meeting of Council that is not an ordinary business matter.

Any such declarations will be managed during the meeting as required in accordance with the relevant sections of the Act.

4 MAYORAL MINUTE

This item on the agenda allows the Mayor to introduce, by a signed minute, a matter for consideration at the meeting. In accordance with Council's Standing Orders, such a matter takes precedence over all other matters for consideration at the meeting and may be adopted by a motion moved by the Mayor without the need for the motion to be seconded.

5 MAYORAL UPDATE

A verbal update will be provided.

6 CONFIRMATION OF MINUTES

6.1 - Confirmation of Minutes

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Tailah Jensen – Governance Administration Officer

AUTHORISING OFFICER: Rodney Ferguson - Chief Executive Officer

PRESENTED FOR: Decision

ATTACHMENTS

Nil

PURPOSE

At each Council meeting, the minutes of the previous meeting must be confirmed by the councillors present and signed by the person presiding at the later meeting. The Minutes of Council's Ordinary Council Meeting and Special Council Meeting (Budget) held on 24 June 2022 are provided for Councils review and confirmation.

OFFICER'S RECOMMENDATION

That Council confirms the Minutes of the Ordinary Council Meeting and Special Council Meeting (Budget) held on 24 June 2022.

BACKGROUND

In accordance with s272 of the Local Government Regulation 2012, minutes were taken at Council's Ordinary Meeting and Special Meeting (Budget) held on 24 June 2022 under the supervision of the person presiding at the meeting. These unconfirmed minutes once drafted were submitted to the Chief Executive Officer for review and are available on Council's website for public inspection.

DISCUSSION/CURRENT ISSUE

Council's options are:

Confirm the Minutes of the Ordinary Council Meeting and Special Council Meeting (Budget) held on 24 June 2022.

If Council is satisfied that the unconfirmed minutes are an accurate representation of what occurred at both of these meetings held on 24 June 2022 and comply with legislative requirements outlined in this report, no further action is required other than to confirm the minutes as per the recommendation.

Confirm the Minutes of the Ordinary Council Meeting and Special Council Meeting (Budget) held on 24 June 2022 with amendments.

If Council is not satisfied that the unconfirmed minutes are an accurate representation of what occurred at both of these meetings held on 24 June 2022 and comply with legislative requirements outlined in this report, then they move a motion that they be confirmed but with a list of amendments to ensure they are correct and compliant.

STATUTORY/COMPLIANCE MATTERS

In accordance with the Act, Council must record specified information in the minutes of a meeting regarding any declared material personal interests or conflicts of interest. At the Ordinary Council Meeting and Special Council Meeting (Budget) held on 24 June 2022, the following interests were declared and recorded in the minutes:

Councillor/Officer	Prescribed or Declarable	Report No.	Particulars of the interest
Cr Al Grundy	Prescribed	13.4.3	Cr Grundy acknowledged a declarable conflict of interest in this item as defined by section 150EQ of the Local Government Act 2009, due to being on the Executive Committee for the Coastal Council Adaption Taskforce. As a result of this conflict of interest, Cr Grundy left the meeting at 11.04am and did not take part in the discussion or decision making of this matter.
No declarations were made at the Special Council Meeting.			

Additionally, the chairperson of a local government meeting must also ensure that details of an order made against a Councillor for unsuitable meeting conduct at a Council meeting are recording in the minutes of the meeting. At the Ordinary Council Meeting and Special Council Meeting (Budget) held on 24 June 2022, the following orders were made:

Councillor	Order Made
No orders made for either of these meetings.	

Local Government Regulation 2012

Section 272 of the Regulation stipulates that the Chief Executive Officer must ensure that minutes of each meeting of a local government are taken under the supervision of the person presiding at the meeting.

Minutes of each meeting must include the names of councillors present at the meeting and if a division is called on a question, the names of all persons voting on the question and how they voted.

At each meeting, the minutes of the previous meeting must be confirmed by the councillors present and signed by the person presiding at the later meeting.

A copy of the minutes of each meeting must be available for inspection by the public, at a local government's public office and on its website, within 10 days after the end of the meeting. Once confirmed, the minutes must also be available for purchase at the local government's public office(s).

FINANCIAL IMPLICATIONS

The price for a member of the public to purchase a copy of the minutes must not be more than the cost to the local government of having the copy printed and made available for purchase, and if the copy is supplied to the purchaser by post, the cost of the postage.

TABLED MATTERS

Unresolved Tabled Matters			
Date of Meeting	**Resolution Number**	**Summary**	**Resolved**
13/05/2020	20191416 - Development Permit for Material Change of Use - Showroom - 2-12 Central Avenue Cannonvale – Yoogalu Pty Ltd 2020/05/13.07	That the application lie On the table as the Applicant has 'Stopped the Clock'.	On hold pending The outcome of the intersection funding and discussion with DTMR – Corner Galbraith Park Road and Shute Harbour Road.
25/11/2020	Cantamessa Road Bridge 2020/11/25.27	That the item be Tabled pending further investigations for temporary access, replacement, or closure of the bridge and to seek further information regarding funding.	The Cantamessa Bridge project has been submitted for $500,000 in grant funding from QRRRF (Queensland Risk Reduction and Resilience Fund). Resolution OM2022/02/09.4
25/05/2022	13.1.3 Council Meetings Live Stream Policy	That the item be tabled until we have a full Council.	N/A
25/05/2022	13.4.6 - Road Register Policy	That the item lay on the table pending further information to be provided regarding any updates to the policy.	Completed – Report presented at the 24th June 2022 Ordinary Meeting.
25/05/2022	13.4.7 - Whitsunday Regional Council Road Register (May 2022)	That the item lay on the table pending further information to be provided regarding any updates to the Road Register policy.	Completed – Report presented at the 24th June 2022 Ordinary Meeting.

CONSULTATION

Manager Governance & Administration

DISCLOSURE OF OFFICER'S INTERESTS

No officer involved in the preparation of this report has an interest to declare in accordance with the provisions of the Local Government Act 2009 or the Staff Code of Conduct.

CONCLUSION

These minutes from the Ordinary Council Meeting and Special Council Meeting (Budget) held on 24 June 2022 are therefore submitted for adoption of their accuracy by the Councillors at this meeting of Council.

7 BUSINESS ARISING

This item on the agenda allows Councillors the opportunity to seek clarification or updates on business arising from the minutes of the previous meeting.

8 DEPUTATIONS

This item on the agenda allows persons to make a deputation to Council. Deputations are managed in accordance with Council's adopted Standing Orders.

9 PETITIONS

This item on the agenda allows for the Mayor, Councillors or Council's Chief Executive Officer to present a petition to the meeting. In accordance with Council's Standing Orders, no debate on or in relation to the tabled petition shall be allowed and the only motion which may be moved is that the petition either be received, referred to a Committee or Council officer for consideration and report back to Council, or not be received because it is deemed invalid.

10 NOTICES OF MOTION

In accordance with Council's Standing Orders, Councillors may give notice of any business they wish to be discussed at an Ordinary Meeting by way of a Notice of Motion. This item on the agenda allows Councillors to introduce and move any motions they have submitted to the Chief Executive Officer for inclusion in the agenda.

11 QUESTIONS ON NOTICE

This item on the agenda is for the inclusion of any responses prepared by officers in response to questions taken on notice at previous meetings of Council.

12 QUESTIONS FROM THE PUBLIC GALLERY

Excerpt from Council's Standing Orders:

1. In each Meeting, time shall be set aside to permit members of the public to address the Council on matters of public interest related to local government.
2. Questions from the Public Gallery will be taken on notice and may or may not be responded to at the Meeting.
3. The time allotted shall not exceed fifteen (15) minutes and no more than three (3) speakers shall be permitted to speak at any one (1) meeting.
4. Any person addressing the Council shall stand, act and speak with decorum and frame any remarks in respectful and courteous language.

13 OFFICERS REPORTS

13.1 Office of the Mayor and CEO

13.1.1 - Funding Opportunity - Gambling Community Benefit Fund

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Elouise Lamb - Project Officer Economic Development and Major Grants

AUTHORISING OFFICER: Rodney Ferguson - Chief Executive Officer

PRESENTED FOR: Decision

ATTACHMENTS

Nil

PURPOSE

To seek funding support from the Gambling Community Benefit Fund.

OFFICER'S RECOMMENDATION

That Council:

a) Support the recommended project for the Bowen Lapidary Club (Total Project Cost $32,760) for submission to the Gambling Community Benefit Fund Round 114 funding program.
b) Approve the proposed Council co-contribution of $1,300, should the funding application be successful.

BACKGROUND

The Incoming Grant Funding Application Policy was adopted in July 2018. The policy identifies Councillors, elected to represent the views of the community, as stakeholders in the decision-making process to determine which projects become the subject of grant funding applications.

DISCUSSION/CURRENT ISSUE

The following funding program is open, and Council is eligible to apply to attain funds to support operational and capital activities. Projects put forward aim to align with Council's Strategic Management Plan, Strategic Asset Management Plan, Project Management Framework, 10 Year Capital Works Plan and Capital and Operational Budget cycles.

Funding Program	Project Recommendation
Gambling Community Benefit Fund R114 Due Date: 15/07/2022 Project notified:15/12/2022 Project completion: 15/12/2023 Max $35k per project No contributions required	Bowen Lapidary Club Project Cost: $32,760 Amount Requested: $31,400 WRC Contribution (staff resources): $1,300 Project Implications: Council supports the Bowen and Collinsville Lapidary Club with a building for club activities under a peppercorn lease agreement. This project will look to upgrade the facility which is dated and requires minor repair works. The project is identified in the 22/23 Capital works budget.

STATUTORY/COMPLIANCE MATTERS

Incoming Grant Funding Application Policy

STRATEGIC IMPACTS

To support business units across Council in the delivery of their objectives through enabling access to Grants and Funding.

FINANCIAL IMPLICATIONS

There is no financial contribution for the project required from Council. The Co-contribution put forward is for WRC officer resources totalling $1,300 and are supported in the 2022/23 Capital Budget.

CONSULTATION/ENGAGEMENT

Director Corporate Services
Director Community Services
Director Infrastructure Services
Director Development Services
Chief Executive Officer
Chief Operating Officer Aviation & Tourism
Economic Development Manager

RISK ASSESSMENT

The risk in not supporting the project submission could result in the Council owned building falling into disrepair.

TIMINGS/DEADLINES

Submission deadlines and project delivery dates have been provided for each funding program.

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

Section 58 of the *Human Rights Act 2019* specifies required conduct for public entities when acting or making a decision. Sections 15-37 of the *Human Rights Act 2019* identifies the human rights a public entity must consider in making a decision. The human rights relevant to this decision are as follows:

- Section 19 – Freedom of movement.
- Section 21 – Freedom of expression.
- Section 24 – Right to own property and not be arbitrarily deprived of property.
- Section 27 – Cultural rights – generally – all persons with a particular cultural, religious, racial or linguistic background have the right to enjoy their culture, to declare and practice their religion and use their language.
- Section 28 – Cultural rights – Aboriginal peoples and Torres Strait Islander peoples.

This decision does not limit the above identified human rights.

ALTERNATIVES CONSIDERED

Prioritisation of projects was considered by ELT and projects have been recommended based on the above Policy requirements in addition to project alignment with funding objectives and readiness to be delivered.

13.2.1 - Lease - Part of Land - 125A Mt Nutt Road, Bowen - Amplitel Pty Ltd

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Billie Davis - Senior Commercial Officer

AUTHORISING OFFICER: Jason Bradshaw - Director Corporate Services

PRESENTED FOR: Decision

ATTACHMENTS

1. Site Map - 125 A Mt Nutt Road, Bowen [**13.2.1.1** - 1 page]
2. LEASE PLAN - Lease B on SP150802 in Lot 2 on RP 717537 [**13.2.1.2** - 2 pages]

PURPOSE

To advise Council of a request to renew the lease on Council owned land at 125A Mt Nutt Road. Bowen.

OFFICER'S RECOMMENDATION

That Council authorise the Chief Executive Officer to enter into negotiations and execute a part of land lease over Lot 2 on RP717537, with Amplitel Pty Ltd for a 10-year term in accordance with Section 236(1)(c)(iii) of the Local Government Regulation 2012.

BACKGROUND

Telstra holds a 10-year term lease with Council over part of the land at 125A Mt Nutt Road, Bowen. This lease is due to expire on 31 July 2022.

The purpose of the lease is for telecommunication infrastructure.

Telstra assigned all their leases and interests to Amplitel Pty Ltd in 2021 to manage, who are a subsidiary of Telstra.

Amplitel will be the named lessee on the new lease.

DISCUSSION/CURRENT ISSUE

Council has been in contact with Amplitel to advise of the lease expiry and have since received correspondence requesting a lease renewal for a 10-year term from their legal representatives.

Consultation has occurred with Council's Innovation and Technology Services and Whitsunday Water branches' to confirm that there were no issues with this lease renewal as the telecommunication infrastructure is on land that houses the Bowen Reservoir.

STATUTORY/COMPLIANCE MATTERS

In accordance with Section 236(1)(c)(iii) of the Local Government Regulation 2012, Council may enter into a lease without the requirement of going back to tender if it is for the purpose of renewing the lease to an existing tenant.

STRATEGIC IMPACTS

Lead and improve the organisation's procurement, property and fleet functions across the organisation, including managing the centralised and specialised services to enable and achieve the operational and long-term objectives of Council.

Support the organisation in ensuring appropriate compliance with legislation and to support the elected council in its decision-making processes and obligations as a local government.

FINANCIAL IMPLICATIONS

Council receives a lease fee that has had a yearly increase of 3%.
The new lease fee will commence at a 3% increase over the previous years' lease fee.

CONSULTATION/ENGAGEMENT

Executive Manager Procurement, Property & Fleet
ICT Project Manager

RISK ASSESSMENT

The lease is a commercial lease provided by Telstra and Amplitel's legal representatives as they have significant legislative obligations under the *Telecommunications Act* 1997 and that is incorporated throughout the document.

Terms are incorporated and reviewed to ensure that any risks to Council are mitigated and to hold the lessee responsible for the operations and land management occurring within their leased area. Clauses have also been included to ensure they do not disrupt the major Council infrastructure that is on the Premises.

TIMINGS/DEADLINES

The current lease is due to expire 31 July 2022.

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

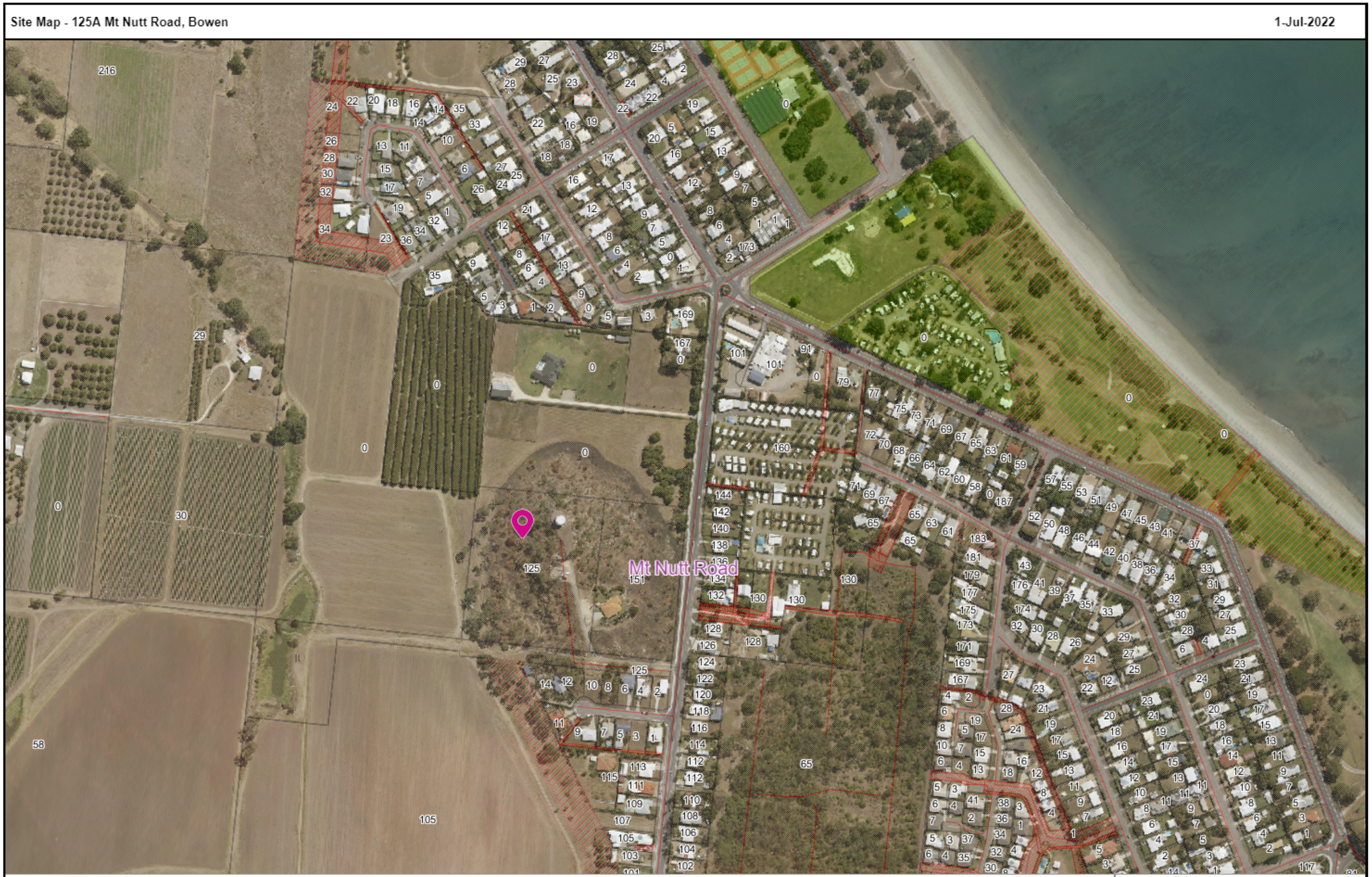
HUMAN RIGHTS IMPACT

No.

ALTERNATIVES CONSIDERED

N/A

Attachment 13.2.1.1 Site Map - 125 A Mt Nutt Road, Bowen



SP150802 V0 REGISTERED Recorded Date 30/07/2003 15:26 Page 1 of 2 Not To Scale

81944_01/CMG/FB105

Land Title Act 1994 ; Land Act 1994
Form 21 Version 2

SURVEY PLAN

Sheet 1 of 1

Lease A on RC893748 (8-9-11-12-8)
Lease 2 on RP717903 (10-11-12-13-10)

Peg placed at all new corners.

DIAGRAM
1:200

LEASE B
65 m²

N

REFERENCE MARKS

STN	TO	ORIGIN	BEARING	DIST
2	Spike in Bit		155°17'20"	9.329
3	Cen P Pole (No 5303)		289°33'	0.41
3	OIP	RP732778	180°17'20"	1.0
3	O.Cen P Pole gone	RP732778	244°52'10"	7.57
7	Nail in Rock		226°19'30"	1.553
8	O.Holding Bolt	RC893748	142°33'	2.16
9	O.Holding Bolt	RC893748	229°33'	2.04
10	O.Bolt	RP717903	1°20'	1.006
11	O.Bolt	RP717903	181°20'	1.006
12	O.Bolt	RP717903	181°20'	1.006
13	O Bolt	RP717903	1°20'	1.006

PERMANENT MARKS

PM	ORIGIN	BEARING	DIST	NO
1-OPM	RP717903	90°08'	1.006	982
9-OPM	RC893748	342°18'50"	59.155	81340

To Stn 3
46°19'30" 6.5
136°19'30" 10.0
316°19'30" 10.0
6.5 226°19'30"
133°28'30" 10.83
91°20' 6.095
(12.19)
(12.19)
1°20'
181°20'
6.095
6.095
6.095 271°20'
To Stn 2

5 4 6 7 8 9 10 11 12 13

2
RP717537

OP O.Bolt
O.Bolt at Stn (RC893748) O.Bolt

No O.Mk O.Cen Steel RFP 0.055N 0.04W (RC893748) O.I.Bolt

Lease A RC893748

O.Cen Steel RFP at Stn (RC893748) O.I.Bolt

Lease 2 RP717903

No O.Mk O.Cen Steel RFP 0.09W (RC893748) O.I.Bolt

No O.Mk O.Cen Steel RFP 0.02W (RC893748) O.I.Bolt

LEASE B

SEE DIAGRAM

41°51'50" 149.803
158°07'50" 117.648

2
RP717537

2
RP720747

MOUNT NUTT ROAD

155.382 270°08'
100.584 270°08'

3 No O.Mk OIP O.Cen P Pole gone
2 No O.Mk
1 No O.Mk O.Cen RFP 0.04N 0.14W (RP732778) OPM

31
RP89355

/
RP717536

Scale 1:1000 – Lengths are in Metres.

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

C&B CONSULTANTS PTY LTD ACN 055 931 096 hereby certify that the Company has surveyed the land comprised in this plan by Antony Wayne LAMBY (Licensed Surveyor) & Peter Henry STENZEL (Surveying Associate) for whose work the company accepts responsibility, that the plan is accurate, that the said survey was performed in accordance with the Surveyors Act 1977 and the Surveyors Regulation 1992 and that the said survey was completed on 2/05/2002

C&B CONSULTANTS PTY LTD A.C.N. 055 931 096 THE COMMON SEAL OF

Stephen James REDGWELL
Director and Licensed Surveyor

Director

10.5.02
Date

0 50 mm 100 mm 150 mm

State copyright reserved

Plan of

Lease B

in Lot 2 on RP717537

PARISH: ***PRING*** COUNTY: ***Herbert***

Meridian: *RP717903* *ADD 6°12' for AMG Zone 55 Vide RC893748* F/N's: *No*

Scale: ***1:1000***

Format: **STANDARD**

SP150802

Plan Status:

Copyright protects the plan/s being ordered by you. Unauthorised reproduction or amendments are not permitted.

706845231

BE 403

$229.70
30/07/2003 15:26

WARNING : Folded or Mutilated Plans will not be accepted.
Plans may be rolled.
Information may not be placed in the outer margins.

Registered

5. Lodged by
AGS 67.
CT
(Include address, phone number, reference, and Lodger Code)

1. Certificate of Registered Owners or Lessees.

I/We BOWEN SHIRE COUNCIL

(Names in full)

* as Registered Owners of this land agree to this plan and dedicate the Public Use Land as shown hereon in accordance with Section 50 of the Land Title Act 1994.

* ~~as Lessees of this land agree to this plan~~

J J Finlay A/C.E.O. (MAYOR)

Signature of *Registered Owners *~~Lessees~~

* Rule out whichever is inapplicable

2. Local Government Approval.

* BOWEN SHIRE COUNCIL.

hereby approves this plan in accordance with the :

% INTEGRATED PLANNING ACT 1997.

"APPROVED"

Dated this SIXTH day of JULY 2003

J. J. Finlay

CHIEF EXECUTIVE OFFICER.

ASSESSMENT MANAGER PLANNING & DEVELOPMENT.

* Insert the name of the Local Government. % Insert Integrated Planning Act 1997 or
# Insert designation of signatory or delegation Local Government (Planning & Environment) Act 1990

3. Plans with Community Management Statement :

CMS Number :

Name :

4. References :

Dept File :

Local Govt :

Surveyor 81944

6. Existing

Title Reference	Lot	Plan
20586200	2	RP717537

Created

Lots	Leases	Road
	B	

52A	Lease B
Orig	Lots

7. Portion Allocation :

8. Map Reference :
8558-32223

9. Locality :
Bowen

10. Local Government :
BOWEN S.C.

11. Passed & Endorsed :

By : C&B CONSULTANTS PTY LTD

Date : 14/5/2002

Signed :

Designation : LICENSED SURVEYOR

12. Building Format Plans only.

I certify that :

* As far as it is practical to determine, no part of the building shown on this plan encroaches onto adjoining lots or road.

* Part of the building shown on this plan encroaches onto adjoining * lots and road

Licensed Surveyor/Director * Date

* delete words not required

13. Lodgement Fees :

Survey Deposit	$
Lodgement	$
New Titles	$
Photocopy	$
Postage	$
TOTAL	$

14. Insert Plan Number SP150802

13.2.2 - Show Holidays 2023

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Melanie Douglas - Governance and Councillor Support Officer

AUTHORISING OFFICER: Jason Bradshaw - Director Corporate Services

PRESENTED FOR: Decision

ATTACHMENTS

1. Request letter 2023 [**13.2.2.1** - 1 page]

PURPOSE

To provide Council the opportunity to determine the regions special holidays for the 2023 calendar year.

OFFICER'S RECOMMENDATION

That Council propose 'special and show holidays' for the 2023 calendar year as follows:

1. Proserpine, Airlie Beach and Cannonvale districts - 23rd June 2023;
2. Bowen district including the localities of
    a. Bowen;
    b. Guthalungra;
    c. Gumlu; and
    d. Bogie - excluding the area south of the Bogie River from its confluence with the Burdekin River to its source and then easterly by the Clark Range to the eastern boundary of the Council area - 27 June 2023.
3. Collinsville district, including the area south of the Bogie River from its confluence with the Burdekin River to its source and then easterly by the Clark Range to the eastern boundary of the Council area - 7 November 2023.

BACKGROUND

Local Governments are provided each year the opportunity by the Office of Industrial Relations to request special holidays for their districts to be observed for the following year if in respect to an Agricultural, Horticultural or Industrial Show.

Each year the Queensland Agricultural Shows (known as QCAS) delegate dates to 127 independent Show Societies in the state. Agricultural Shows have played a leading role in the development of agriculture and communities since they commenced in 1882.

Council has been approached by the Office of Industrial Relations with the invitation to request special holidays to be observed during 2023 in accordance with the *Holidays Act 1983.*

DISCUSSION/CURRENT ISSUE

The community expectation is that Council would support the local show societies and seek a show holiday for the respective events to maintain and support strong, collaborative and cooperative relationships with the communities.

STATUTORY/COMPLIANCE MATTERS

The Minister has the power to appoint a special holiday under section 4 of the *Holidays Act 1983.*

STRATEGIC IMPACTS

Support the organisation in ensuring appropriate compliance with legislation and to support the elected council in its decision-making processes and obligations as a local government.

FINANCIAL IMPLICATIONS

Managed within existing budgets.

CONSULTATION/ENGAGEMENT

Director Corporate Services
Manager Governance & Administration
Queensland Chamber of Agricultural Societies Inc. (Queensland Ag Shows)

RISK ASSESSMENT

The risk of a response not being provided to the Office of Industrial Relations will eliminate the regions opportunity for recognition of a Special Holiday, which could potentially put Council in a negative position with the communities.

TIMINGS/DEADLINES

A response to the Office of Industrial Relations is required by 29 July 2022.

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

Section 58 of the *Human Rights Act 2019* specifies required conduct for public entities when acting or making a decision. Sections 15-37 of the *Human Rights Act 2019* identifies the human rights a public entity must consider in making a decision. The human rights relevant to this decision are as follows:

- Section 19 – Freedom of movement.
- Section 21 – Freedom of expression.
- Section 24 – Right to own property and not be arbitrarily deprived of property.
- Section 27 – Cultural rights – generally – all persons with a particular cultural, religious, racial or linguistic background have the right to enjoy their culture, to declare and practice their religion and use their language.
- Section 28 – Cultural rights – Aboriginal peoples and Torres Strait Islander peoples.

This decision does not limit the above identified human rights.

ALTERNATIVES CONSIDERED

Council has the option to decline the Special Holiday offer.

Queensland Government

Office of
Industrial Relations

Department of Education

15 June 2022

Dear Chief Executive Officer,

As you may be aware, each year in accordance with the *Holidays Act 1983* local governments are invited to request special holidays to be observed during the following year for districts in their area.

If you wish to request special holidays to be observed during 2023 for districts in your local government area, please complete the attached request form and submit via email to info@oir.qld.gov.au by no later than **Friday, 29 July 2022**.

A local council requested special holiday is a public holiday only if it is in respect of an agricultural, horticultural or industrial show. Under federal industrial relations legislation, on a public holiday employees are, without loss of ordinary pay, entitled to be absent from work or refuse to work in reasonable circumstances. Employees who work on a public holiday are entitled to penalty rates in accordance with their award or agreement.

A special holiday for any other reason is not a public holiday but is a bank holiday only and under the *Trading (Allowable Hours) Act 1990*, is only a holiday for banks and insurance offices and under a directive of the *Public Service Act 2008*, a holiday for public service employees unless otherwise determined by a chief executive.

Upon receiving Ministerial approval, the holidays will be published in the Queensland Government Gazette. Confirmation of the approved special holidays together with a link to the Queensland Government Gazette will be emailed to your office.

Should you require further information regarding this process, please contact Ms Jacqui McGuire, Office of Industrial Relations on (07) 3406 9854 or email jacqui.mcguire@oir.qld.gov.au.

Yours sincerely

[redacted]

Tony Schostakowski
Acting Executive Director – Industrial Relations
Office of Industrial Relations

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13.3.1 - Housing Affordability Consultation

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Leonie Meurant - Strategic Planner

AUTHORISING OFFICER: Neil McGaffin - Director Development Services

PRESENTED FOR: Decision

ATTACHMENTS

1. Housing Affordability Community Engagement Plan [**13.3.1.1** - 23 pages]
2. Housing Affordability Study 2022 [**13.3.1.2** - 13 pages]
3. Housing Affordability Literature Review [**13.3.1.3** - 51 pages]

PURPOSE

For Council to seek public comment on housing affordability issues in the Whitsundays by commencing public consultation in line with the Housing Affordability Community Engagement Plan.

OFFICER'S RECOMMENDATION

That Council commence public consultation on Housing Affordability initiatives in line with the Housing Affordability Community Engagement Plan.

BACKGROUND

Actions that Council can take to improve housing affordability and residential rental availability have been investigated. The Housing Affordability Study (Attachment 2) has been developed to investigate the options from the Housing Affordability Literature Review (Attachment 3).

DISCUSSION/CURRENT ISSUE

The next step is to gauge the interest of the local community on the range of possible Planning Scheme amendments detailed in the Housing Affordability Study. A Community Engagement Plan has been developed (Attachment 1) providing opportunities for sharing ideas, giving feedback and commentary through various consultation methods.

Council will undertake targeted engagement in August. If there is sufficient interest shown two public forums may be held, one in Bowen and one in Cannonvale to encourage participation and discussion.

STATUTORY/COMPLIANCE MATTERS

Community Engagement Policy

STRATEGIC IMPACTS

Provide advocacy and partnerships with government, community and business interests through effective stakeholder engagement.

FINANCIAL IMPLICATIONS

Exhibition costs are accommodated within the existing budget.

CONSULTATION/ENGAGEMENT

Manager Strategic Planning
Manager Communications and Marketing

RISK ASSESSMENT

If no consultation is undertaken, Council will not be aware of the communities consideration.

TIMINGS/DEADLINES

Consultation is expected to commence within the next 30 days.

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

Section 58 of the *Human Rights Act 2019* specifies required conduct for public entities when acting or making a decision. Sections 15-37 of the *Human Rights Act 2019* identifies the human rights a public entity must consider in making a decision. The human rights relevant to this decision are as follows:

- Section 19 – Freedom of movement.
- Section 21 – Freedom of expression.
- Section 24 – Right to own property and not be arbitrarily deprived of property.
- Section 27 – Cultural rights – generally – all persons with a particular cultural, religious, racial or linguistic background have the right to enjoy their culture, to declare and practice their religion and use their language.
- Section 28 – Cultural rights – Aboriginal peoples and Torres Strait Islander peoples.

This decision does not limit the above identified human rights.

ALTERNATIVES CONSIDERED

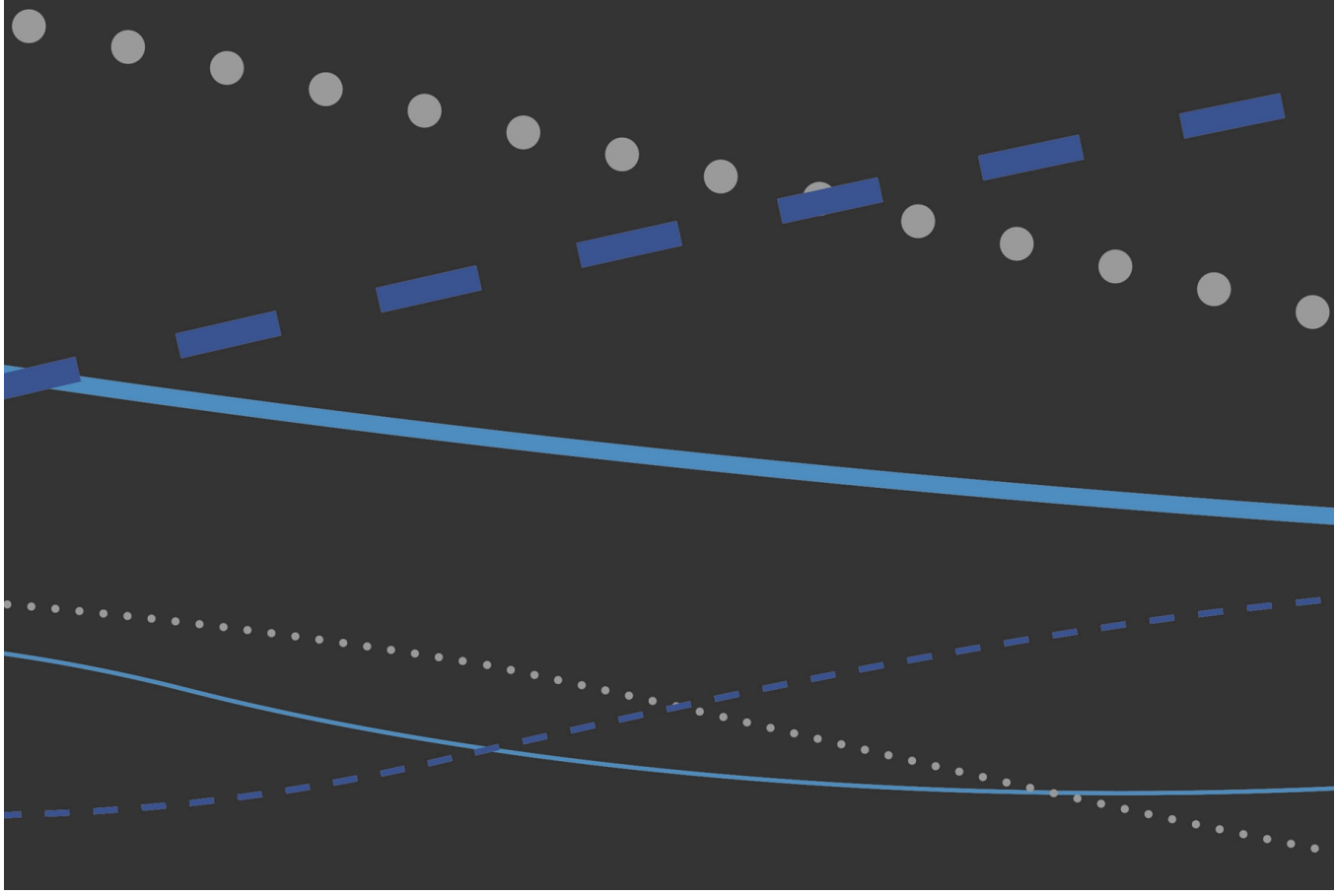
Options	Description	Positives	Negatives
Option 1	Don't consult with the community on Planning Scheme amendments early in the process	Early public consultation ensures amendments to the Planning Scheme are what the community wants and needs.	The community miss out on early engagement.

Whitsunday Regional Council

Housing Affordability

Community Engagement Plan

Date: June 2022



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Document History

Title	Version No.	Date	Author	Reviewer	Approved by
Report	1.0	6 July 2022	Leonie Meurant	Shane Neville	

1. Introduction

1.1 Background

Whitsunday Regional Council will be undertaking public consultation to gauge the local interest in making amendments to the Whitsunday Planning Scheme to encourage housing diversity and in turn affordability. Possible amendments include:

1. Reduce lot sizes within residential zones
2. Reduce assessment levels for residential housing products
3. Introduce density benchmarks (multiple dwellings) to allow for more dwellings on a lot
4. Increase the floor areas for secondary dwellings (Granny Flats)
5. Introduce diversity Benchmarks for new subdivisions, percentage of development must have larger dual occupancy/multiple dwellings lots
6. Introduce a Medium density residential zone
7. Encourage Mixed use accommodation through the planning scheme

The purpose of the public consultation is to inform and consult with the community about housing affordability issues in the Whitsundays and to provide an opportunity for ideas, feedback and commentary through public forums in each major area.

This Community Engagement Plan outlines the communication processes, methods and action plan to engage with the community during consultation.

1.2 Purpose and Aim of the Community Engagement Plan

This Community Engagement Plan (The Plan) will support the project to ensure all communication activities are appropriate, consistent, and delivered in a timely manner. It outlines key messages and objectives and aims to increase awareness of and participation by the community. This Plan identifies and defines the roles of persons involved in this project, , when information will be delivered and what communication channels will be used to deliver the information.

This Plan sets the communications framework for this project and will serve as a guide for internal and external communications throughout the life of the project.

1.3 Communication Objectives

Open and transparent communication and stakeholder management plays a key role in enabling effective engagement. The key objectives of this Plan are to:

- Ensure a transparent and open process where all interested residents and key stakeholders are provided with information in a consistent and timely manner;
- Identify and manage communication issues and risks throughout the project;
- Encourages feedback from stakeholders and the community; and
- Enhance stakeholder and community awareness, understanding and confidence by following best-practice communication and engagement principles.

1.4 Communication Objectives by Project Phase

The project will have several clear phases and communication objectives, outlined below:

Table 1 Communication Objectives

Project Milestones	Indicative Timing	Level of Engagement	Communication Objectives
1. Community Engagement Plan developed	June 2022	Involve	To engage with internal stakeholders during the planning process and develop a communications and engagement strategy.
2. Prepare Consultation materials	June/July 2022	Involve	To prepare materials for the consultation and/or engagement process, and gain approvals from the Project Manager and relevant Director, and Council.
3. Launch Community Consultation	August 2022	Consult & Collaborate	To inform and engage with all directly affected residents and key stakeholders and undertake engagement activities.
4. Close Community Consultation and prepare Consultation Report	August 2022	Inform	To inform the community that consultation has closed and prepare the Consultation Report and Summary.
5. Close the Loop – Report back to the community and Council	September 2022	Inform	To provide all participants with a copy of the Consultation Summary and publish this document on the website.

1.5 Communication Principles

Several key consultation principles have been developed, summarised in Table 2 below:

Table 2 - Summary of Consultation Principles

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. Stakeholder Identification

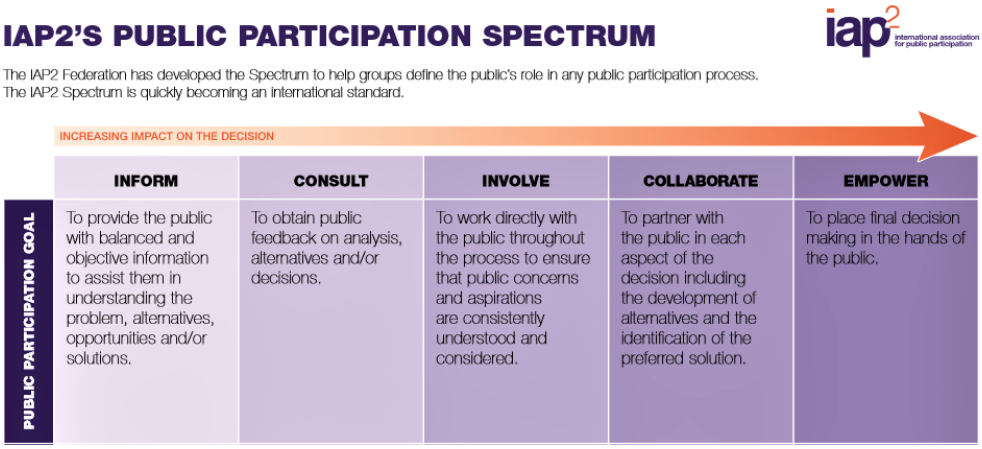
A stakeholder is defined as any individual, group of individuals, organisation or political entity with an interest in the outcome of a decision. They may be, or perceive that they may be, affected directly or indirectly by the outcome of a decision. To ensure the best outcome when communicating, stakeholders must be identified and level of engagement determined.

2.1 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. Based on the levels of engagement, outlined below in Table 3, Council will:

- **Inform** the wider community throughout every phase of the project;
- **Consult** key stakeholders and affected residents; and
- **Collaborate** with interested stakeholders and residents.

Table 3 – IAP2 Public Participation Spectrum



2.2 Stakeholder Analysis

A summary list of potential stakeholders has been developed below, demonstrating the level of consultation and communication methods best suited to each stakeholder group.

Table 4 - Project stakeholders and level of consultation

Stakeholder Category	Representative/Member	Level of consultation
Local Government		
Whitsunday Regional Council Executive Leadership	Mayor, CEO & Councillors Development Services Corporate Services Community Services Infrastructure Services Communications & Marketing	Involve
Key Stakeholders		
Local Construction Industry	Various see Appendix A	Consult & Collaborate
Local Developers	Various see Appendix A	Consult & Collaborate
Local Real Estate Agents	Various see Appendix A	Consult & Collaborate
Local Solicitors	Various see Appendix A	Consult & Collaborate
Key community interest groups, (Airlie Beach Chamber of Commerce, Fight for Airlie, Save our Foreshore, Bowen Chamber of Commerce etc)	Various see Appendix A	Consult & Collaborate
All interested Community stakeholders (see Appendix A for list)	Various see Appendix A	Consult & Collaborate

Stakeholder Category	Representative/Member	Level of consultation
General Community		
Wider public	All Whitsunday Region residents	Consult & Collaborate

3. Roles and Responsibilities

The project team's roles and responsibilities have been outlined below in Table 5:

Table 5 – Roles and Responsibilities

Project Team Roles	Responsibilities
Whitsunday Regional Council	
Project Lead – Strategic Planner - Leonie Meurant	Manage and coordinate the project's deliverables, keep project phases on track.
Project Team Strategic Planner – Jono Cutting Strategic Officer – Nicole Lorraway	Provide support to all deliverables within the project, including participating in public forums.
Project Manager – Manager Strategic Planning – Shane Neville	Approve all major planning and communications strategies prior to implementation. Approve all budget modifications.
Project Director – Director Development Services – Neil McGaffin	Provide final approvals for all major external communications during consultation. The Director will act as liaison between Councillors and the Project Team.
Communications & Marketing Support – Lisa Maher, Sarah Collins, Hannah Fuzier	Assist Project Team by preparing strategy to communicate with key stakeholders and residents, draft and review communications and marketing materials, coordinate engagement activities, prepare reporting.
Communications & Marketing Manager – Greg Martin	Manage all media enquiries and issues which may arise during the project, act as liaison between Councillors and the Project Team, approve all media communications and external communications.

4. Identify Risks of Poor Communication

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 effectiveness of the project. Several potential risks may be associated with this project due to existing community concerns. These potential risks will require management throughout the communication process, and have been identified below in a risk assessment table:

Table 6 – Risk Assessment

Identified Risk	Level of Impact (High, Medium, Low)	Mitigation Method
Community expectations may be unrealistic regarding	High – Could result in negative backlash from the community and	Provide consistent and accurate information to key stakeholders and the community, and ensure our key messages

what the consultation is about.	distraction from consultation about other planning matters concerning the community.	are distributed widely – regarding the purpose of the consultation. Develop engaging and easy-to-understand materials. Ensure there is sufficient notification to the local community via all communication channels.
Concern over how the amendments may impact on the region	High – Communities generally do not like change to how a town functions and/or feels/looks.	Outline the benefits of the project to the Town/s and communicate that Council will keep all outcomes open and transparent for any amendments to the Planning Scheme in public forums and Council Meetings.
Ensuring COVID safe practices during in person consultation events.	High	Ensure proposed face to face consultations observe QLD Health requirements current at the time.
Unrealistic expectations for the outcome of this consultation	High – Communities expect immediate change to affordable housing from this consultation	The fact sheets will clearly specify that this is a long term solution and an amendment would not even have effect for another few years.

5. Communication Strategy

The Plan has been broken down into several different elements, enabling Council to appropriately inform and engage with the regional community. The key elements of this section include communication management, communication tools, and an Action Plan.

5.1 Communication Management

5.1.1 Communication Protocol and Media Spokesperson

The following protocols will be followed throughout the consultation process:

- All media enquiries will be directed through Council's Communications & Marketing Manager and Project Director.
- The Whitsunday Regional Council Mayor will be the key spokesperson for any media statements or releases; if the Mayor is not available, the Communications Manager/ Project Director will be media spokesperson for the project.
- All other enquiries will be directed to the Project Manager who will notify the Communications & Marketing Manager, and Project Director.
- All formal external communication materials will be reviewed and approved by the Project Director, and the Communications & Marketing Manager.
- 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.

5.2 External Communication Tools

The following engagement tools may be used during the consultation process:

- Your Say Whitsunday online engagement portal
- Whitsunday Regional Council website
- Media releases
- Emails
- Social media updates, and
- Newsletters.
- Newspaper advertising
- Possible Community forums

5.2.1 Whitsunday Regional Council websites

A dedicated page will be available on the Your Say Whitsunday with project updates, images and links to media releases. Customers may make a submission via Your Say Whitsunday or by email to info@whitsundayrc.qld.gov.au.

5.2.1.1 Media Releases

Media releases may be used at strategic points throughout the project stages, announcing important information about upcoming forums for each area. A media release may also be utilised to close the initial loop once Council adopts the Submission Analysis Report and how the project will proceed after the public consultation.

5.2.2 Social Media

Council's social media platform - Facebook, may be used to distribute information to the public throughout the duration of the project. Each of these platforms requires a different approach to content, so all content will be drafted and released strategically to ensure it is relevant to each platform's audience. Social media can be a great tool for engaging with the wider community and encourages sharing of information.

5.2.3 Emails

Emails to invite persons will be sent to:

- all known community groups found on Council's database
- all known builders, planning companies, developers, real estate agents, solicitors and other persons of interest on Councils databases. If any businesses are missed, the email will encourage receivers to send it on to other interested persons.

5.2.4 Newsletters

Newsletters can be used to update members of the local business community and key stakeholders who may be directly or indirectly impacted by the project and to provide progress updates.

5.2.5 Face to Face

Direct contact will occur throughout the project in various forms.

If the interest is high enough, Community forums may be facilitated by officers in Bowen and Cannonvale, at night-time to encourage greater participation.

Place	Venue	Date	Time

Bowen	Bowen Board Room 67 Herbert Street Bowen	TBD	6pm
Cannonvale	VMR	TBD	6pm

5.2.6 Newspaper advertising

Consultation period to be promoted through local newspapers either through paid feature advertising or appearing in the monthly WRC 'Our Whitsunday Community Update'.

5.3 Key Messages

The following key messages have been drafted to communicate about the project, and may be updated regularly with new information, as required:

- Council encourages the community to provide their views and make a submission or participate in the local community forums about future housing diversity in our region.
- This is the first step in a long process that may end up making changes to the Planning Scheme.
- Council is looking at possibly of different amendments to encourage housing diversity in the region and wants to gauge the local interest for amendments to the Planning Scheme.
- The amendments suggested are:
    - Reduce lot sizes within residential zones
    - Reduce assessment levels for residential housing products
    - Introduce density benchmarks (multiple dwellings) to allow for more dwellings on a lot
    - Increase the floor areas for secondary dwellings (Granny Flats)
    - Introduce diversity Benchmarks for new subdivisions, percentage of development must have larger dual occupancy/multiple dwellings lots
    - Introduce a Medium density residential zone
    - Encourage Mixed use accommodation through the planning scheme
    - Refer to **Further Information** in **Appendix B**.
- Council is open for suggestions and the communities ideas for other amendments to encourage housing diversity.
- Council wants to know if there is anything the community is disliking about the Planning Scheme in relation to housing and the development of housing.
- This is the first consultation about this subject, if community interest is limited, the subject may not progress.
- Council has an existing Policy to support social housing through a discount of their rates
- Council already supports and advocates for the State Government Housing Initiative
- Council is not exploring infrastructure charges discounts as an option for housing affordability at this point in time.

6. Action Plan

An Action Plan has been developed to provide a consistent structure to developing and implementing the communication strategy (**Table 7** below). This Action Plan will continue to be reviewed and updated as the project progresses.

Table 7 – Communications Action Plan

Step		Timing	Aim	Objective	How
1	Community Engagement Plan developed	June 2022	Develop a Community Engagement plan	To engage with internal stakeholders during the planning process	▪ Direct contact by email and phone with key stakeholders ▪ Face-to-face meetings with project team
2	Prepare Communications / Consultation Materials	June/July 2022	Prepare engaging, easy-to-understand key messages and materials for distribution	To provide clear, consistent and engaging communications	▪ Council websites updates ▪ Factsheets ▪ FAQs (if required) ▪ Media materials
3	Launch Community Consultation	August 2022	Engage and inform affected residents, businesses and key stakeholders	To provide opportunities for affected stakeholders and residents to get involved and give feedback	▪ Public notification ▪ Social Media ▪ Public Forums ▪ Website updates ▪ Direct emails to affected stakeholders
4	Close Consultation and prepare Consultation Report	August 2022	Analyse feedback results and prepare the Consultation Report and one-page Summary	To advise affected stakeholders and residents that consultation has closed and reporting is underway	▪ Website updates ▪ Media Release ▪ Social media
5	Close the Loop – report back to the community	September 2022	Report back to the community by publishing the consultation Summary	To inform participants and key stakeholders about the key results and outcomes of the consultation process	▪ Website updates ▪ Social media update ▪ Direct emails to participants and affected Stakeholders

6	Start Possible Amendment if Favourable Outcome from Community Consultation Report	October 2022	Inform residents and businesses of outcome and next steps	To inform residents and businesses of the outcome and general interest in amending the planning scheme for housing affordability	▪ Website updates ▪ Social media update ▪ Direct emails to participants and affected Stakeholders

7. Feedback and Integration

7.1 Next steps

Community engagement materials will now be developed in preparation for the consultation activities to commence in August 2022.

At the commencement of the community engagement, key stakeholders and the public may be advised of the concept plan by email, newsletters, web update and media release.

7.2 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 document, which outlines the key results of the engagement process and indicates the next steps for the project. This document will be publicly available via the project page on the Your Say Whitsunday website.

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.

Appendix A – List of Interested Stakeholders

List of Community Stakeholders

Note: an option to unsubscribe from consultation updates will be provided within each email update.

Note: Stakeholder list is subject to updates.

Whitsunday Coast Chamber of Commerce
Whitsunday News
Greater Whitsunday Communities
Whitsunday Ratepayers Association
Rotary Airlie Beach
Whitsunday Neighbourhood Centre
RSL Airlie Beach Whitsunday Sub Branch
Whitsunday Zonta
Airlie Beach Men's Shed
Community Solutions
Bygerrah Ngaro Aboriginal Corporation
Tourism Whitsundays
Cruise Ship Ambassadors
SKAL International Whitsundays
Cruise Whitsundays
Coral Sea Marina
Port of Airlie
Whitsunday Sailing Club
Airlie Beach Hotel
Australian Adventure Tourism Group
Lions Airlie Beach Community Markets
Save Our Foreshore Inc
Bowen and Collinsville Enterprise (BCE)
Bowen Gumlu Growers
Bowen Business Chamber
Reneken Accountants
Bowen Transit
Bowen Tourism and Business
Whitsunday Region Ratepayers Association
Girudala Community Cooperative Society
Juru Enterprises
Bowen Rotary Club
Bowen Lions Club
Bowen Neighbourhood Centre
Zonta Club of Bowen

Bowen RSL
Bowen Independent
Tassals
North QLD Bulk Ports
Arabon Seafoods
Coral Coast Barra
Bill Dreger Aluminium and Glass
Lowcock Construction
Sanoma Qcoal
Phantom Produce
Pilcher Industries
Rodney Barrett Graziers
Whitsunday Neighbourhood Centre
Bowen and Collinsville Enterprise (BCE)
Collinsville Connect
Collinsville Community Association
Collinsville Progress Association
Sonoma Mine
Glencore Mine
Conway Beach Progress Association
Dingo Beach Progress Association
Hydeaway Bay Progress Association
Gloucester Sport & Recreation Association
Proserpine Indigenous Reference Group
Proserpine Chamber of Commerce
AAA Building Consultants
Abell Builders
Agile Approvals
Airlie Beach and Whitsunday Real Estate
Airlie Beach Constructions
Airlie Beach Hot Water Service
Airlie Beach Plumbing & Gasfitting
Airlie Builders
Airlie Clean Drains
Airlie Plumbing
Alan Jamieson
Allbuild Approvals
Allen Trinder Building
Allenbuild Construction & Design
Analysis Realty
Apex Home Constructions
Archers the Strata Professionals

Avery Surveys
BBS Developments
BC Constructions
Beachtech Designs
Ben - Blue Palm Property
Ben Campbell Building Group
Bernie McErlane
Berry Excavations
Blue Diamond Constructions (admin@bluediamondconstructions.com.au)
Blue Palm Property
Bluewater Plumbing
Bob Bogie & Co Solicitors
Bob Thomson
Bogie & Co Solicitors
Brad Penhallurick
Brahman Builders
Brazilbuilt
Bredl Plumbing
Brian Smith Constructions (thesmithmob@hotmail.com)
Bruce Absolon
Butterfly Realty Group
Cane Civil Constructions
Cannonvale Plumbing
Century 21
Century 21 Bowen
Chris Bailey Pools
Chris Russell Constructions
Clarkco Pty Ltd
Coastal Building Approval Service
Coastal Edge Constructions
Colin Hounsell
Colony Building Group
Construction Sciences Airlie
Coral Coast Building & Management
Coral Sea Carpentry
Crear Construction
Cumberland Homes
Dan McCormack
Darcy Lowcock
David's Drain and Sewer Cleaning
Derek Hansen

Devcert
Development Planning & Approvals
Dixon Homes
Dolphin Realty
Dowdens Pumping & Water Treatment
EcoDrill - Garry Stewart (ecodrill@bigpond.com)
Ecological Service Professionals
First National Real Estate Whitsunday Coast
Flanagans Engineering
Focus on Water
Frontline Constructions (Qld) Pty Ltd
G J Gardner Homes Whitsundays
G.W. Goddard & Associates Consulting Engineers & Designers
Gary Molloy Building
Gary Taylor
Geotechnicoal
Greg Dibben
Greg Matthews
Ground Consulting Environmental & Geotechnical Engineering
GT Homes
Hamilton Island Real Estate
Harris Design & Building Concepts
Hermosa Constructions
Hutchinson Builders
Hydeaway Plumbing & Gas Fitting Service
Ideal Gas & Plumbing
info@premise.com
Integral Building
Jaremus Constructions
Jason Bartz
Jeff Day Plumbing
Jeremy Smith Constructions
Jim Stace Carpentry & Construction
JM Constructions
John Harris - PRD Whitsunday
Johns Plumbing
Justin Daley
Kegsawers
Kendall Nash
Laser Plumbing
Latitude 20 Homes
Laurie Smith

Lawtos Barefoot Real Estate
Lawto's Barefoot Real Estate
Leith Michell Builder
Lindsay Bates Building
LJ Hooker Bowen
LJ Solid Constructions (bryce@ljsolid.com)
Lowcock Builders
Lowcock Builders
M M Architect
Macrossan & Amiet Solicitors
Macrossan & Amiet Solicitors Proserpine
Main Engineering
Marco Deboni
Matt Kelly
McCrae Property Group
McDonald Smith Plumbing Pty Ltd
McNeill Building
Merrick Constructions
Milford Planning
Moloko Homes
Morton Plumbing
Nat Cobham Builder
Need A Tradie
Neil Sempf
Northarm Constructions
NQ Environmental Health Services
O'Brien Plumbing Airlie Beach
O'Connor Plumbing
Ogilvy Properties
Paragon Engineering
Paul Smith
PD Law
Peter Town Homes
Peto's Constructions Pty Ltd
Piccinelli Builders
Pichers Industries
PRDnationwide Whitsunday
Precise Plumbing & Excavations
Premise
Professionals Bowen - Frank Sellars @ Co
Professionals Whitsundays
Queensland Trade Services Group

R J Taylor Law
R.B.C Building Electrical Civil
Rapid Building Approvals
Ray White Whitsunday
Real Estate for Sale
Real Estate Vision Group
Red Emperor Constructions
Reece Milburn (rdmilburn@hotmail.com)
Reece Plumbing
Ricciardi Builders (ricciardi.builders@bigpond.com)
Richard Rewald Lawyers Pty Ltd
Rob Jeffrey
Rock Plumbing & Gasfitting
Roebuck Civil
Ross Smith
RPS Group
Rudd Constructions
Ruddy Tomlins & Baxter Lawyers
Ryan Building Group
Sabai Consulting Pty Ltd
Sandra Hansche
SMEC Engineering
Spannys Real Estate
Splash Pools
STA Engineering
Steve Knight
Steve Paine Builder
Steve Williams
Stewart Lester
Strathdickie Engineering
Sugarloaf Views
Sunstate Shed
Sunsteel Homes
T M Wardlaw Plumbing & Gas
Tap Out Plumbing
Taylor Plumbing Whitsundays
Taylors Property Specialists
Terry Kemp
Terry Peach
Think Water
Titan Homes
Totally Drained Plumbing

Town & Country Builders
Trevor Harrison
trevor.glasson (trevor.glasson@bigpond.com)
Tropical Sheds/Parnells Metal
Ultimate Homes & Constructions Pty Ltd
Veris
Vision Surveys
Wakefield Plumbing
Wayne Borellini
Whaleback Plumbing
Whit Spec
Whitsunday Charter Boat Association
Whitsunday Bareboat Operators Association
Whitsunday Drainage Contractors
Whitsunday First Home
Whitsunday Law
Whitsunday Plumbing
Whitsunday Reality
Winterburn Constructions
Winterburn Pools
Wynne Planning & Development
YCC Building Services
Yuskan Builders

Appendix B Further Information

Possible Amendments

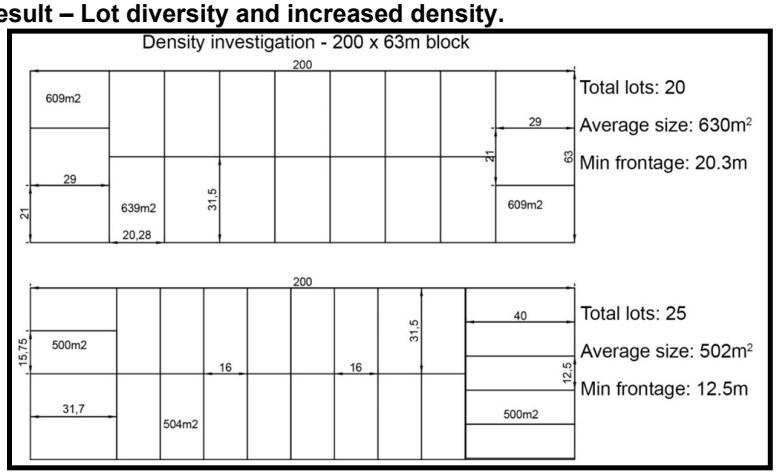
Online interaction will include easy to read fact sheets and surveys for increased participation.

1. **Lot Sizes**

Reduce the minimum lot sizes within urban residential zones and introduce a maximum lot size to enable an increase in density and diversity.

Example: Reduce minimum lot size from 600m² to 500m².

Desired Result – Lot diversity and increased density.



2. **Assessment Levels**

Reduce assessment level in certain zones for desirable housing types.

Example: Reduce assessment level from Impact to Code Assessable in Low Density Residential Zone, where meeting benchmarks.

Desired Result – Dwelling diversity without compromising amenity.

3. Density Benchmarks for Multiple Dwellings and Dual Occupancy

Introduce density benchmarks for multiple dwellings, currently a Multiple Dwelling or Dual Occupancy requires 800m² minimum lot size in all zones.

Example: relax requirements, particularly minimum lot size from 800m² to 600m², and allow design to influence.

Desired Result - Higher density low height multiple dwellings on low density residential lots.

< 5 Single story multiple dwellings on low density residential lot

< Residential dwelling on low density residential lot ~ 1000m²

4. Secondary Dwellings

Increase the floor area for secondary dwellings to make then more appealing for homeowners.

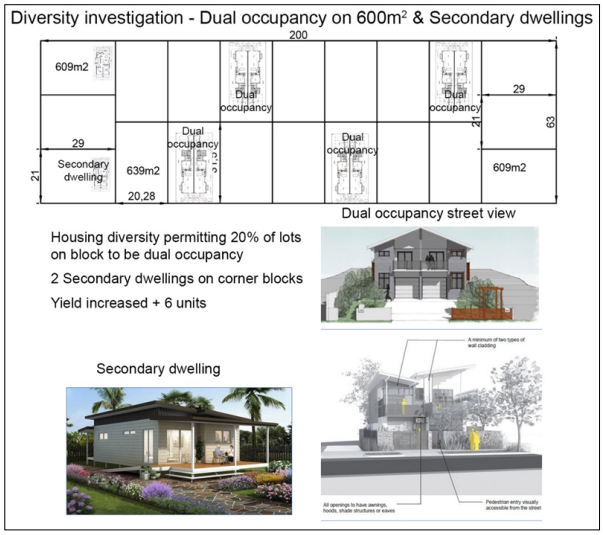
Example: 70m² maximum to 100m² maximum gross floor area and 100m² maximum to 140m² maximum total use area.

Desired Result – More appealing secondary dwellings.

5. Lot Diversity Benchmarks

Introduce lot diversity benchmarks in the Reconfiguration of a Lot Code requiring some lots be higher density (multiple dwellings, dual occupancies, and small lots).

Example Lot Diversity



6. **Medium Density Residential Zone**

Introduce a Medium Density Residential Zone to facilitate higher density including:

- Increased density.
- Increased building heights, low to medium rise (2-4 storeys).
- Increased site cover.
- Diversity of accommodation types.

7. **Mixed Use Accommodation**

Introduce benchmarks to Zone Codes to strongly encourage accommodation over commercial developments, including a full review of the Mixed Use Zone Code.

Example – Multiple Dwellings up top and shops on the bottom level (3 stories)

HOUSING AFFORDABILITY
STUDY 2022
Whitsunday
Regional Council

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1.0 Introduction

A Housing Affordability Literature Review has been undertaken to explore the methods implemented by Local Governments around Australia to address housing affordability. The Literature Review provided four opportunities for Council to explore in the local context of the Whitsunday Region.

1.1. Purpose

The purpose of the Housing Affordability investigation is to present Council with options on how to address housing affordability most effectively.

2.0 Housing Affordability Literature Review Outcomes

The Housing Affordability Literature Review (Review) provides an assessment of:

- Housing affordability in the Whitsunday Region.
- Existing legislation.
- Current actions at all levels of Government.
- Case studies.
- Advice about outcomes that local governments around Australia have taken to address housing affordability.

The following four outcomes were identified in the Review:

2.1. Rates Policy

Develop a Local Government Policy to provide rates concessions to community housing organisations or similar entities.

2.2. Advocacy

Advocate to the State and Federal Government for affordable housing initiatives to be implemented in the Whitsunday Region.

2.3. Planning Scheme Amendment

Review the Whitsunday Planning Scheme and provide options on policy amendments that improve housing affordability over the long-term.

2.4. Infrastructure Charges

Review the Infrastructure Charges Resolution and their role in providing affordable housing incentives.

3.0 Outcomes Explored

3.1. Rates Policy

Council currently has an initiative for reduced rates for Aged Homes, Nursing Homes and Affordable Housing Organisations. The *Donations on Rates & Charges for Not-for-Profit Organisations Policy* is administered by the Community Services Directorate and is due for review on 30 June 2022.

3.2. Advocacy

Council resolved to advocate for affordable housing at the Ordinary Council Meeting held on 28 July 2021. Council subsequently wrote a letter to the Director General of the Department of Communities, Housing and Digital Economy on 28 September 2021 (refer to **Attachment A)**, and received a reply from the Director General, on 21 October 2021 (refer to **Attachment B)**. The state is delivering 98

social homes over the next four years in the Mackay/Whitsunday Region through the *Queensland Housing Action Plan*, in addition to 20 social housing homes under the *Queensland Housing Strategy*.

The *Regional Economic Development Strategy 2022-2025*, adopted by Council on 27 April 2022, identifies the lack of affordable housing in the region as a major issue, with a corresponding advocacy task identified in the Action Plan.

3.3. Planning Scheme Amendment Options

Housing Affordability strategies identified in the Review consistently identify land use policy and controls as a tool to improve housing affordability. Policy initiatives include encouraging housing diversity in residential areas and higher density in well-serviced existing neighbourhoods. The Planning Scheme could include provisions that could better encourage or facilitate the development of affordable housing.

The land use policies that most effectively contribute to housing affordability are increased housing diversity and density. In the Whitsunday Region the median lot size of low density residential land is 1239m², despite the minimum lot size being 600m².

The Review (p 38) shows that housing built in the region is predominantly single detached dwelling houses. Encouragement for building multiple dwellings, dual occupancies and smaller lots is an option to assist people entering the property market, allowing for housing affordability for people in the median income bracket within the Region (p 24).

Proposed amendments will be spilt into two packages, a short-term Housing Affordability Amendment, which can be initiated immediately, and a long-term Housing Affordability Amendment that will require additional justification, to be initiated 2023.

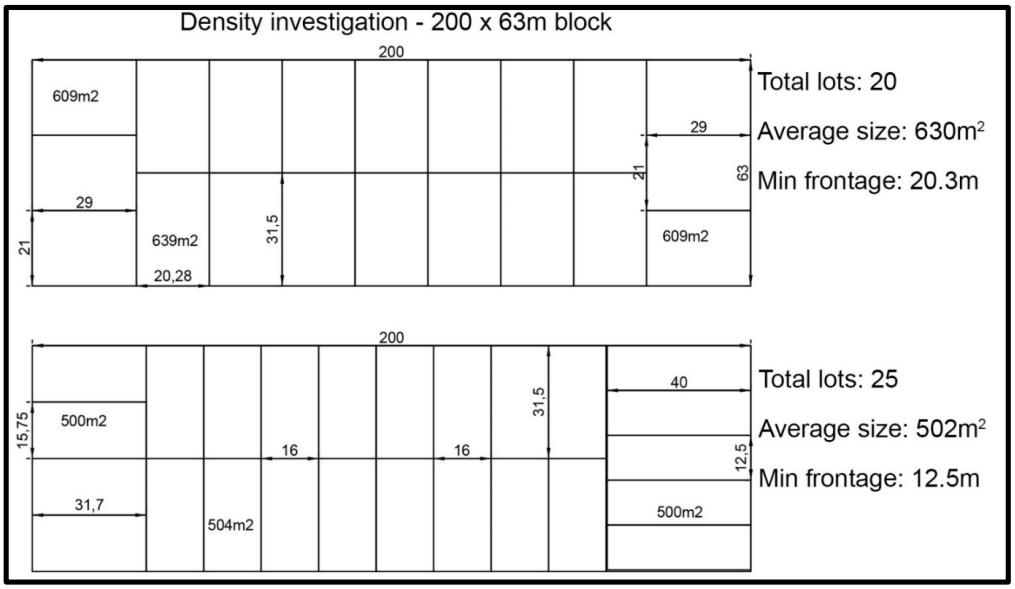
3.3.1. Planning Scheme Amendment - First Amendment Package

The following 4 options can be completed in the shorter term to encourage more affordable housing:

1) <u>Lot Sizes</u>

Reduce the minimum lot sizes within urban residential zones and introduce a maximum lot size to enable an increase in density and diversity. Example: Reduce minimum lot size from 600m² to 500m².

Desired Result – Lot diversity and increased density.



2) Assessment Levels

Reduce assessment level in certain zones for desirable housing types. Example: Reduce assessment level from Impact to Code Assessable in Low Density Residential Zone, where meeting benchmarks.

Desired Result – Dwelling diversity without compromising amenity.

3) Density Benchmarks for Multiple Dwellings and Dual Occupancy

Introduce density benchmarks for multiple dwellings, currently a Multiple Dwelling or Dual Occupancy requires 800m² minimum lot size in all zones. Example: relax requirements, particularly minimum lot size from 800m² to 600m², and allow design to influence.

Desired Result - Higher density low height multiple dwellings on low density residential lots.

< 5 Single story multiple dwellings on low density residential lot

< Residential dwelling on low density residential lot ~ 1000m²

4) **Secondary Dwellings**

Increase the floor area for secondary dwellings to make then more appealing for homeowners. Example: 70m² maximum to 100m² maximum gross floor area and 100m² maximum to 140m² maximum total use area.

Desired Result – More appealing secondary dwellings.

3.3.2. Planning Scheme Amendment - Second Amendment Package

The following three options can be considered however, the State Planning Policy guidance material requires supporting justification reports, such as a Housing Needs Assessment and a Land Supply Analysis to justify the proposed amendments. The justification reports will require the 2021 Census data, expected to be release in late 2022, therefore these amendments cannot be initiated until 2023 at the earliest.

1) **Lot Diversity Benchmarks**

Introduce lot diversity benchmarks in the Reconfiguration of a Lot Code requiring some lots be higher density (multiple dwellings, dual occupancies, and small lots). Examples: **Attachments C & D**.

2) **Medium Density Residential Zone**

Introduce a Medium Density Residential Zone to facilitate higher density including:

- Increased density.
- Increased building heights, low to medium rise (2-4 storeys).
- Increased site cover.
- Diversity of accommodation types.

3) **Mixed Use Accommodation**

Introduce benchmarks to Zone Codes to strongly encourage accommodation over commercial developments, including a full review of the Mixed Use Zone Code.

3.4. Infrastructure Charges

Infrastructure charges pay for future local government trunk infrastructure, as identified in the Local Government Infrastructure Plan (LGIP). Council's current forecast, with full infrastructure charges being collected, shows that the infrastructure costs will exceed revenue by almost $15M in the next 15 years.

Local governments, such as Mackay Regional Council (MRC), have adopted infrastructure charges incentives to build particular dwelling house types to increase diversity and/or density. However, those local governments are generally receiving more revenue than their infrastructure costs and have considered the financial implications of the charge reductions.

Creating more efficient networks by increasing housing diversity and density will lead to a more affordable LGIP. If Council can achieve these financial benefits over the long-term (approximately 10-15 years) it may become feasible to offer financial incentives to further encourage diversity and density, without impacting on the ratepayers, at that time.

4.0 Risks

4.1. Planning Scheme Amendments

An increase to diversity may alter the way each town functions. Desirability could be reduced through greater diversity away from the normal 'single lot and dwelling' model the region expects. There may be opposition to having smaller lots from the Development Industry, as larger lots are a product that is sought after.

Housing affordability amendments to encourage mixed use developments may dilute the hierarchy of centres in allowing clusters of shops to be outside these nominated centres. Diversity always comes with risks, however they can be mitigated and managed with good performance outcomes, public input and good design to produce the Whitsunday style of living. Generally higher density is perceived to be negative, however the rewards of higher density will outweigh the concerns. Higher density is a foothold for many to achieve entry into the property market and create clusters of active living that stimulate the surrounding area. Higher density will also improve infrastructure network efficiency and lower infrastructure costs in the long-term.

4.2. Infrastructure Charges

Infrastructure charges fund the critical trunk infrastructure that supports development. While other Councils may be able to afford infrastructure charge incentives, Council's revenue is derived from the development of a small, slow growth Region and is not projected to fully fund the infrastructure that is needed. Reduced infrastructure charges are unlikely to be passed on to the prospective purchaser and therefore would not materially affect housing affordability.

Council's LGIP is not self-funding and requires supplementary revenue from rates and grants to meet the desired standards of service for the community. If Council were to reduce infrastructure charges the State Government may not support Council through grants until the LGIP is fully self-funded again. If Council does not have enough infrastructure charge revenue and the State Government doesn't support Council's infrastructure through grants, the likely outcome is that ratepayers will need to fund trunk construction.

5.0 Outcomes

1. **Rates Policy** - The Community Services Directorate monitor the efficacy of the *Donations on Rates & Charges for Not-for-Profit Organisations Policy* and review accordingly.
2. **Advocacy** - The Economic Development Branch continue advocating to the State and Federal Government and monitor the release of affordable housing initiatives.
3. **Planning Scheme Amendment** - That Council undertake a Planning Scheme (Housing Affordability) Major Amendment to increase diversity, density and housing affordability, the four short-term options in Section 3.3.1, and investigate the three long-term options in section 3.3.2.
4. **Infrastructure Charges** - That Council continue to charge the maximum adopted infrastructure charges until the LGIP revenue exceeds the planned infrastructure expenditure.

6.0 Attachments

A. Housing Affordability Advocacy Letter to Director General.

B. Housing Affordability Advocacy Reply from Director General.

C. Example of Diverse Subdivision.

D. Example of Lot Diversity.

Attachment A

Correspondence:
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Whitsunday Regional Council,
PO Box 104, Proserpine QLD 4800
P: 1300 WRC QLD (1300 972 753)
F: (07) 4945 0222
E: info@whitsundayrc.qld.gov.au
www.whitsundayrc.qld.gov.au
ABN 63 291 580 128

Whitsunday Regional Council

Contact: Shane Neville
Phone: (07) 4945 0263

28 September 2021

Ms Clare O'Connor
Director-General
Department of Communities, Housing and the Digital Economy
GPO Box 806
BRISBANE QLD 4001

Dear Clare

RE: Affordable Housing in the Whitsunday Region

The Whitsunday Regional Council has resolved to contact the Department of Communities, Housing and the Digital Economy to express concerns at the lack of 'affordable housing' in the greater Whitsunday Region.

Like many regional areas across Queensland, the Whitsunday Region has felt the impact of COVID, as city families opt for a 'tree change/sea change' moving to the beautiful Whitsunday Region to escape lockdowns. This has severely impacted existing housing stock availability, forcing out local families who cannot compete with capital city wages, raising rental and sales prices as the city families move into the local market.

Council is aware the Department has approved, or is investigating, the following projects:

- 49 Livingstone Street, Bowen for 4 units (Approved - May 2021); and
- 185 Shute Harbour Road, Cannonvale for 12 units (Investigating - June 2021).

Council thanks the Department for this capital spend in the Region and encourages further investment in affordable housing.

Council would like to take this opportunity to advocate for improved housing affordability in the Whitsunday Region and open a discussion about options to solve these challenges with the Department.

To discuss this matter in more detail please contact me on (07) 4945 0601. I look forward to receiving your call.

Yours faithfully

Rodney Ferguson
Chief Executive Officer

Attachment B

Queensland Government

Our reference: MN06807-2021

Office of the
Director-General

Department of
Communities, Housing and Digital Economy

Mr Rodney Ferguson
Chief Executive Officer
Whitsunday Regional Council
info@whitsundayrc.qld.gov.au

Dear Mr Ferguson

Thank you for your letter of 28 September 2021 regarding housing affordability in the Greater Whitsunday Region.

I share your concern and recognise the challenges faced by Queenslanders in navigating and sustaining private market tenancies, especially during this time.

The Palaszczuk Government recognises the impact of the current market conditions on many people across Queensland and remains committed to ensuring all Queenslanders have access to safe, secure and affordable housing. The Government is aware that in many areas of the state, including the Greater Whitsunday Region, the private market has tightened, and the rental sector is experiencing low vacancy rates due to several factors, including the impact of the COVID-19 pandemic on tenants and rental property lessors.

In response to the unprecedented housing market conditions we are seeing statewide, the Palaszczuk Government has launched the *Queensland Housing and Homelessness Action Plan 2021–2025* (Action Plan). Through this Action Plan, the Government is investing $2.9 billion over four years to help more vulnerable Queenslanders into homes quicker. The Government will deliver 7400 new social and affordable housing commencements over the next four years and provide more support for women and families experiencing, or at risk of, homelessness. Through the Help to Home initiative, the Department of Communities, Housing and Digital Economy will be headleasing properties to ensure that we can respond quickly in areas of high demand and provide homes for people at risk of homelessness.

Underpinning the Action Plan is the *Queensland Housing Investment Growth Initiative* which includes QuickStarts Qld, a coordinated capital program delivering new social homes across all Queensland and establishes new regions and targets.

QuickStarts Qld is planning to commit over $36 million over four years within the Mackay/Whitsunday region to commence the delivery of 98 new social homes, supporting more than 112 full-time equivalent jobs. This is in addition to the 48 new social homes that have already commenced under the *Queensland Housing Strategy 2017–2027* across Central Queensland, which includes 20 new social housing homes commenced in the Mackay/Whitsunday Region specifically, with the remaining 28 commencing in the new Central Queensland Region.

1 William Street
Brisbane Queensland 4000
GPO Box 806 Brisbane
Queensland 4001 Australia

Councils are important stakeholders in the delivery of the Action Plan and my department is committed to working collaboratively to identify, develop and deliver place-based solutions to local housing issues. The Action Plan is clear on the Palaszczuk Government's commitment to work with Councils to better understand housing issues in communities, improve the availability, diversity and quality of housing and encourage community liveability, resilience and social and economic growth and prosperity.

There is now a timely opportunity to continue to work with Councils to develop local actions to reflect the needs of local communities. Local Councils are encouraged to keep up to date with developments through the QuickStarts Qld initiative and further opportunities as they are released by the department in October 2021.

The Government continues to transform the way it delivers services through person-centred approaches and, through *Partnering for Impact to reduce homelessness in Queensland*, is providing multi-agency coordinated housing and homelessness responses to vulnerable groups within the community.

A range of products and services are available through the department, which are designed to assist people to secure and sustain private rental accommodation or get on the pathway to owning their own home. Through the department's statewide Housing Service Centre network customers can access RentConnect services, including financial assistance through bond loans, rental grants and other practical assistance to locate and secure affordable private rental accommodation.

If you require further information or assistance in relation to this matter, please contact Mr Mark Wall, General Manager, Strategy, Policy and Programs, Department of Communities, Housing and Digital Economy on (07) 3007 4500 or by email at mark.wall@chde.qld.gov.au.

Yours sincerely

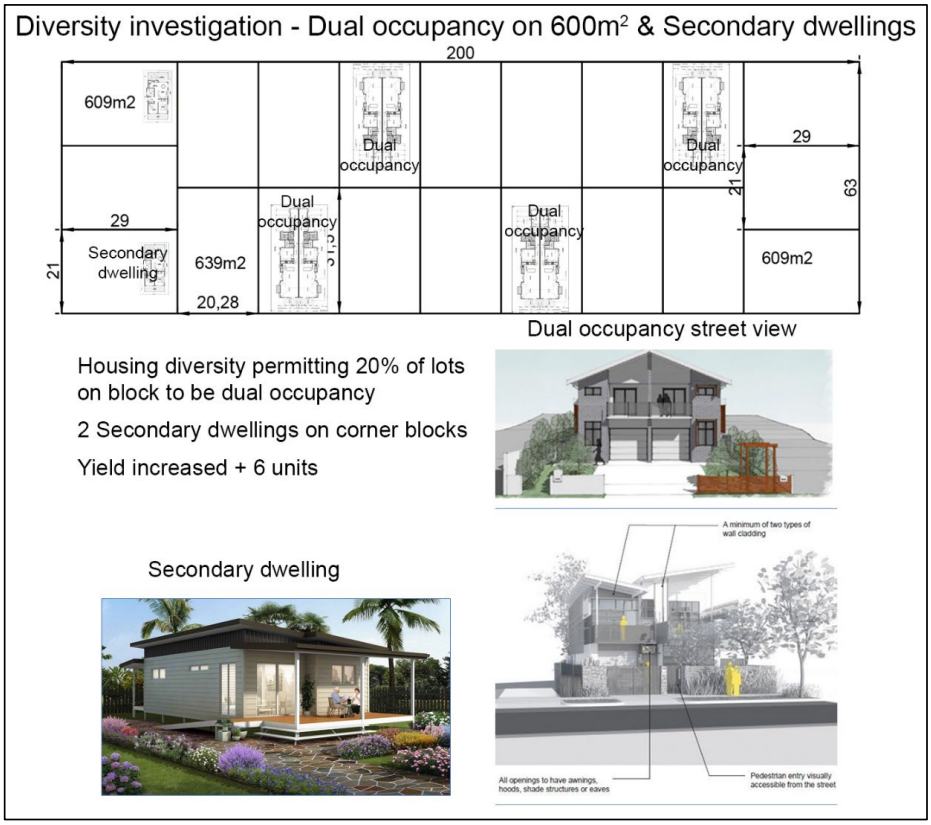
Clare O'Connor
Director-General

Attachment C

High Diversity Subdivision – Lot sizes range from 108m² to 918m², the average lot size for these 20 lots is 499m² and the density is 20 dwellings per hectare.

Attachment D

Lot Diversity



HOUSING AFFORDABILITY LITERATURE REVIEW

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SUMMARY

This paper looks at the culminative outcomes of a range of studies and the collective knowledge to progress affordable housing options within the Whitsundays, and to articulate the areas that Council can influence and improve upon. A range out realistic outcomes are proposed to support Affordable Housing options within the region that Council can contribute to the community through the Council documents, the support and of State Government objectives and the support to private enterprise.

Legislative and Non-Legislative Context

The ***Whitsunday Regional Council Community Plan 2011-2021*** advocates for the development of affordable housing options in the Region as an ongoing action of the Plan.

The provision of affordable housing is identified as a strategic direction of the ***Mackay, Isaac and Whitsunday Regional Plan 2012.***

The ***Queensland Housing Strategy 2017-2027*** is a 10-year framework driving key reforms and targeted investment across the housing continuum. The objective of the strategy is to ensure every Queenslander has access to a safe, secure and affordable home that meets their needs and enables participation in the social and economic life of the state.

The Department of State Development, Manufacturing, Infrastructure and Planning released the ***State Planning Policy*** **(SPP)** in July 2017 which identifies affordable housing as a key state interest.

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1 GOVERNMENT MATERIAL AND STRATEGIES

1.1 Federal Government

1.1.1 Department of Social Services

In 2020-2021 the Australian Government spent around 8.4 billion to help improving housing and homelessness outcomes.
This includes:

- around $5.5 billion in Commonwealth Rent Assistance to help eligible Australians pay their rent; and
- around $1.6 billion through the National Housing and Homelessness Agreement (NHHA) to states and territories.

1.1.2 National Housing and Homelessness Agreement

It provides around 1.6 billion each year to state and territories to improve Australia's access and affordable housing across the housing spectrum.

Under the NHHA, to receive funding, state and territory governments are required to have publicly available housing and homelessness strategies and contribute to improved data collection and reporting. The housing strategies must address the NHHA housing priority policy areas relevant to the state or territory. The housing priority policy areas include:

- affordable housing,
- social housing,
- encouraging growth and supporting the viability of the community housing sector,
- tenancy reform,
- home ownership and
- planning and zoning reform initiatives.

The homelessness strategies must address the NHHA priority cohorts, and outline reforms or initiatives that reduce the incidence of homelessness.

Priority homelessness cohorts include:

- women and children affected by family and domestic violence,
- children and young people,
- Indigenous Australians,
- people experiencing repeat homelessness,
- people exiting from care or institutions into homelessness and
- older people.

1.1.3 Commonwealth Rent Assistance

Rent Assistance is non-taxable income supplement payable to eligible people who rent in the private rental market or community housing. The assistance is through the Department of Human Services.

1.1.4 National Rental Affordability Scheme

The National Rental Affordability Scheme commenced in 2008, aimed to increase the supply of affordable rental dwelling by providing financial incentives for up to 10 years. The incentive was to provide affordable rental dwellings at least 20 percent below the market rate.

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Under the regulation there are no new allocations for this Affordability Scheme, currently there are 31,624 dwellings within this scheme.

1.1.5 Building Better Regional Cities Program

The BBRC Program aimed to facilitate the provision of affordable housing for low to moderate-income earners in regional Australia. The Australian Government provided funding to local councils for infrastructure projects to expedite the release of land and support an increase in affordable housing. Local councils were required to co-contribute to the project by providing discounts/rebates on the sale price for eligible purchasers.

The BBRC Program funding ceased on 30 June 2014, with total funding of $106.3 million provided over three years from 2011-12. Fifteen projects across four states (New South Wales, Victoria, Western Australia and Queensland) were funded and have now been finalised.

1.1.6 Hobart City Deal

The Australian Government is providing $30 million to three local community housing providers in Tasmania, under the social housing component of the Hobart City Deal.

The funding will deliver more than 100 new social and affordable dwellings in Greater Hobart, to address housing affordability issues in the region.

These dwellings will provide long-term accommodation of 30 years to those on the Tasmanian social housing priority list. This includes elderly people, victims of family violence, people at risk of homelessness and people with a disability.

As of April 2021, 52 new dwellings have been built and tenanted, with many remaining dwellings due to be complete by the end of 2021. Dwellings are designed to accommodate the needs of occupants, with an energy rating more than six stars and meeting the Liveable Housing Australia silver standard.

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1.2 State Level

1.2.1 State Planning Policy – Housing Supply and Diversity (Guidance Material)

Dated: *July 2017*
Author: *Queensland Government, Department of Infrastructure, Local Government and Planning*

Summary

This State interest for affordable housing sits within the 'Planning for liveable communities and housing' theme in the SPP. The interest is encapsulated by the State interest statement "Diverse, accessible and well-services housing, and land for housing, is provided and supports affordable housing outcomes".

The material contains a series of core concepts which expand what the interest encompasses. The core concepts include:

- Accessible and well-services housing;
- Diverse housing;
- Best practice, innovative housing design and siting;
- Adaptable housing;
- Affordable housing;
- Social housing;
- Incentives for affordable and social housing;
- Affordable living; and
- Non-resident workforce accommodation.

Under the 'Incentives for affordable and social housing', in addition to the planning scheme incentive options, several non-planning incentives are nominated.

The guidance material then outlines how this interest may be integrated into the planning scheme. Example wording for a local government planning scheme is provided, from Strategic Framework objectives to Acceptable Outcomes.

A list of supporting information is provided with additional information on the concepts referenced in the Guidance Materials such as climate sensitive urban design and non-resident worker accommodation.

Note: This guidance material was updated in 2020 with similar themes.

1.2.2 Housing 2020 Strategy

Author: *Department of Housing and Public Works, Queensland Government*
Date: *July 2013*

Summary

This strategy was a response to the increasing issue of inadequate social housing availability in Queensland. Social housing is an important subset of affordable housing as it is typically allocated to those most disadvantaged and at the highest risk of homelessness. As of 31 December 2012, there were 72,329 social housing dwellings in Queensland, of which 54,394 (75%) were government-owned and managed through a state-wide network of 23 Housing

Service Centres. Community housing providers (not-for-profit community organisations and local governments, including Indigenous councils) owned and/or managed 17,935 (25%) of social housing dwellings. However, most of this stock (63.2%) is more than 20 years old and consists of three to four bedroom houses.

Of the 23,550 eligible applications for long term social housing listed on the State's Housing Register (as of 31 December 2012), 56.3% were in very high or high needs categories and included people who were homeless or at risk of homelessness. In the 12 months to 31 December 2012, 94% of allocations to social housing tenancies were from the very high and high need levels of the Housing Register.

The highest percentage of applications was from singles (49%) and single parents (31%). As a result, many households being assisted requires one or two bedroom dwellings which was not the type of social housing often available.

Social housing rent revenue is calculated at 25% of household income. Due to many persons who are allocated social housing have very little to no income, the revenue from these properties was drastically decreasing while the age of the building meant increase maintenance costs. This financial decline also meant that there was no funding available to increase housing stock without external funding.

The strategy discusses the other challenges rising in the QLD housing industry which exacerbated housing costs including the lack of housing availability, increase population growth and rising housing prices.

The intent of the strategy was to renew the approach to social housing to meet the demand in both scale and nature – "*Housing 2020 will aim to establish a financially-sustainable, regionally-based, integrated system that, by 2020, will see social housing services mostly, if not fully, delivered by community housing providers. Government will take a broader vision for social housing reform in Queensland, which will include increasing development of affordable housing and support within the private market*."

The strategy had six (6) primary implementation projects – Logan, Gold Coast, Sunshine Coast, Redcliffe, Gladstone and Townsville. It emphasised partnerships with social housing providers.

Review

This strategy was targeted at the provision of social housing which is the type of affordable housing typically required by the members of a community who are most disadvantaged and at risk of homelessness. While the actions taken in this strategy are not likely viable for a Local Government to undertake – due to lack of financial and policy power to instigate reform on this scale – the information provided highlights the need for affordable housing, and more importantly, diverse affordable housing.

1.2.3 Integration state interests int in a Planning Scheme Guidance for Local Governments

November 2021 V1.2

Department of State Development, Infrastructure Local Government and Planning

The guidance states that Planning Schemes need to consider the following for affordable housing in their strategic outcomes.

- Do strategic outcomes encourage the inclusion of social and affordable housing?

Consider outcomes which promote inclusive communities which are socially and economically diverse and foster productivity within local communities.

- Do strategic outcomes promote the delivery of a diverse range of innovative and adaptable housing in accessible and well-serviced locations?

This includes outcomes which support flexibility of use and building form as the needs of household occupants and the community change over time.

- Do the strategic outcomes reflect the cultural and kinship needs for housing supply and diversity?

The intent is to promote a mix of lot sizes and configurations that encourage a variety of housing options. This is particularly relevant to greenfield locations which are often not as constrained as brownfield sites in terms of layout

1.2.4 Queensland Housing Strategy 2017-2027

Author: *Department of Housing and Public Works, Queensland Government*
Date: *2017*

Summary

The Queensland Housing Strategy 2017-2027 is a 10-year framework driving key reforms and targeted investment across the housing continuum. The objective is to ensure every Queenslander has access to a safe, secure and affordable home that meets their needs and enables participation in the social and economic life of Queensland.

The intent of the strategy includes investing $1.8 billion to deliver more social and affordable housing over the ten year life of the strategy. The development of this housing is to be in proximity to services and public transport as well as existing social housing property holdings.

Furthermore, this strategy intends to provide ongoing jobs in the construction industry.

Review

The scale of this strategy and the actions it nominates indicates the Queensland Government's commitment to addressing the affordable housing issues within Queensland. 20 new social housing homes have been identified for the Mackay/Whitsunday region, however there is no further breakdown as to the areas. The strategy has nominated where to locate the investment based on population growth and demand for housing.

Based on the SEIFA scores throughout the LGA Whitsunday Region, in conjunction with the associated population growth rates of the localities, the areas which require investment in social or affordable housing are not experiencing sufficient growth to attract this type of investment.

1.2.5 Housing and Homeless Action Plan 2021-2025

Following on from the Housing Strategy the QLD government has the Action Plan. The plan provides a framework for delivering housing with support that is integrated across government and the community sector—an important step towards ending homelessness in Queensland. It is a whole of government plan with significant investment and actions to increase housing

and provide better support. The action plan is to support low to moderate income families to afford social and affordable housing.

Actions include:

- 2400 social housing builds have commenced
- Partnered with the housing sector to increase housing supply
- Established the Coordinated Housing and Homelessness Response
- Commenced the Build to Rent project for provide affordable housing for key workers
- Established the peak housing body Aboriginal and Torres Strait Islander Housing Queensland.
- Established Renting in Queensland
- Enhancing the ability of Aboriginal and Torres Strait to access home ownership

For older people develop and deliver housing with support for older Queenslanders experiencing or at risk of homelessness, including specific responses for older women, working with the aged care, health and disability sectors
For younger people ensure new housing supply for sustainable social private market tenancies

People with a disability re promoting rights, choice, control, accessibility and inclusion in housing with support, including actions to:

- co-design housing responses with people with disability and peak and expert organisations
- work with National Disability Insurance Agency (NDIA) to help Queenslanders to access and maximise National Disability Insurance Scheme packages and Specialist Disability Accommodation
- work across government and the sector to deliver integrated responses that increase the diversity and supply of accessible housing.

1.2.6 Queensland Housing Investment Growth Initiative

The state will support investment into more than 6365 new social housing homes.

To encourage partnerships and co-investment from the individuals and organisations who see the benefits that housing brings to the community, industry and the economy. State is looking to work with community housing providers, not-for-profit organisations, builders, developers, investors and other interested parties to deliver more homes for Queenslanders.

Housing Investment Fund – established to support dedicated investment, and co-investment through partnerships, and into building more new homes (open October 2021)
QuickStart's QLD – accelerated capital program to commence delivery of new social homes through 9 regions in QLD, to bring forward construction.
Help to Home – priority sourcing of private market headleases to meet emergent need

The **Housing Investment Fund** will be used to construct over 3600 social and affordable housing properties through joint investments before 30 June 2025, with a range of industry and no-government partners. Expressions of interest were sought in October 2021 and Economic Development within Council are assisting interested parties in this venture.

1.2.7 QuickStart's QLD (Community Housing Providers)

The initiative is bringing forward social housing investments to deliver a range of housing types through the 9 development regions of Queensland. This construction program will be delivered

through partnerships with community housing providers as well as capital build projects delivered by government.

The **Help to Home** initiative is increasing access to private rental market head leasing arrangements, supported crisis accommodation and housing with support in locations with high need.

The Queensland Government is seeking expressions of interest for private market investors with a range of dwellings suitable for headlease to people in housing need. The leases will be managed by state or community housing providers, to ensure tenants are supported. The government will lease up to 1000 properties.

The Quickstarts QLD has committed over 36 million to the Mackay/Whitsunday region with over 98 social homes.

Queensland's **State Infrastructure Strategy** has the following:

This capture shows that 70% of tenant profiles are either single parents or seniors.

1.3 Affordable Housing Published Papers

1.3.1 Models of Sustainable and Affordable Housing for Local Governments

Author: *University of Western Sydney, Urban Research Centre*
Date: *2008*

Summary

The University of Western Sydney undertook a study in 2008 entitled "Models of Sustainable and Affordable Housing for Local Governments". Though slightly dated, the report from the study raises points and nominates strategies relating to the role of Local Government in providing affordable housing which remain valid for WRC.

A Local Government considering intervention on housing affordability must recognise that they do so within specific limitations and concerns. The relationship a Local Government (LG) has with its community – the 'worm's eye view' – has benefits and drawbacks. A community may often have high expectations of the services the LG should provide, with little acknowledgement of the services a LG can provide. Subsequently, a LG must take care to minimise or mitigate any political or economic risk when undertaking affordable housing initiatives. The report states that the institutional sustainability of the LG should be given priority in any initiatives pursued.

The report comments on the effectiveness of LGs partnering with not-for-profit housing providers. Not-for-profit housing providers can typically access significant tax concessions which extend their capacity of provide affordable housing. Additionally, being single-purpose organisations, they are often able to provide economic certainty for affordable housing projects.

It is noted in the report that the contribution of equity, usually in the form of land, from LGs is an important element in the provision of affordable housing. Often the scope and scale of a LGs capacity to directly influence the provision of affordable housing is dependent on the level of support and commitment given by State Government. The more directly a LG is involved in the provision of affordable housing the greater the risk the LG is exposed to. Measures should be taken to minimise this risk, often by partnerships with not-for-profit groups who are able to assume a large part of the financial and management risk.

Beyond the provision of equity (land) to an affordable housing strategy, a LG can support such initiatives by programs which enhance disadvantaged person's ability to meet housing costs indirectly, by addressing needs other than housing needs such as employment, literacy, health care.

1.3.2 Out of Reach? The Australian housing affordability challenge.

Dated: *May 2015*
Author: *Economics References Committee, Commonwealth of Australia*

Summary

In this 496 page report, the committee underscores the importance of affordable, secure and suitable housing as a vital determinant of wellbeing. But, based on the evidence, the committee finds that a significant number of Australians are not enjoying the security and comfort of affordable and appropriate housing—that currently Australia's housing market is not meeting the needs of all Australians.

The committee does not believe the issue of housing affordability in Australia is rightly categorised as either a 'supply-side problem' or a 'demand-side problem'. Supply is currently not keeping pace with demand in the housing market. In this context, policy interventions that add to demand without addressing or at least accounting for supply-side constraints risk inflating house prices and exacerbating affordability problems.

Worsening housing affordability is reflected in declining home ownership rates. The committee makes a range of recommendations directed primarily toward improving home purchase affordability. Other recommendations are directed at improving the efficiency, effectiveness and equity of infrastructure funding arrangements, which can have a strong influence on the cost of new housing. Similarly, several recommendations are made with the intention of ensuring land supply, urban planning and zoning processes have a positive effect on housing affordability.

The problems engendered by poor housing affordability are clear in the private rental market. Here low- to medium-income earners encounter significant problems accessing affordable and appropriate housing, with significant numbers experiencing rental stress or even severe rental stress.

Many pensioners and people dependent on welfare or disability payments, who find themselves priced out of the private rental market, seek relief by accessing social housing, which provides a much needed safety net. An adequate supply of social housing would mean that older Australians are better able to age in place and not have to forgo daily essentials simply to pay their rent, and people with disability are not left to fend for themselves in substandard dwellings that make no allowance for their needs. Also, an adequate supply of social housing would mean that women escaping domestic violence would not be forced to stay in motels or, worse still, remain in abusive relationships.

The committee makes recommendations that address identified deficiencies in Australia's rental market. Another cluster of recommendations call for the review and reform of tenancy laws and the responsibilities and obligations of landlords when it comes to energy efficiency and home modifications for tenants with needs.

1.3.3 Local Government and Housing in the 21st Century Housing Locally – A report on the Local Government and Housing Linkage Project national survey

Dated: *28 August 2018*
Author: *Andrew Beer, Alan Morris, John Martin, Trevor Budge, Chris Paris and Sandy Horne – University of South Australia & University of Technology Sydney*

This report presents the outcomes of an on-line survey of local governments across Australia into their attitudes, programs, policies and actions with respect to housing. Just over 200 local governments responded to the survey, from all Australian states and the Northern Territory, and from metropolitan, rural and remote councils.

The report found that many local governments take an active interest in housing questions, including a keen focus on housing affordability. Other areas of concern include the regulation of informal housing tenancies – Airbnb, Stayz et cetera – as well as the effective functioning of the planning system, homelessness, urban regeneration and environmental sustainability.

Most respondent councils agreed that local government has a role in responding to housing concerns but often struggled to make an impact because of a lack of leadership from the state and federal Australian governments. The respondents saw themselves working in partnership with others, making an important contribution to a whole-of-government effort to address

housing affordability, homelessness et cetera. Local governments also worked with nongovernment organisations including homelessness service providers, a range of community groups and not-for-profit housing associations.

This research found that:

- There was a very high degree of awareness of housing affordability challenges across Australia, but this did not always result in it being a high priority for councils, largely because of the perception that other tiers of government had a responsibility and the fiscal capacity to take primary carriage of this issue;
- More local governments than anticipated were involved in the direct provision of accommodation to persons in need;
- A significant percentage of local governments had strong working relationships with not-for profit housing providers;
- The planning system was seen to be an important tool in providing affordable housing, but local governments felt more could be done in terms of boosting the effectiveness of the planning system, including the processes of urban regeneration;
- Approximately 55 per cent of respondents reported that their local government had a housing strategy, policy or plan;
- In some jurisdictions the interaction between local governments and housing is affected by many state policies, and these can serve as an impediment to effective action by councils;
- In most councils, housing matters were dealt with by the planning departments within Council. In some instances, housing was treated as part of the community development portfolio;
- Only a third of local governments reported concern with short term rental accommodation – Airbnb, Stayz, holiday homes et cetera – but some of those affected experienced serious impacts, often in the form of complaints from other residents;
- Local governments did not identify immigration as an issue of concern for their housing markets;
- Few local governments set specific housing affordability targets for their Council area;
- Many local governments across Australia have an involvement in housing markets – for example, supplying the funding of support services et cetera – that extend beyond their legislated minimum obligations;
- Few councils see the provision of housing for rental or sale as an opportunity to diversify income streams, though a higher percentage of local governments are interested in increasing housing densities to generate additional rate revenue;
- Some local governments expressed concern about the impacts of urban sprawl, with a much smaller percentage voicing questions around the impact of higher density living on families and communities;
- Limited resources were seen to be the biggest impediment to addressing housing affordability at the level of local governments; and,
- There was limited recognition of overcrowding as an issue within the Australian housing stock, even though it is the most common form of homelessness in this country.

1.3.4 Inquiry into Affordable Housing

Author: *Mission Australia*
Dated: *Not dated (approximately 2014).*

Interesting points:

- Between 1947 and 1961 State and Commonwealth Governments contributed directly to 24 per cent of new housing stock. Between 1976 and 1991 this fell to nine per cent, and at the height of the Social Housing Initiative (SHI), which added 20,000 properties to the social housing stock and was the only significant investment in new stock in

recent decades, the Commonwealth Government indicated that it had some form of investment in, in 1 in 20 new dwellings, or 5 per cent. The SHI is now finished with no successor in sight.

- Severe over-crowding is one form of homelessness which will respond directly to changes in supply.
- Population increases by 2031 is expected to be 40%, but there will be a 49% increase in the number of households – this is attributed to a cultural and societal acceptance of single person households.
- National maps using SA3 regions to depict homelessness, mortgage stress and rental stress.
- The NHSC estimates Australia is short of 553,000 affordable and available properties for people on low income renters because the properties that are affordable, are often taken up by people 'camping' in the rental market because they cannot afford to buy. At the same time, 60 per cent of people who are on low incomes who rent are in housing stress.
- Demand for public housing is estimated to rise by 28% or about 93,000 houses by 2023.This lack of supply has impacted on the affordability of housing and when combined with limited social and affordable housing, increasing numbers of Australians at risk of homelessness. Nationally, social housing also has a low rate of turnover – only six per cent of tenants exit each year. People generally remain in social housing because there are no affordable housing options. In short, there is nowhere else for them to go. The low turnover also means that without significant additional stock, it will be virtually impossible to shrink the waiting lists.
- Planning systems must be redesigned so that they encourage, enable and expedite approval processes for construction of affordable housing or mainstream property developments that include a proportion of affordable housing.
- Current taxation settings currently favour owner-occupiers over other household types and have also skewed the market towards investment in higher cost housing and therefore compounded issues around affordability.
- People who can access affordable housing invest in their social environment; build a sense of belonging and community, as well as being able to respond to labour market trends by increasing labour mobility. Affordable housing is therefore more than just a place to live, as the long term social and economic outcomes which result are often overlooked. Affordable housing is needed to foster healthier and stronger communities, as well as connecting residents to jobs and services by public transport or other alternative means such as bikes or walking, and broadening people's economic opportunities. The discussion on affordable housing needs to consider the links between access to 'healthy, affordable, well-located housing' with potential 'intergenerational implications for engagement with work and community and for productivity in the economy'.
- Housing Supply report noting a shortfall of 493,000 properties at the affordable end of the rental market available to those with incomes in the lowest two quintiles because of occupation by households from higher income brackets.

It is noted that this paper is predominately concerned with affordable housing as a solution to homelessness. The author organisation is a charity which has numerous programs aimed at assisting homeless persons.

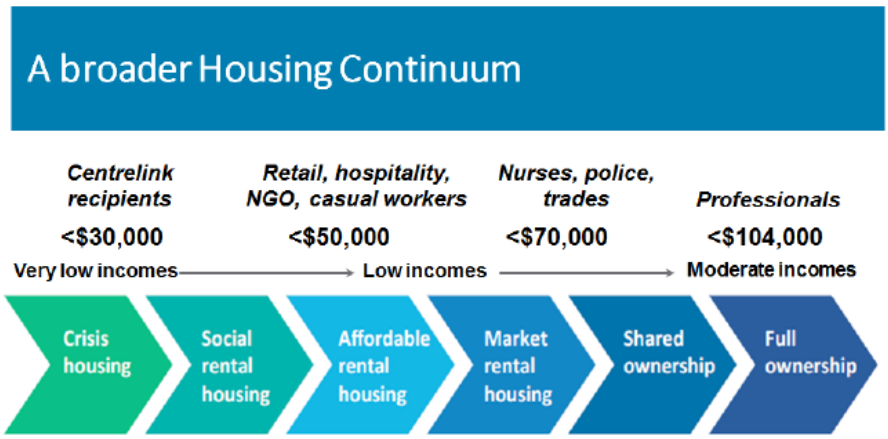
1.3.5 Modelling housing need in Australia to 2025

By Australian Housing and Urban Research Institute
Date – August 2017

Review

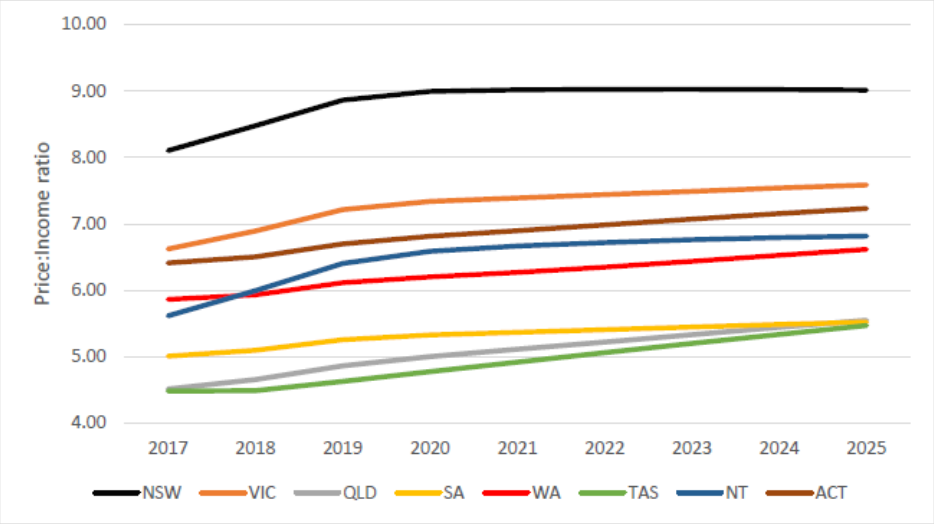
- Housing need is defined as the aggregate of households unable to access market provided housing or requiring some form of housing assistance in the private rental market to avoid a position of rental stress.
- The current housing need is estimated at 1.3 (14%) million households to rise to 1.7 (16%) million households by 2025.
- There will be significant additional pressure placed on the private rental market through the shortfall in affordable housing by 2025
- The housing need simulation consists of five interrelated models of the housing market, labour market, labour market earnings, household formation and tenure choice
- A policy is called for at a national level through a simulation model
- Affordable housing is defined in this report as rental housing priced at below market rents and earmarked for low to moderate income households and owner-occupied housing for eligible households that is provided under a subsidised loan or share equity arrangement or a covenant for affordability requirement.
- Young Australians are struggling to enter the housing market, and more older Australians are paying mortgages into retirement
- Housing need is determined by employment opportunities, unemployment, earnings levels, stability of income, house prices, rents, and mortgage finance availability. Human behaviour is also a factor.
- 4 categories of housing need (from the UK): lacking own secure tenure, unsuitability of current accommodation, poor housing conditions, and social needs
- Housing need includes peoples:
    - Homeless
    - Desiring to form a household but unable to afford access to housing
    - Living in financially unsustainable unaffordable housing, such as those on the edge of home ownership or struggling to sustain a private rental tenancy
    - Living in overcrowded or poor quality accommodation
    - Requiring specific care or be part of a specific vulnerable group
    - Living under condition of harassment such as domestic violence

Figure 2: A typical housing continuum



Source: Adapted from the Housing Authority of Western Australia (2010).

Figure 9: House price to income ratio for all states and territories



Source: Authors.

1.3.6 Additional Sources

Articles or Ideas which are not formalised enough for inclusion in the Review but contribute to the discussion.

Affordable housing – some small moves to fix a big problem (21 November 2019)
https://www.thefifthestate.com.au/articles/affordable-housing-some-small-moves-to-fixing-a-big-problem/

Interesting Points:

- In the UK, council housing comprises around 10 per cent of the housing stock and is a vital provider of social and affordable housing.
- Measures such as inclusionary zoning, which sets a percentage of a development that must be affordable as part of development consent, are not happening at scale.
- A survey of local government found that for most councils, particularly metropolitan ones, affordable housing is seen as a state or federal government responsibility.
- "Superfunds have an increasing desire to invest in social and affordable housing in Australia and NHFIC's bonds provide them with an opportunity to do this at scale."
- Taxation settings favour investment property ownership over owner-occupier ownership.
- House prices are a major part of the problem. Between 1985 and 2016 average house prices have tripled, but wages have only doubled.

Developing Affordable Housing Solutions at a 12pc Return (4 March 2020)
https://theurbandeveloper.com/articles/dfp-affordable-housing-developments

Interesting Points:

- Superfunds, self-managed superfunds, are exhibiting growing interest in low-risk, quick turnaround projects with decent yield. This is translating into housing

development with a percentage of the stock being constructed being allocated as affordable housing.
- "Australia's rigid banking sector, stringent tax laws and an inflexible financial system that lacks innovation all combine to ensure that affordable housing on a large scale will not thrive in this country without significant changes."

Australia needs one million new affordable and social homes, researchers say (14 March 2019)
https://www.themandarin.com.au/105515-australia-needs-one-million-new-affordable-and-social-homes-researchers-say/

Interesting Points:
- Researchers estimate the country will need 728,600 new social housing properties and 295,000 affordable rental homes by 2036. Currently, just 46% of Australian households in need of social housing are receiving it.
- "Our analysis shows that the sheer number of households in rental stress across the country means that if we're going to meet the need, at least 12% of all our housing by 2036 will need to be social and affordable housing."

Busted: Seven Myths About Affordable Housing
https://www.tchabitat.org/blog/affordable-housing-myths

Interesting Points:
- There are multiple common misconceptions about affordable housing which creates a negative image.
    1. Affordable Housing drives down property values.
    2. Affordable Housing looks cheap and undesirable.
    3. Affordable Housing hurts the quality of local schools and lowers standardized test scores.
    4. Affordable Housing is a burden on taxpayers and local government.
    5. Affordable Housing brings increased crime.
    6. Affordable Housing is just another government hand-out.
    7. Affordable Housing only benefits the very poor, everyone else pays.
- The article provides responses to each of these misconceptions.

Understanding the 30:40 indicator of housing affordability stress
https://www.ahuri.edu.au/policy/ahuri-briefs/3040-indicator

- Provides detailed outline of the 30% of gross income 'rule of thumb' for determining housing stress.

Can Australia build its way out of the coronavirus economic slump, with public housing the priority?
https://www.abc.net.au/news/2020-05-29/public-housing-crisis-economic-recovery-from-coronavirus/12268274

An opinion piece which looks at the Australian affordable housing shortage during the COVID-19 Pandemic and the call from the Construction Union for the government to pledge $10 billion for the construction of affordable and social housing.

> *"The consequences of a failed housing policy are not just growing inequality and more poverty, but increased welfare costs (the Federal Government now spends*

$4.4 billion annually on rent assistance alone); poorer educational outcomes, because insecure rentals force families to move frequently and disrupts children's education; and health problems linked to living in overcrowded or poorly maintained dwellings.

So, if housing is to be part of our post-COVID recovery strategy, it needs to be more than a quick fix to help the construction sector through a downturn."

The article cites a report prepared by a committee in Hobart:

"The Hobart committee pointed out that the greatest benefit of improving housing conditions would go to children, and argued that unless housing is addressed, "the benefits of free education and free medical services are seriously retarded…."

In other words, then, as now, a lack of decent, affordable rental accommodation undermines — or overburdens — other aspects of our social system, like universal access to education and healthcare.

The authors argued that providing decent accommodation for those on the lowest incomes, was "a national question that requires a solution which cannot be regarded as a business proposition, but rather as one that is just as necessary as free education and free medical services.".

We have a political and social consensus in Australia that universal education and universal healthcare are essential goods. There is near unanimous agreement that the state has a responsibility to ensure all citizens enjoy an acceptable standard of education and healthcare regardless of income.

We do not think the same way about housing. Yet housing, healthcare and education are like the three legs of a stool: all are necessary to create the solid basis for a good life.

If people are not adequately housed then other essential goods, like education and health, cannot be assured either. If people are not adequately housed, their potential will be truncated; they cannot flourish as human beings."

DRAFT

1.4 Affordable Housing Council Related Data

1.4.1 Donations of Rates & Service Charges – Affordable Housing Organisations

Dated: *11 July 2018*
Author: *Community and Environment Department, Whitsunday Regional Council*

This policy provides an administrative framework for consistently assessing requests for assistance for affordable and social housing to not for profit organisations that offer a benefit to the residents of the Whitsunday region, to alleviate the cost of the annual rates and charges. The donation is only available for existing properties located in the whole of the Whitsunday region.

It does not apply to any properties that are purchased or become available for affordable or social housing needs from 30 June 2010. Non-government community based not for profit organisations who are suffering financial hardship and whose principal charter is to offer residential accommodation to residents identified as financially disadvantaged are eligible for this donation. Such not-for-profit organisations include the Whitsunday Housing Company Ltd. Assistance is only offered to associations with no other independent avenues for support.

1.4.2 Donations on Rates & Services Charges For Not For Profit Organisations Policy

Dated: *11 July 2018*
Author: *Community and Environment Department, Whitsunday Regional Council*

This policy provides an administrative framework for consistently assessing requests for assistance from not for profit organisations that offer a benefit to the residents of the Whitsunday Regional Council area, to alleviate the cost of the annual rates and charges. Council may grant a donation towards the net general rates and service charges of a not for profit organisation. Whilst not a requirement, when assessing a request for a donation Council may consider an applicant's current financial position and ability to pay the annual rates.

1.4.3 Memo – Dual Occupancy within Low density residential zone.

Dated: *10 October 2017*
Author: *Jonathan Cutting*

Summary

The purpose of the memo was to assess the positives and negatives of allowing dual occupancies within low density residential zones. The memo includes an analysis of the Urban Growth Study 2014. The analysis looks at the Study's findings of land supply in the low and low-medium residential zones and the subsequent impact on the potential to supply dual occupancies within each of the Region's centre (Bowen, Collinsville, Proserpine, Airlie Beach/Cannonvale, Jubilee Pocket – Shute Harbour).

Bowen, Collinsville and Proserpine have a shortfall of low-medium residential zoned land however the growth rates for these centres are low enough to not warrant significant land rezoning. It would be most effective to encourage dual occupancy developments within the existing urban areas.

Airlie Beach/Cannonvale has an excess of low density residential land and sufficient availability of low-medium residential land. This was remedied by rezoning land in response

to the Urban Growth Study from low density to low-medium density. Large amounts of this low-medium zoned land are greenfield. It is considered more likely for dual occupancies to occur in brownfield infill developments around Airlie Beach, Eshelby Drive and Cannonvale Beach where lots are of a size and nature to accommodate this form of development.

Jubilee Pocket – Shute Harbour has an oversupply of low density and significant shortfall of low-medium density land however this is offset by the rezoning of land in the Airlie Beach/Cannonvale area.

The memo compares the benefits and impact of dual occupancies within a low density residential area. Subsequently how a range of Queensland Planning Schemes treat dual occupancies in low density residential zones are compared.

The memo concludes with a recommendation to make dual occupancies accepted development in low density residential zones as they are in the low-medium density residential zone with specific provisions relating to low size, setbacks, parking, flood immunity and proximity to services. A series of maps are provided identifying the land which would comply with the nominated restrictions.

1.4.4 Updated Economic and Population Study for the Whitsunday Regional Council Local Government Area

Dated: *2021*
Author: *Norling Consulting Pty Ltd*

The Economic & Population Study 2021 (EPS 2021) projections are more in line with Queensland Government Statistician's Office (QGSO) projections for 2021 – 2036. The EPS 2021 provides expert opinion on COVID impacts, the housing market and local industry sectors to inform projections that were not anticipated in 2018. Key observations include:

(a) The move to a work from home model should not adversely impact local businesses;
(b) The housing market has disconnected from population growth;
(c) The Region may benefit from the move by some city residents to the regional areas. However, unless the provision of jobs improves, this relocation may only be temporary;
(d) The recent and current lockdowns in NSW and Victoria are likely to limit the source of migrants to the Region and to Queensland;
(e) The source of labour for the tourism and horticultural sectors will continue to be difficult until international travel returns to pre-pandemic levels; and
(f) Patronage at festivals, dining out, sporting events, cinemas and other group-based entertainment is likely to diminish significantly due to social distancing measures and temporarily changed behaviours.

Projections from 47,010 people to 43,500 people in 2036 is considered is counterintuitive to what has been experienced in the past 12 months. Nonetheless, projections are more reflective of the past 5 years of growth and adopt a low-risk approach for long-term strategic planning projects by aligning with QGSO projections. A low-risk approach to projections is recommended given the uncertainties around COVID and uncertainty behind current drivers of population growth.

The EPS 2021 suggests the current influx in residents may be driven by migrants from southern states who can afford to pursue a multiple housing strategy to maintain options of where to live, but this may not be sustainable once the worst of the pandemic has passed and there is greater certainty over the future.

2.0 DEFINING AFFORDABLE HOUSING

2.1 What is affordable housing?

Affordable Housing is housing which is affordable for low-income households. This housing also must be reasonably adequate in its standard and location for these households and not cost so must that a household is unlikely to be able to meet other basic living costs on a sustainable basis. Public Housing and Community Housing are forms of Affordable Housing which are typically managed or provided by charitable or government organisations.

It is noted that affordable housing in relation to low-income households typically refers to rental affordability. While affordable housing for purchase is also a goal all Council's should strive for, those within our communities which most require affordable housing would rarely be in the financial position to pursue this. The primary aim should be to provide affordable *rental* housing.

2.2 What types of affordable housing is there?

There are four broad types of affordable housing:

- crisis housing
- social rental housing
- affordable rental housing
- affordable home ownership

Crisis housing is for those in immediate need, be it from domestic or family violence, or a local disaster, and are either homeless or going to be homeless in short order. Crisis housing is usually in a form of a crisis shelters.

Social Rental housing is housing supplied by the Commonwealth or State Government through government or charity organisations who meet the requirements through low income, and a need for a safe shelter.

Affordable rental housing is the ability to ensure people can afford the private rental market, through products and services. New flexible products and services including Bond Loan Plus, Rent Subsidy, No Interest loan Scheme, and Headleasing to assist people to access the private rental market. Rental reforms also include minimum housing standards that better protect renters and improves stability in the rental market.

Affordable home ownership is the ability of people on low or moderate[1] incomes to access the private home ownership market, especially as house prices surge across the state of Queensland.

2.3 Why is affordable housing important?

Affordable housing helps prevent low income households from experiencing 'housing stress'. A general rule is that housing is 'affordable' when it costs no more than 30% of a household's income. Housing stress occurs when a household must spend more than 30% of their income on accommodation. In 2019, 32% of low income households in Queensland were suffering from housing stress.

2.4 What are the Incomes in the Whitsunday Region?

The median total personal income in the Whitsunday LGA is $35,620 per year.

[1] Moderate income is an income from a key worker (e.g. nurse) QLD Housing Strategy 2017-2027.

Table 1: Total personal income 2016 Whitsunday LGA

Amount	Less than $20,800 per year	$20,800 to $51,999 per year	$52,000 to $103,999 per year	$104,000 or more per year	Median ($/year)
Number	6,522	9,815	5,392	1,625	$36,520
Percent	23.6%	35.5%	19.5%	5.9%	

The median total family income in the Whitsunday LGA is $77,012 per year.

Table 2: Total family income 2016 Whitsunday LGA

Amount	Less than $33,800 per year	$33,800 to $77,999 per year	$78,000 to $155,999 per year	$156,000 or more per year	Median ($/year)
Number	832	2,572	2,454	839	$77,012
Percent	10.7	33	31.5	10.8	

2.5 Who is considered Low Income?

A person or household is 'low income' when their income is only 80% of the median income. 'Very low income' is measured at 50% of the median income. It is households in these income brackets which most often experience housing stress and need access to affordable housing.

Using data from REMPLAN, which sources its data from the Australian Bureau of Statistics (ABS), the following chart and tables identify Low Income and Very Low Income Persons, Households and Families within the Whitsunday Region.

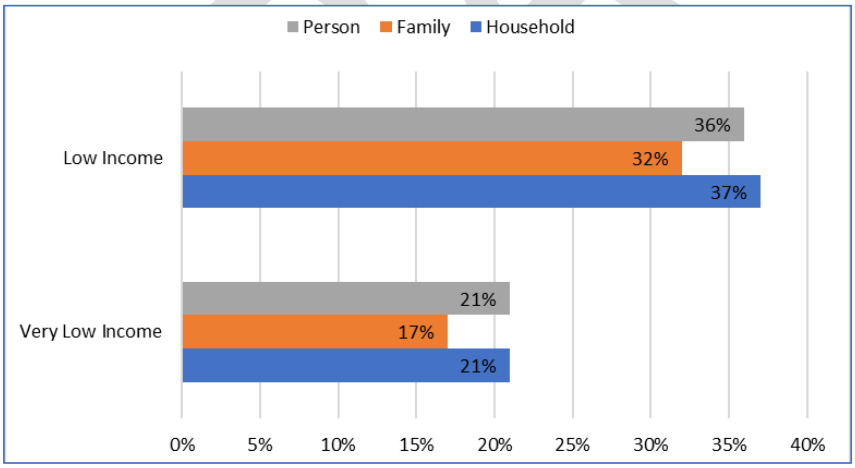


Figure 1: Low Income and Very Low Income Percentage of Whitsunday Region

	Low			Very Low		
	Income (p.a.)	#	% of Region*	Income (p.a.)	#	% of Region
Person	$28,496	13213	36%	$17,810	7769	21%
Family	$61,609	6810	32%	$38,506	3574	17%
Household	$59,737	11207	37%	$37,336	6501	21%

*Totals for each category (Person, Family, Household) is taken from REMPLAN

Figure 2: Low Income and Very Low Income Percentage of Whitsunday Region

Category	Median* Income (p.a.)
Person	$35,620
Family	$77,012
Household	$74,672

Figure 3: Median Income for the Whitsunday Region.

Four basic criteria are used define 'Families' – couple relationships, parent-child relationship, child dependency, other blood relationship.

Households include one family households, multiple family households and non-family households.

2.6 Homelessness in the Whitsunday Region

The most disadvantage people within a community and who are unable to afford housing are unfortunately often left with no safe or reliable accommodation. Homelessness is the extreme end of the housing stress spectrum which affordable housing solutions aim to address. The ABS defines homelessness as when a person does not have suitable accommodation alternatives. They are considered homeless if their current living arrangement:

- is in a dwelling that is inadequate; or
- has no tenure, or if their initial tenure is short and not extendable; or
- does not allow them to have control of, and access to space for social relations.

The ABS definition of homelessness is informed by an understanding of homelessness as 'home'lessness, not 'roof'lessness. It emphasises the core elements of 'home'. These elements may include: a sense of security, stability, privacy, safety, and the ability to control living space. Homelessness is therefore a lack of one or more of the elements that represent 'home'.

Within the Whitsunday Region, a rate of **59 per 10,000 persons** are homeless. This is well above the State-wide rate of 45.6 persons per 10,000. The chart below demonstrates how within the Mackay, Isaac and Whitsunday Regional Plan area, the Whitsunday Region has a much higher homelessness rate.

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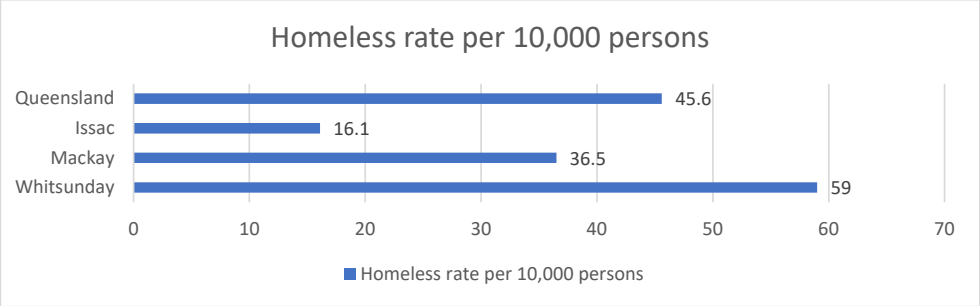

Homelessness comes under Crisis Housing which is administrated by the two local companies, Whitsunday Housing Company and The Mackay Housing Service.

2.7 Local Statistics (extract)

27 July to 15 September 2021 Bowen Neighbourhood Centre (50 Days)

- 37 adults and 34 children, a total of 37 groups comprising of families with dependants, couples, single parents and singles presented during this period as requiring crisis housing or social housing.
- 73% has no fixed address
- 76% present have a risk of homeless
- 60% of the adults presenting are female, 40% male
- 47% are children

2.8 What affordable housing organisations are available in the Region?

The Whitsunday Housing Company Ltd (WHCL) is a not-for-profit company which manages emergency, transitional and long term social housing throughout the Whitsunday Region. They are registered under the National Regulatory System for Community Housing (NRSCH). Their property portfolio includes a modest number of houses and units in the Region.

The Mackay Housing Service Centre is the contact for the Department of Public Housing in the region and they cover the Whitsundays as well for social housing. They cover emergency, transitional and long term social housing throughout the Mackay Isaac and Whitsunday region.

2.9 What areas of the Region are the most disadvantaged?

Socio Economic Indexes for Areas (SEIFA) is a suite of indexes that have been created by the Australian Bureau of Statistics (ABS) from social and economic Census information. Each index ranks geographic areas across Australia in terms of their relative socio-economic advantage and disadvantage. This report presents information from the Index of Relative Socio-economic Disadvantage (IRSD), a general socio-economic index that summarises a range of information about the economic and social conditions of people and households within an area. This index includes only measures of relative disadvantage.

A low score indicates relatively greater disadvantage in general. For example, an area could have a low score if there are (among other things), many households with low income, many people with no qualifications, or many people in low skill occupations.

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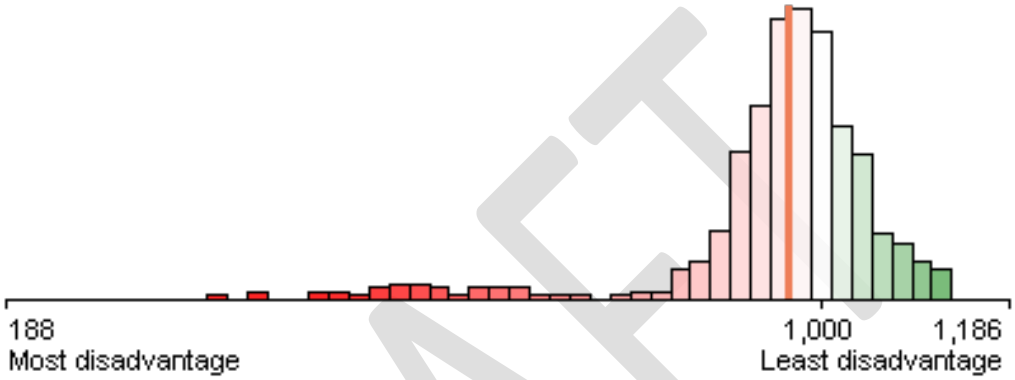
A high score indicates a relative lack of disadvantage in general. For example, an area may have a high score if there are (among other things), few households with low incomes, few people with no qualifications, and few people in low skilled occupations.

The SEIFA scores range from 188 (min) to 1,186 (max), with 188 having the highest level of disadvantage and 1,186 being least disadvantaged.

The SEIFA index of disadvantage score for the Whitsunday Region is 967. This score ranks the Region as 243 out of 544 local government areas with SEIFA scores in Australia. There are 301 local government areas which are less disadvantaged, and 242 local government area that are more disadvantaged



**Orange line indicates the Whitsunday Region on the scale.

ABS data which contribute to SEIFA score:	
Advantage	**Disadvantage**
people with stated household equivalised income greater than $52,000 per year	people aged 15 years and over who have no educational attainment
occupied private dwellings paying mortgage greater than $2,800 per month	occupied private dwellings requiring one or more extra bedrooms
people aged 15 years and over whose highest level of educational attainment is a diploma qualification	occupied private dwellings with no cars
employed people classified as Professionals	employed people classified as low skill Community and Personal Service workers
occupied private dwellings with four (4) or more bedrooms	employed people classified as Machinery Operators and Drivers
employed people classified as managers	people aged 15 years and over who are separated or divorced
occupied private dwellings paying rent greater than $370 per week	occupied private dwellings paying rent less than $166 per week (excluding $0 per week)
occupied private dwellings with one or more spare bedrooms	people under the age of 70 who have a long-term health condition or disability and need assistance with core activities
people aged 15 years and over at university or other tertiary institution	people (in the labour force) who are unemployed
occupied private dwellings with three (3) or more cars	one parent families with dependent offspring only
	employed people classified as Labourers

	families with children under 15 years of age who live with jobless parents
	people aged 15 years and over whose highest level of education is Year 11 or lower
	occupied private dwellings with no internet connection
	people with stated household equivalised income between $1 and $20,799 per year

The SEIFA data for the Whitsunday Region will be viewed in SA1s. Statistical Areas Level 1 (SA1) are standard geographical areas used by the ABS to spatially categorise data. The SA1s have generally been designed as the smallest unit for the release of census data. SA1s have a population of between 200 and 800 people with an average population size of approximately 400 people.

2.9.1 SEIFA Scores For SA1s Across Whitsunday Region.

The Map **SIEFA SCORE WHITSUNDAY REGION** provides an overview of the SEIFA score for the SA1 of the Region.

As per the scale, red tones indicate disadvantage and green tones indicate advantaged area. The stronger the hue, the greater the advantage or disadvantage.

The following areas are mapped for reference:
PROSERPINE
CANNON VALLEY TO SHUTE HARBOUR
CANNONVALE
AIRLIE BEACH AND JUBILEE POCKET
BOWEN
COLLINSVILLE

Grey coloured areas do not have a SEIFA score due to lack of data from persons residing in the area. This data clearly identifies that within the Region Collinsville and Bowen have the highest concentration of disadvantaged people. Focusing affordable housing strategies within these areas may have the greatest chance of addressing the issue where it is most prevalent. It is noted that SEIFA is not only about housing affordability, however it is considered a reasonable measure for those in a community who would be most at risk of experiencing housing stress.

2.9.2 Most Disadvantaged Statistical Areas

Any SA1 with a score lower than 850 has been considered in greater detail below.

Bowen (SA1 31201133721) – SEIFA Score: 822 (Whitsunday Region: 967)

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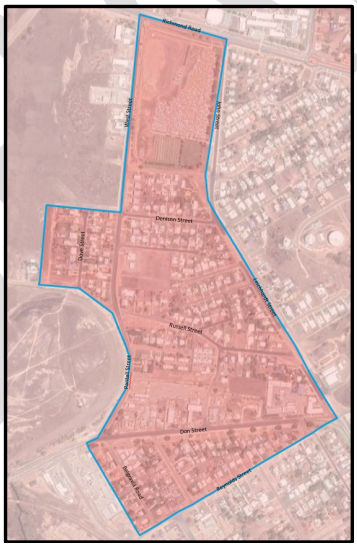
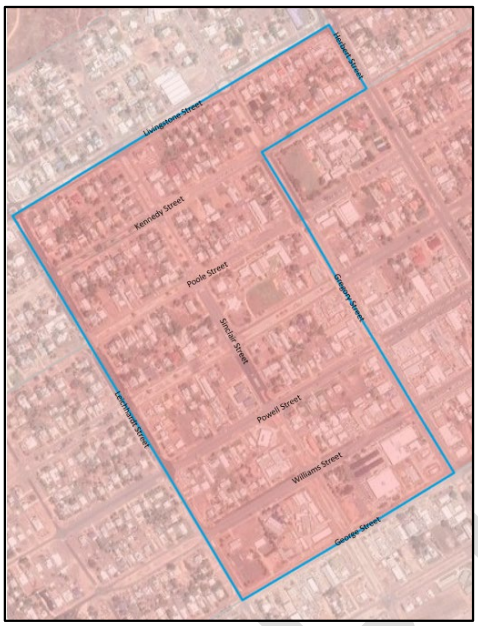
This area is identified as having a distinctively lower SEIFA Score that the surrounding area. However, this area includes the Murroona Gardens Nursing Home. Given the criteria used to determine the SEIFA Score of an area, it is considered likely that the presence of an Aged Care Facility abnormally reduced the score of this area.

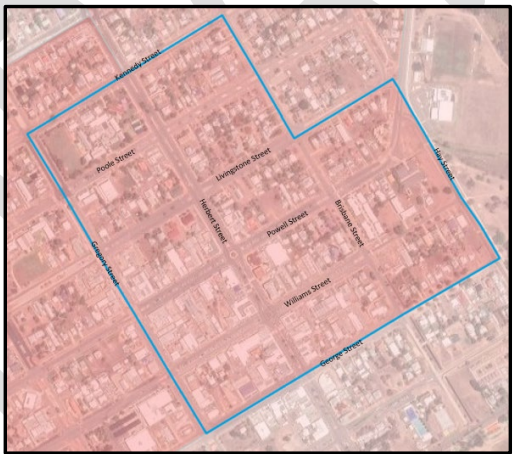
Bowen (SA1 31201133705) – SEIFA Score: 834 (Whitsunday Region: 967)



Bowen (SA1 31201133719) – SEIFA Score: 846 (Whitsunday Region: 967)

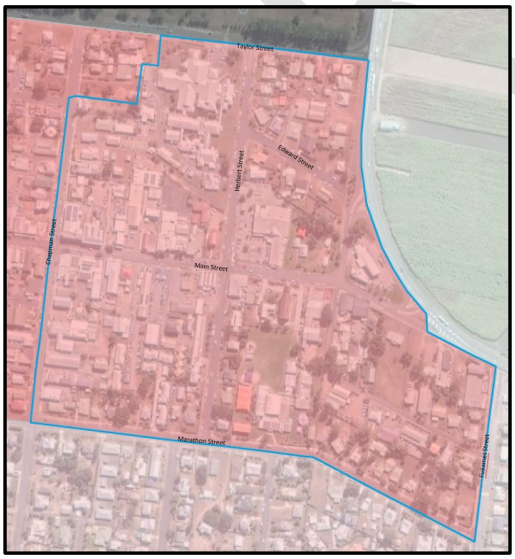


Bowen (SA1 31201133720) – SEIFA Score: 858 (Whitsunday Region: 967)



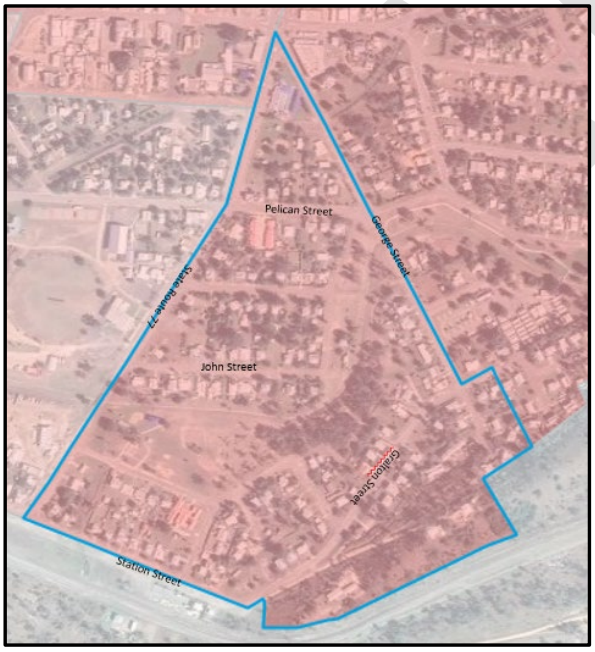
Proserpine (SA1 31203136117) – SEIFA Score: 792 (Whitsunday Region: 967)

Proserpine (SA1 31203136115) – SEIFA Score: 822 (Whitsunday Region: 967)



Collinsville (SA1 31201134004) – SEIFA Score: 835 (Whitsunday Region: 967)

Collinsville (SA1 31201134002) – SEIFA Score: 849 (Whitsunday Region: 967)



2.10 Eligible for Social Rental Housing

1. You must be an Australian citizen or have an appropriate visa.
2. You must have liquid assets (including no property) of less than $149,000.
3. The household's combined gross weekly assessable income must be less than:

- $609:
  - single person, no children
- $755:
  - single person with 1 child
  - couple with no children
  - 2 single people
- $877:
  - single person with 2 children
  - couple with 1 child
  - couple and 1 single person
  - 2 single people and 1 child
  - 3 single people
- $999:
  - single person with 3 or more children
  - couple with 2 children
  - 3 single people and 1 child
  - 2 single people with 2 children
  - 4 single people
- $1121:
  - couple with 3 or more children
  - 5 single people
  - 1 couple with 2 children and 1 single person
  - 2 couples with 1 or more children
  - 1 couple with 1 single person and 2 or more children
  - other households with 5 or more people including at least 2 adults

4. Your current housing does not meet your needs and you need safe, affordable housing. People can then contact their local Housing Service Centre for help.

Comments

Considering the above requirements, Social Housing is something that will need to be more accessible as house rental rates rise, as seen throughout 2020-2021 due to rapid movements across Australia. This is a mandate of the State Government.

2.11 What would be considered 'affordable' rental or ownership housing in the Whitsunday Region?

As nominated above, affordable housing is accommodation which a household does not need to spend more than 30% of their income on. Furthermore, this housing should be adequate in its standard and location to not result in other exorbitant costs because of having to live there (i.e., it is not affordable housing if any saving made on the cost of the accommodation must be spent on or exceeded to reach services and employment).

Considering the above incomes for Low and Very Low Income Persons, Families and Households and the rule of thumb that no more than 30% of gross income should be spent on housing, the following table identifies the maximum amount which theses parties can afford to spend on accommodation:

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Category	Low		Very Low	
	Per annum	*Per week**	*Per annum*	*Per week**
Person	$8,549	$164	$5,343	$102
Family	$18,483	$355	$11,552	$222
Household	$17,921	$344	$11,201	$215

*Rounded down to the nearest whole dollar amount.

Figure 4: Affordable Accommodation Whitsundays Region for Low or Very Low Income Households

2.12 What private rental housing is currently available in the Whitsunday Region?

The latest census data for the Whitsunday Region (2016) identifies that 31.15% (10,721) of persons live in rental accommodation.

A snapshot of the Region from 2006 and 2011 demonstrates that there has been a steady increase in the percentage of the persons in the Region who are renting.

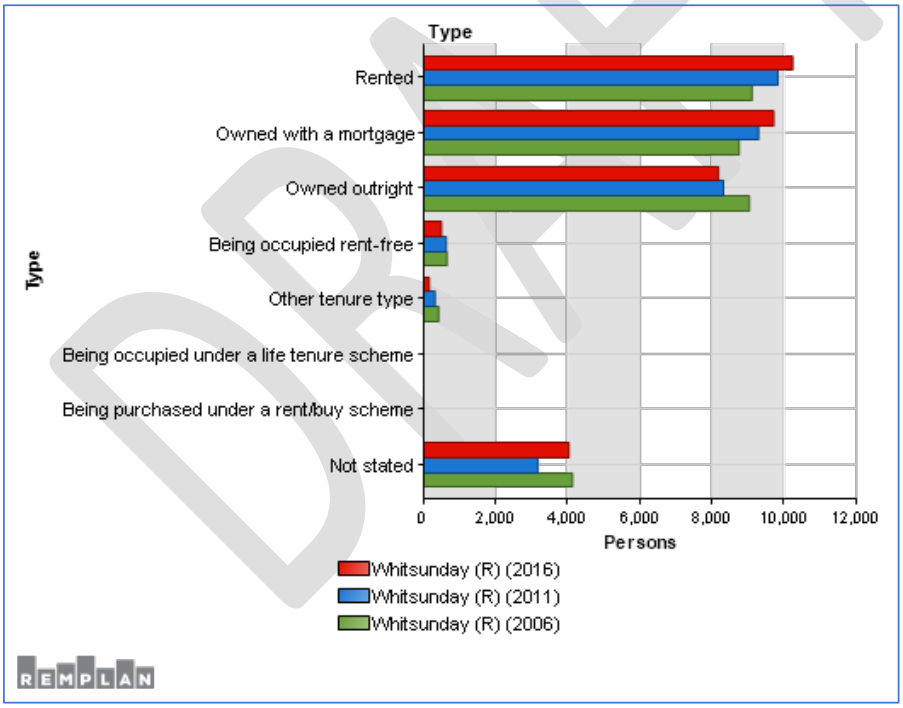


Figure 5: Number of persons depending on type of permanent living accommodation

Furthermore, this information demonstrates that the number of persons who own their homes outright is decreasing.

Table 3: Type of Accommodation Per Year

Year	Renting	Owned Outright	Owned with mortgage
1991	30.6%	37.85%	18.10%
1996	29.41%	36.31%	20.55%
2001	27.17%	36.32%	22.04%
2006	28.33%	28.10%	27.22%
2011	31.07%	26.29%	29.38%
2016	31.15%	24.91%	29.56%

*Data is in percentage of population to account for population growth differential over time.

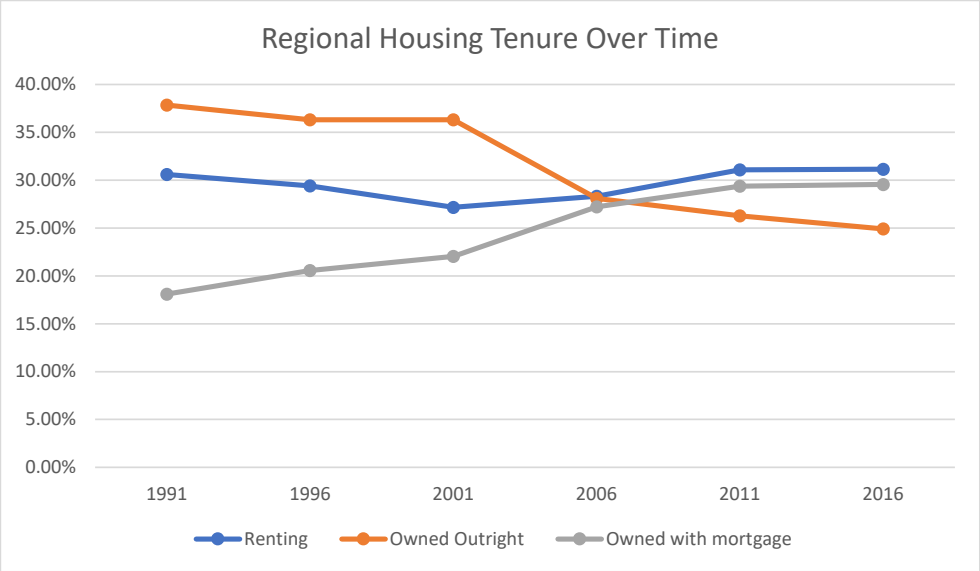


Figure 6: Regional Housing Tenure over Time

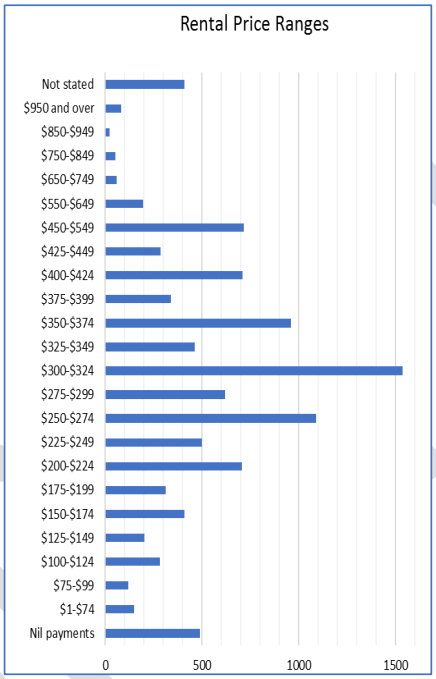
It is clearly seen that outright ownership is decreasing, ownership with a mortgage is increasing and renting is holding steady.

Rental properties in the Region fall into the following price categories:

Table 4: Rental Categories

Rent per wk	Persons	%
Nil payments	488	4.55%
$1-$74	148	1.38%
$75-$99	119	1.11%
$100-$124	284	2.65%
$125-$149	201	1.87%
$150-$174	409	3.81%
$175-$199	314	2.93%
$200-$224	707	6.59%
$225-$249	501	4.67%
$250-$274	1,091	10.18%
$275-$299	620	5.78%
$300-$324	1,536	14.33%
$325-$349	464	4.33%
$350-$374	960	8.95%
$375-$399	338	3.15%

$400-$424	710	6.62%
$425-$449	286	2.67%
$450-$549	718	6.70%
$550-$649	195	1.82%
$650-$749	60	0.56%
$750-$849	54	0.50%
$850-$949	24	0.22%
$950 and over	83	0.77%
Not stated	411	3.83%
Total	10,721	100.00%



The average is $300 to $324, which is far above many persons in the region of Low and Very Low Income, see **Figure 4.**

Table 5: Median Rent in the Whitsunday Region (2016)

Median Rent (per week)			
1 bedroom house	**2 bedroom house**	**3 bedroom house**	**4 bedroom house**
$205	$300	$350	$420

Comments

Based on these values, a single low or very low income person is very unlikely to be able to afford to live on their own.

What type of housing is currently available in the Region?

The QGSO provides data on the type of dwelling structures occupied in the Region.

Table 6: Numbers/Percentages of Dwelling Types

Dwelling Type (2016)	Number	%
Separate House	8,900	79.1%
Semi-detached (row/terrace house, townhouse etc)	919	8.2%
Apartment (flats/units)	976	8.7%
Caravan (includes cabins and houseboats)	228	2.0%
Other (tents, flat attached to shop etc)	38	0.3%

Comments

It is clear many dwellings in the region are separate houses.

Affordable Home Ownership

What new residential lots are being developed in the Region?

As per the Queensland Government Statistician's Office (QGSO), residential development in the Region in the twelve (12) months ending June 2021 included 40 Lot approvals. Of these 40 lots, **21** were urban lots and **19** were rural lots. This total was lower than the average for the past 10 years, being **126** lots per year.

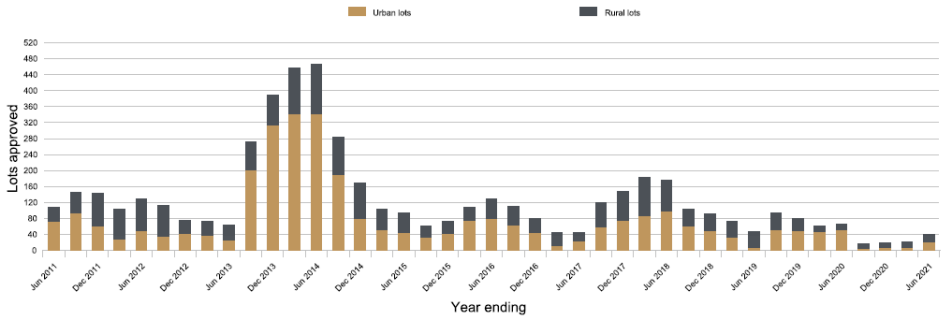
This chart generated by the QGSO identifies the variance of urban and rural residential lots approved since June 2011.

Table 7 Lot approvals by type, Whitsunday (R) LGA

Year ending	Urban lots	Rural lots	Total lots
	— number —		number
Jun 2018	98	78	176
Sep 2018	62	41	103
Dec 2018	49	43	92
Mar 2019	34	39	73
Jun 2019	8	39	47
Sep 2019	52	43	95
Dec 2019	49	31	80
Mar 2020	47	14	61
Jun 2020	52	14	66
Sep 2020	6	10	16
Dec 2020	7	13	20
Mar 2021	7	14	21
Jun 2021	21	19	40

Source: Queensland Government Statistician's Office, Queensland Treasury.

Figure 3 Lot approvals by type, Whitsunday (R) LGA



Source: Queensland Government Statistician's Office, Queensland Treasury.

Figure 7: variance of urban and rural residential lots approved since June 2011

Registrations of Lots

In the year ending September 2021, **210** lots were registered with DNRM. The five-year annual average was **124**. The lots registered in 2021 were as follows:

- 95 were urban lots
- 91 were lower density lots
- 24 were unit and townhouse lots
- the median urban lot size was 1,239 m2.

The charts below identify lots register by type and then by lot size for the past decade:

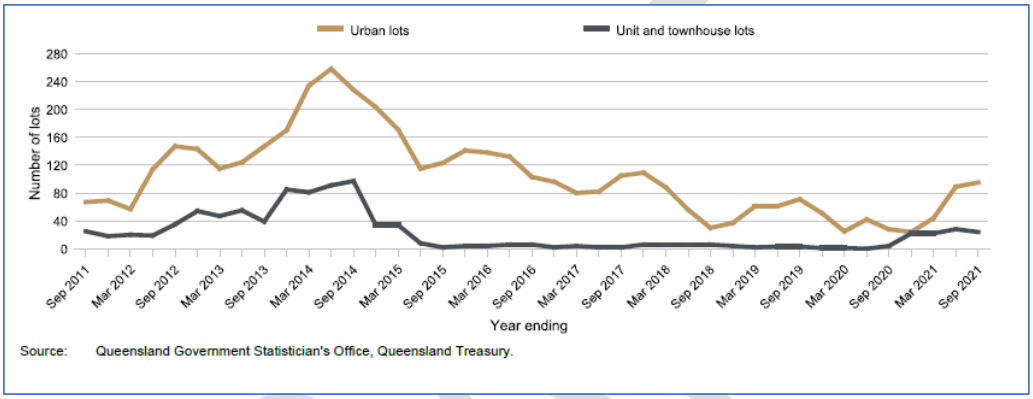


Figure 8: Lots registered by Type

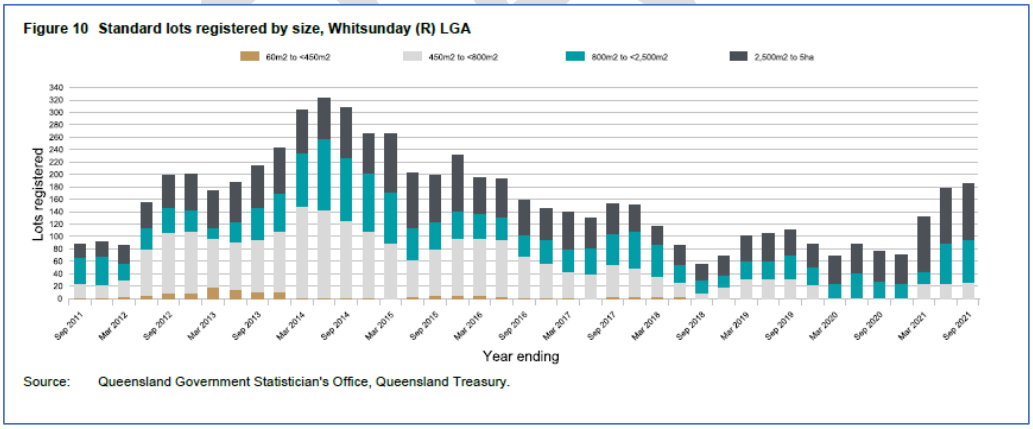


Figure 9: Standard lots registered by size

What lots were sold?

The ABS identified in the year ending June 2021 a total of **284** lots were sold, an increase of 120% compared to the previous year.

Lot sales were **91** more than the 5-year average.

Table 26 Lot sales, Whitsunday (R) LGA

LGA	Year ending June		Year on year growth rate	Annual average (year ending June)	
	2020	2021p	2020 to 2021p	5 years 2017 to 2021p	10 years 2012 to 2021p
	— number —		%	— number —	
Whitsunday (R)	129	284	120	193	223

Source: Department of Resources, Office of the Valuer-General, Property Sales

Figure 10: Lots Sold in Whitsunday LGA

What new residential development is being built?

The ABS identified that in the year ending September 2021, **191** dwelling house approvals were granted. This is a 142% increase to the previous year (Covid impacts).

No approvals were issued for any other type of residential dwellings. Other types include semidetached, row or terrace houses, townhouses, flats, units and apartments.
Over the past four financial years there have been very few approvals granted which were for residential buildings other than dwelling houses.

	Financial Year				
	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
New houses	48	202	233	84	136
New other residential buildings	0	8	0	2	2

Figure 11: Total Residential Buildings Constructed

Comments

It shows a distinct lack in a variation to the normal built type e.g., single detached dwelling, in the region. This only allows a certain margin of people to gain access to the new home ownership market, also only a limited number can use the state/fed government incentives to allow access to new build home ownership under their strict guidelines.

Housing Sales in the Region

The QGSO provides the following figures for housing sales in the 12 months ending June 2021 for the Whitsunday Region were a total of **1247** dwellings sold, being an increase of 76% compared to the previous year.

	Detached Dwellings	Attached Dwellings	Total Dwellings
Number of Sales	878	369	1247
Median Sale Price	$399,000	$283,800	$360,000

Figure 12: Number of House Sales and Median Price

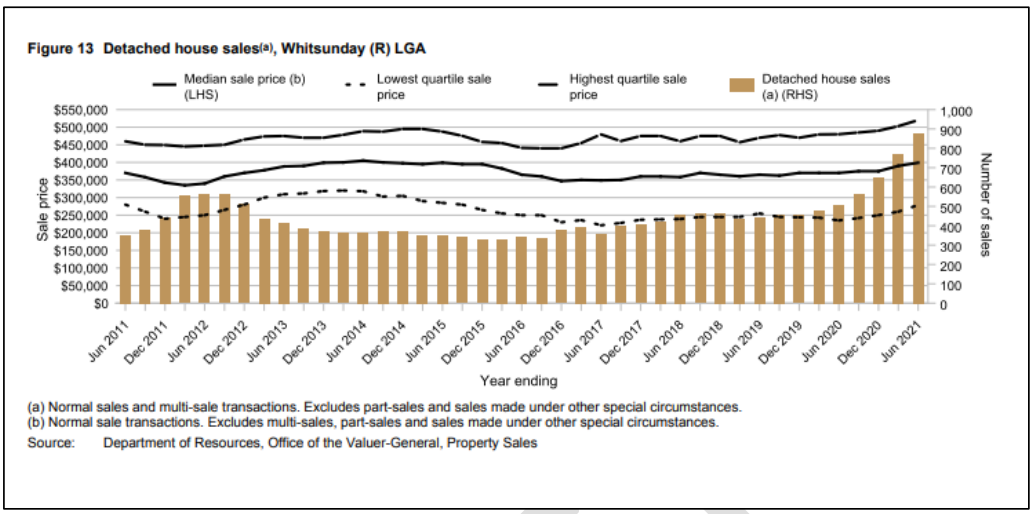


Figure 13: Detached House Sales

Summary of Statistics

It is clearly shown in the above tables that the Whitsundays have a love of the detached dwelling, within a set price range. This may have come about through the 'sea change' attraction of the region, for people to move here and experience the best of the Whitsundays on 2.5 acres of land, with a large house and two sheds. However, society needs people from all aspects of life. Through post Covid life, those people in urgent demand are the essential worker, including cleaners and truck drivers, who may not be able to afford the 2.5 acre block and may wish for a townhouse, but are unable to find any due to the lack of a diverse market in the Region. Those essential workers then are unable to stay within a region due to the lack of housing.

Higher Density - Unit Sizes in Australian Cities

The average projected unit sizes in Sydney are drafted under the 'Draft Apartment Design Guide' published by the Department of Planning Industry and Envi3onment of NSW.

Sydney
Their unit sizes and ceiling heights for greater Sydney are as follows:

NON-DISCRETIONARY DEVELOPMENT STANDARDS

Apartment size

Provide the following minimum internal areas for apartments.

Table 2.4.1: Minimum internal areas for apartments

DWELLING TYPE	MINIMUM INTERNAL AREA (INCLUDES ONE BATHROOM)
Studio	35 m²
1 bedroom	50 m²
2 bedrooms	70 m²
3+ bedroom	90 m²

Ceiling height

Table 2.4.2: Minimum ceiling heights (measured from finished floor level to finished ceiling level) for apartment buildings and mixed-use buildings

AREA	FLOOR-TO-CEILING HEIGHT (MINIMUM)
Habitable rooms	2.7 m
Non-habitable rooms and kitchens	2.4 m
2-storey apartments	2.7 m for main living room floor area 2.4 m for second floor, where the area doesn't exceed 50% of the apartment area
Attic spaces	1.8 m at the edge of the room with a 30-degree minimum ceiling slope
Ground floor non-residential uses	3.3 m

The minimum ceiling heights do not preclude higher ceilings.

Figure 14: Sizes and Ceiling heights

Figure 15: Suggested layouts

South East Corner Queensland

Council	Zone	Projected Density	Metres squared
Brisbane	Low Density Residential	15.2 dwellings/ha	657m²
Brisbane	Low-Medium Density Residential	44 to 84 dwellings/ha	227m² down to 113m²
Moreton Bay	Next Generation	15 to 75 dwellings/ha	666m² down to 119m²
Moreton Bay	Urban Neighbourhood	45 dwellings/ha	222m²

Air BnB within the Whitsundays

Looking on the Airbnb website the Whitsunday region has the following listings (taken from a snapshot of the website):

- 37 stays in and around Bowen
- 35 in Hideaway Bay and Dingo Beach
- Approximate 400 from Shute Harbour to Cannon Valley
- 8 around Conway to Cannon Valley
- 5 in Proserpine
- 5 in Collinsville
- 251 on Hamilton Island

Having a total of around 740 stays it is not considered that Airbnb is having a great impact on our home affordability within the Whitsunday region.

Benefits of Home Ownership

The availability of affordable home ownership housing has many benefits, socially, and economically.

Social

- People who own their homes rather than rent are more likely to engage in the local community and take pride in their neighbourhood. This creates a more socially conscious community,
- There is a pride of place in owning their own home,
- High levels of home ownership may have a correlation to crime rates and liveability

Economic

- Improving local housing affordability could act as an incentive for people to move to our region. Cost of living is often a consideration when people are looking to settle down or relocate and they're not moving due to a particular job. Or some people would not be able to take advantage of any employment opportunities generated in the region if they cannot afford to live here.

Argument for Diverse Housing Stock

Diverse housing stock contributes to the availability of affordable housing, provided it is the right type of accommodation. The diversity which facilitates the development of affordable housing includes accommodation types such as secondary dwellings, dual occupancies or

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multiple dwellings which include affordable choices. Diverse housing stock can be encouraged by reducing levels of assessment or development costs for these housing types.

Development costs can be reduced by speeding up assessment timeframes which reduces holding costs developers incur. Reduction of infrastructure charges is another measure which reduces development costs however long term costs of infrastructure are then passed onto the Council and then the ratepayer, ensuring minimal savings overall.

The goal is to encourage diverse housing stock and increase density within 'middle ring suburbs' – which in the context of the Whitsunday Region are the existing housing areas which are in proximity to services such as public transport and shops. Increasing density in established residential areas will necessitate encouraging secondary dwellings, dual occupancies and multiple dwellings which maximises the use of existing infrastructure.

Location of these density increases is key to ensure low incomes persons have access to public transport and are in proximity to shops and services which enables their transit costs to also remain low. Affordable housing which is isolated from these services often just transfers the cost to low income persons from accommodation to transport.

Diverse housing stock is important because it enables people to have choices of accommodation types which may suit their needs rather than be limited to housing types which may not suit their lifestyle or their budget. Housing stress is when a person or household is required to spend more than 30% of their income on accommodation. People or households which fall into the Low or Very Low income brackets are very limited in what accommodation they can afford before they enter housing stress.

There is an obvious challenge here in that persons or households who are capable of affording more expensive housing may also choose to buy or rent the limited housing stock which may be considered affordable. This raises the question of how to protect affordable housing stock for those who require affordable housing.

Housing diversity also enables people to age in place. Older people can often be disadvantaged due to limited income opportunities (pension or limited superannuation access). Financial difficulties for this demographic can be compounded by limited access to public transport if they are no longer able to drive. Lack of transport can lead to isolation which then leads into a range of social and health issues. Diverse housing can enable older people to downsize while remaining in their community. This enables them to maintain connections, with their peers in their locality.

Challenges for Council through Diverse Stock

Achieving or encouraging affordable housing through land use planning guidance is limited in that it relies on the market and developers to still undertake the development, however it is on the areas for Affordable Housing that Council has control over and can encourage.

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Options for Council

The Local Government strategies available are as suggested:

1. Develop a Local Government Policy to provide rates concessions to community housing organisations.
2. Advocate to the State Government for affordable housing initiative to be implemented in the Whitsunday Region.
3. Review the Whitsunday Planning Scheme and provide recommendations on policy amendments that improve housing affordability over the long-term.
4. Review the Infrastructure Charges Resolution and provide recommendations on affordable housing incentives.

Through initiatives, policies and programs, the Whitsunday Regional Council may implement these strategies to facilitate the development and protection of affordable housing in the Region. These outcomes will be fleshed out and discussed in the Housing Affordability Study.

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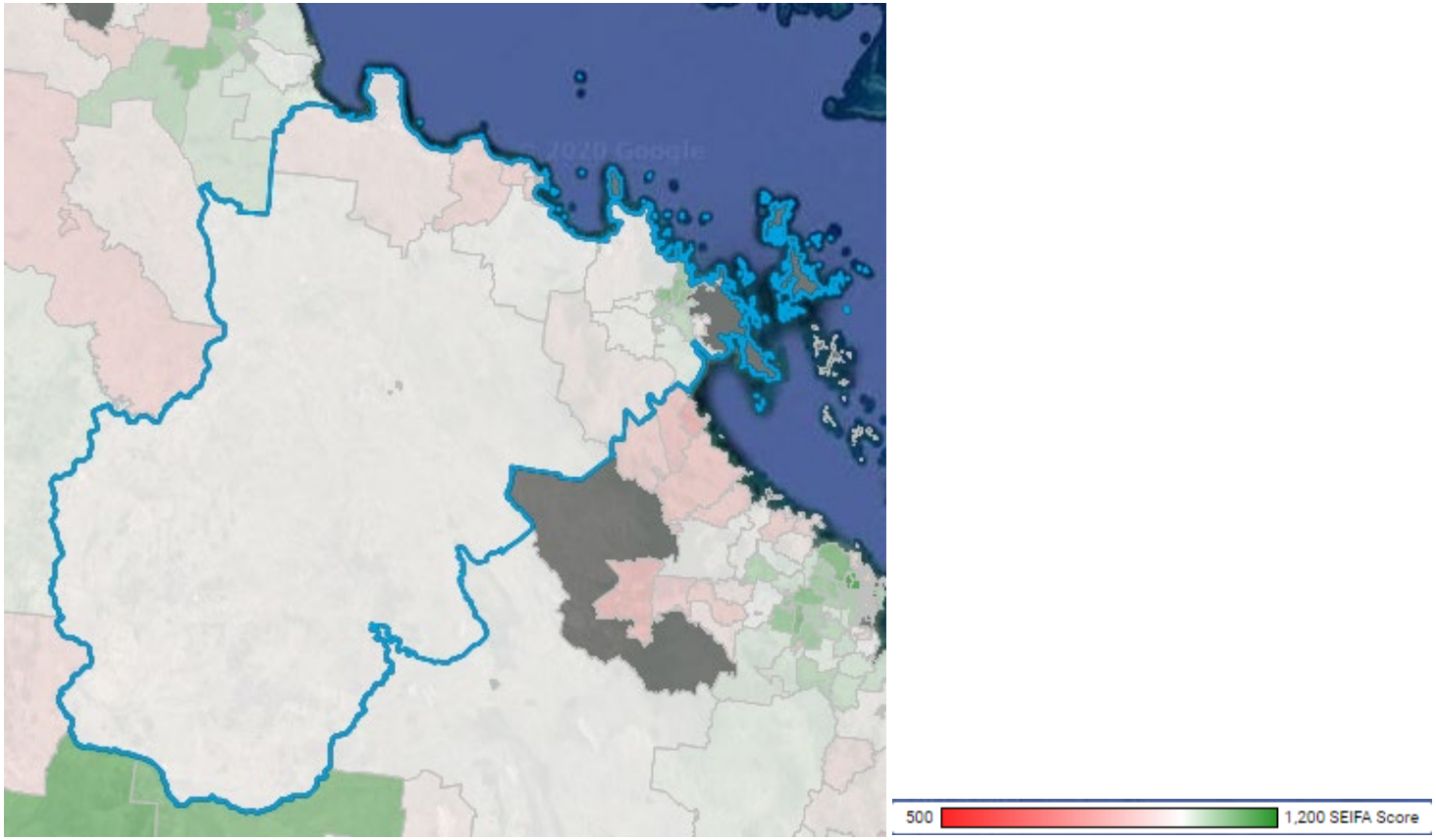
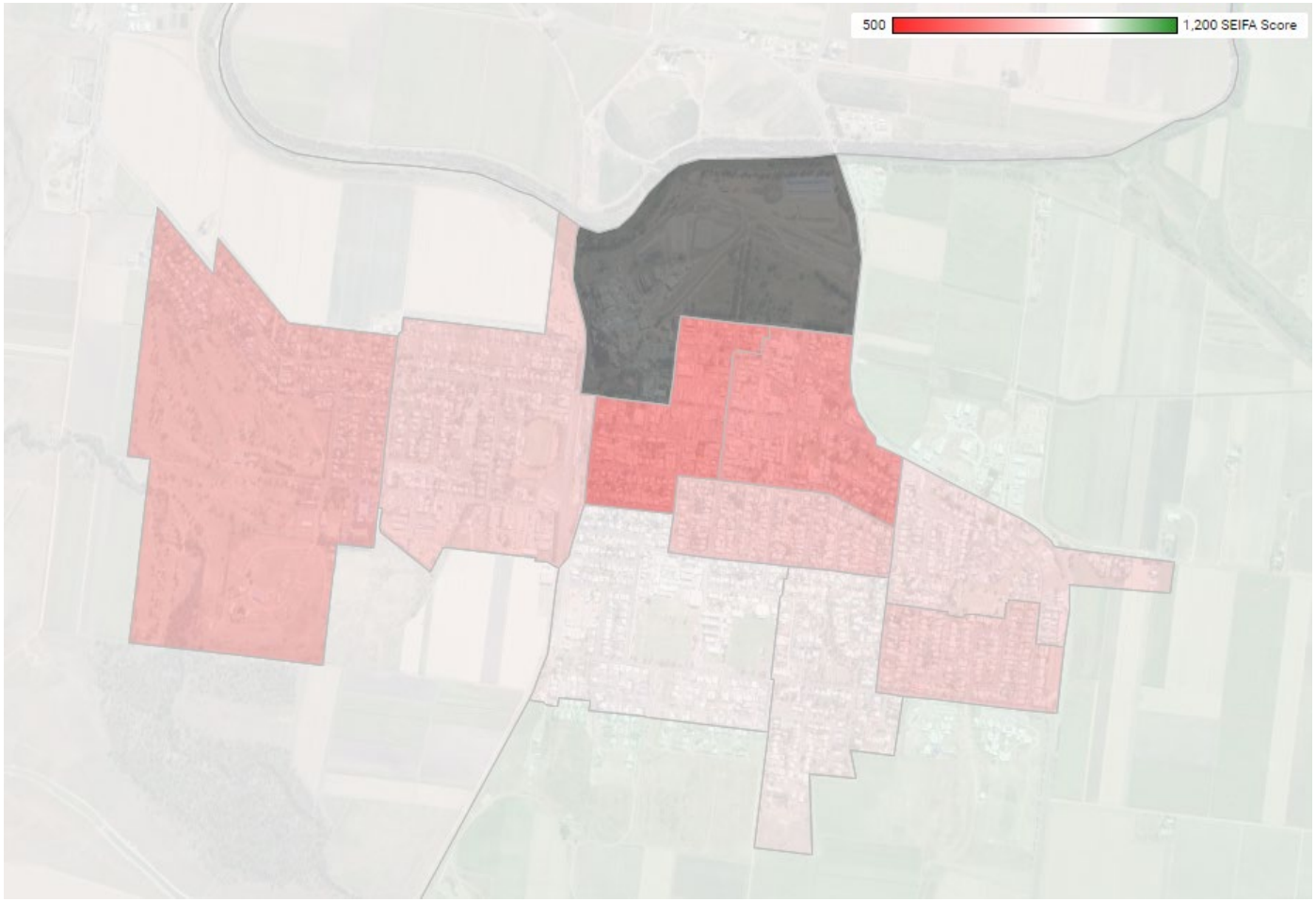
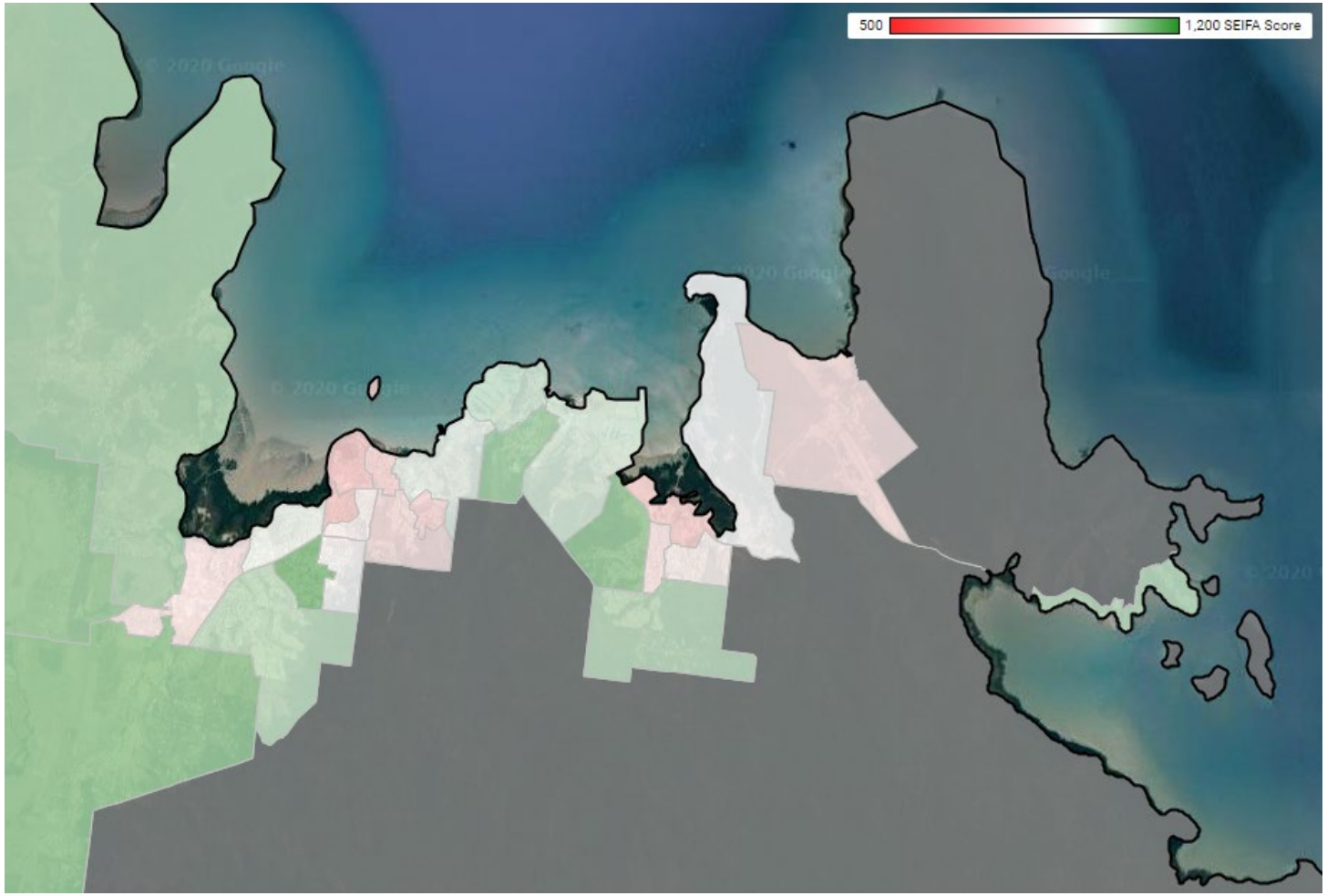
SIEFA Score Whitsunday Region



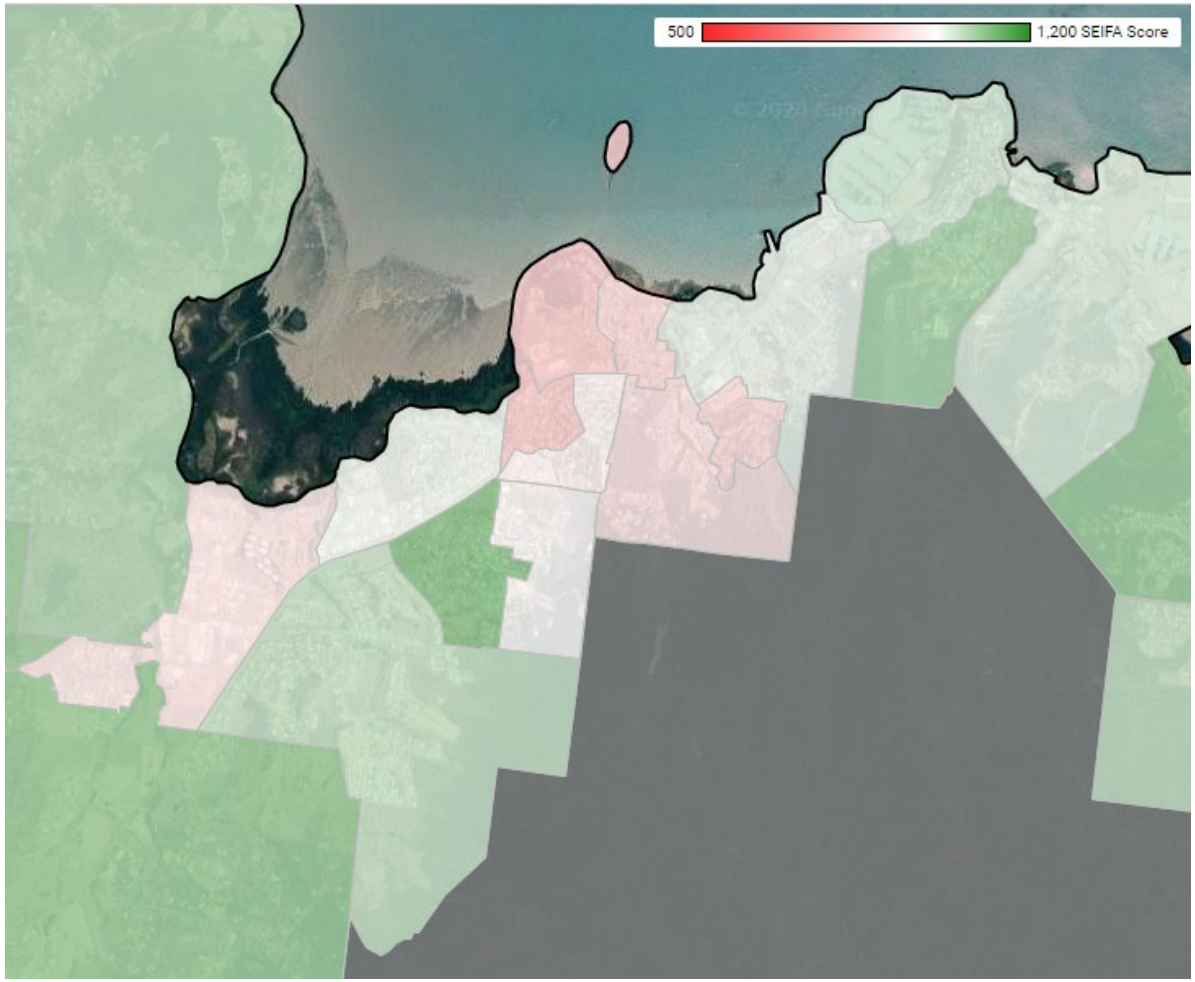
ATTACHMENT 1: PROSERPINE



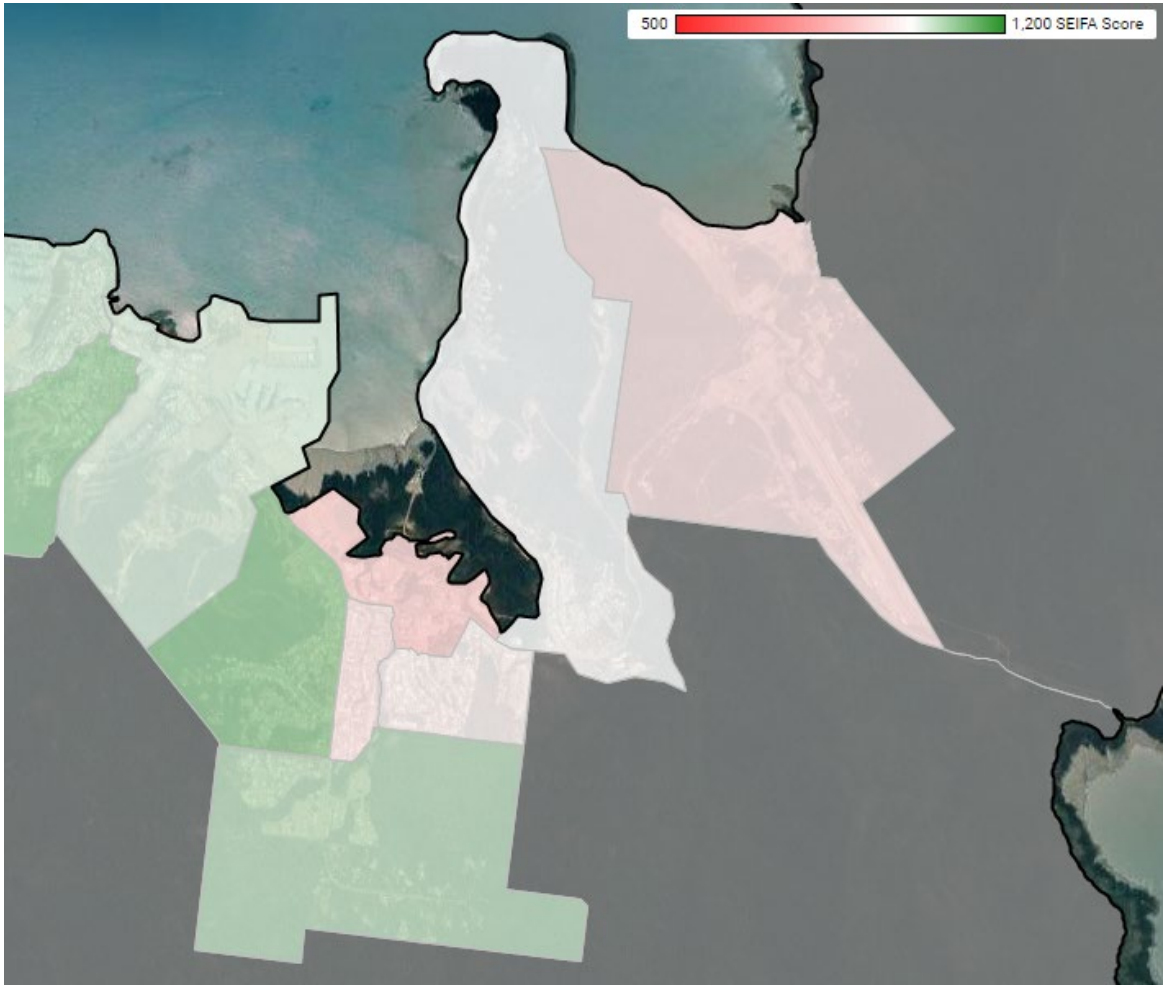
ATTACHMENT 2: CANNON VALLEY TO SHUTE HARBOUR



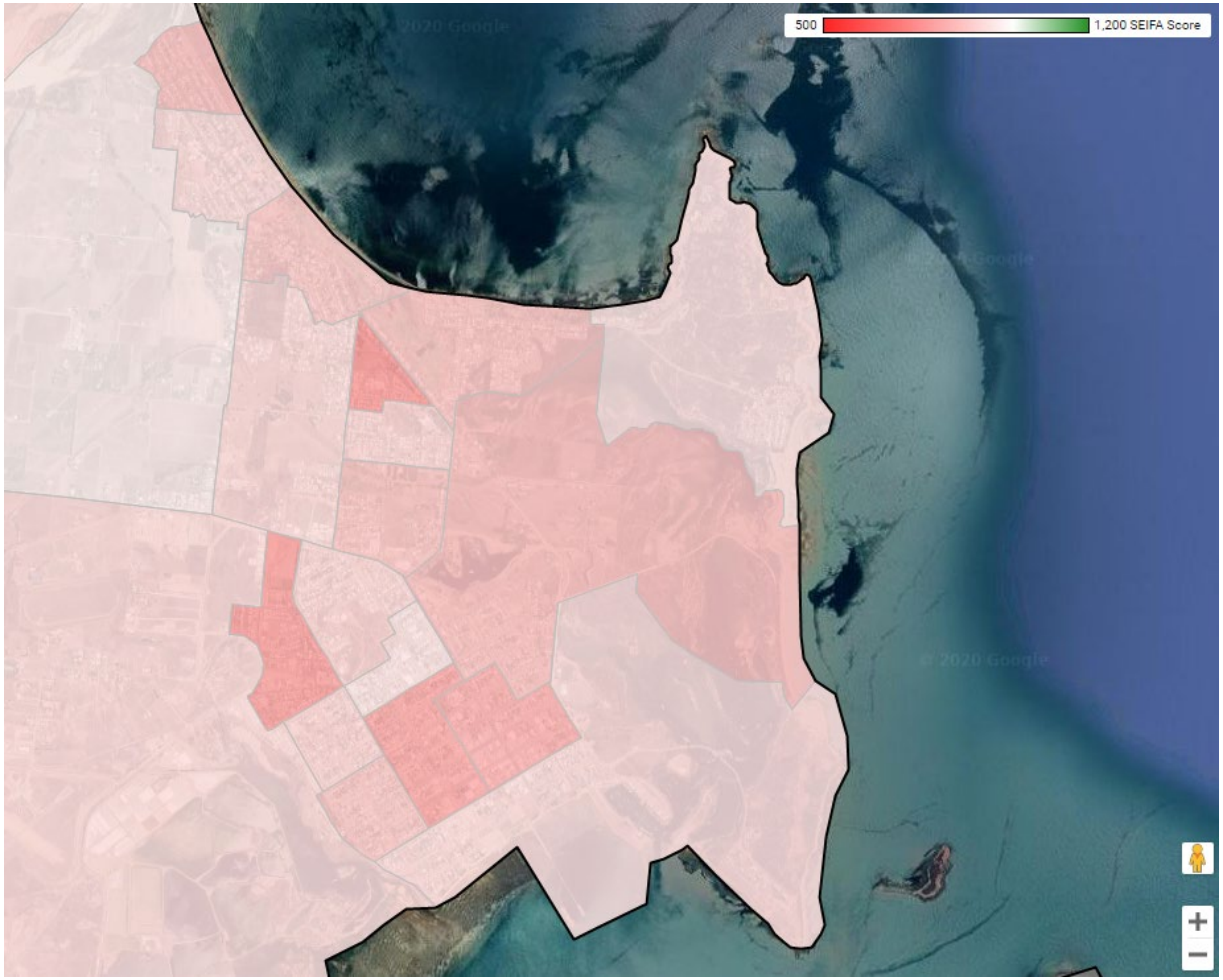
ATTACHMENT 3: CANNONVALE



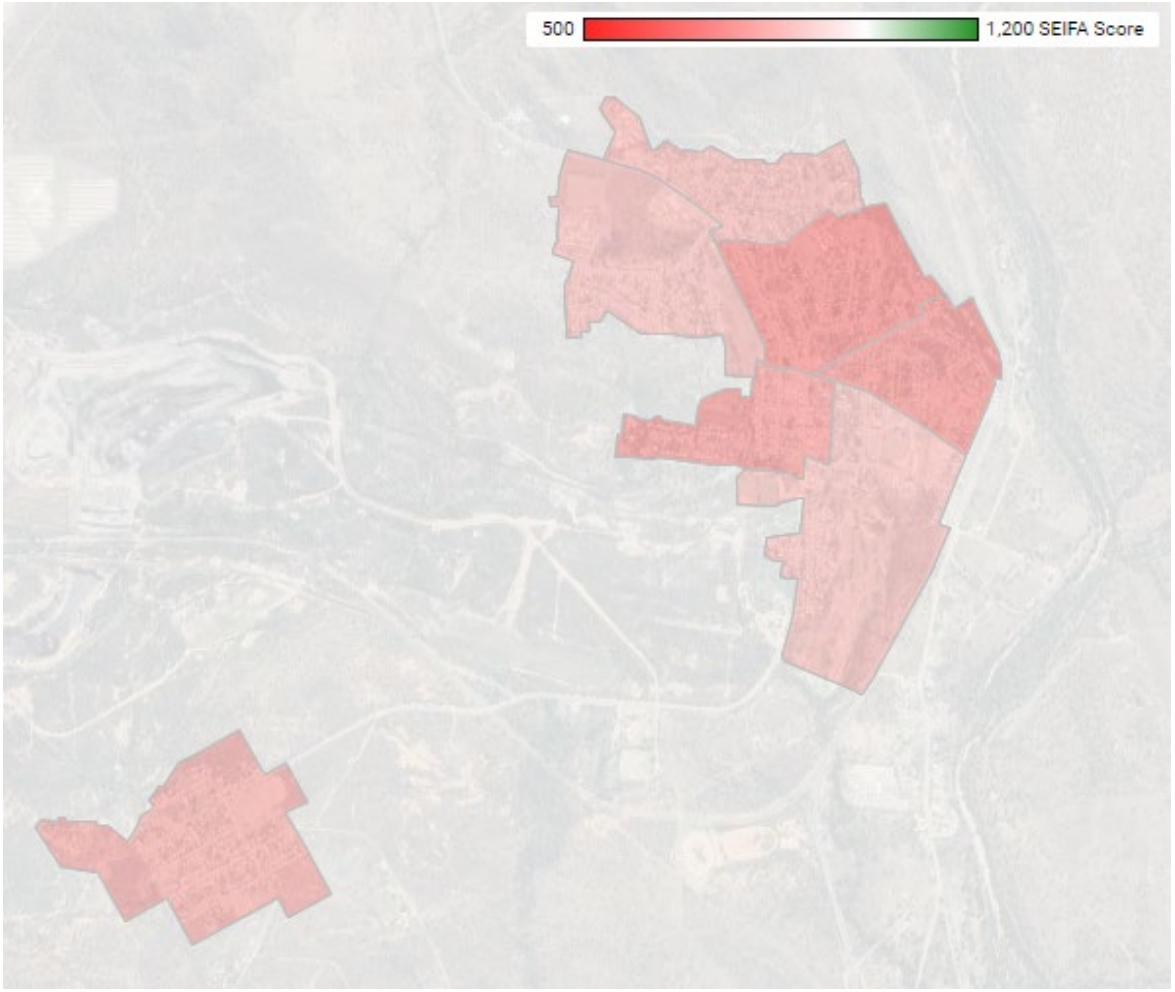
ATTACHMENT 4: AIRLIE BEACH AND JUBILEE POCKET



ATTACHMENT 5: BOWEN



ATTACHMENT 6: COLLINSVILLE



13.3.2 - Update on Current Social/Affordable Housing Reforms

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Leonie Meurant - Strategic Planner

AUTHORISING OFFICER: Neil McGaffin - Director Development Services

PRESENTED FOR: Decision

ATTACHMENTS

1. Help to Home communication kit [**13.3.2.1** - 3 pages]

PURPOSE

To provide Council with an update of the process and structures that assist affordable housing, operating at State and Local Government levels.

OFFICER'S RECOMMENDATION

That Council:

a) Promote the State's Help to Home Initiative to support and increase local social housing, through Council's Communications team.
b) Allow developments to enter into a payment schedule of infrastructure charges for a maximum period of up to 3 years if deemed appropriate by the Chief Executive Officer.

BACKGROUND

At Council Meeting 8 June 2022 it was resolved to report back to Council regarding the consideration of establishing processes and structures to assist affordable housing.

At the Council Meeting 24 November 2021, Council passed a resolution to invite private tenders for several parcels of Council owned land deemed to be surplus to operational and strategic requirements.

DISCUSSION/CURRENT ISSUE

STATE

The Queensland State Government are rolling out their $1.813 billion *Queensland Housing Investment Growth Initiative* (QHIGI), through various programs.

<u>QuickStart's Program</u>

One program is the QuickStart's Program, which encourages social housing providers to apply for funding to build units throughout QLD. This closed January 2022.

Council's economic development staff referred Council's tendered land to two Social Housing providers, Regional Housing Limited and Blue CHP Limited. Both entered the private tender process and Blue CHP was successful with a tender at 27-29 Queens Street Bowen, and 31-33 Queens Street Bowen.

While Blue CHP received the go ahead from the Queensland Government's Housing Partnership Office (HPO) to submit the private tender for the land, they are waiting on the HPO decision regarding final approval of their funding through the QuickStart's Program. Blue CHP estimate they can construct a total of 25 Social Housing units on the blocks.

Help to Home

The program will deliver additional housing outcomes for people eligible for social housing. Through Help to Home, the government will source properties from the private market and sub-lease them to registered community housing providers to deliver specialist tenancy and property management services. This allows tenants to access safe, stable accommodation while a long-term housing solution is identified.

The program is seeking vacant properties, including stand-alone houses, single apartments, multi-unit complexes, properties new to the private rental market like short-stay, holiday homes or properties previously used as hotels, motels or for student accommodation. The program will manage the tenancy and deliver expert services to people eligible for social housing.

The 2-year arrangement provides certainty for property owners, with a guaranteed income while the lease is in place. More information is available on the State Government website under the Department of Communities, Housing and Digital Economy. The communications kit in Attachment 1 can assist Council in sharing this program to the wider community, the program is open until October 2022.

Housing Investment Fund

This is an upcoming program where the State is offering subsidies and one-off capital grants to encourage developers, institutional investors, social enterprises and Eligible Government Entities to partner with Community Housing Providers to build and operate Housing Solutions in Queensland. At the State's discretion, other forms of support may be considered for high-value proposals. This program is open for expressions of interest.

LOCAL

Rates Concessions

Council may assist through rates concessions for affordable housing organisations. Council currently has an initiative for reduced rates for Aged Homes, Nursing Homes and Affordable Housing Organisations. The *Donations on Rates & Charges for Not-for-Profit Organisations Policy* is administered by the Community Services Directorate and is now due for a review.

Infrastructure Charges

Council currently allows for staged development and staged payment of infrastructure charges for residential dwellings in single lot subdivisions. Council may also assist new developments in the administration of infrastructure charges payments. While the community may not be able to afford discounting development, assistance in payment plans or payment scheduling over a fixed amount of time can assist in addressing the burden of payment. This may be lawfully achieved through an Infrastructure Agreement.

STATUTORY/COMPLIANCE MATTERS

Planning Act 2016

STRATEGIC IMPACTS

Provide a consistent and transparent strategic framework and direction for the development industry and community.

FINANCIAL IMPLICATIONS

Offering the *Donations on Rates & Charges for Not-for-Profit Organisations Policy* has a small financial impact on rates and charges income to support non-profit organisations providing social housing locally. However, this Policy is existing and will have no further financial impact on Council.

CONSULTATION/ENGAGEMENT

Manager Strategic Planning
Manager Economic Development
Senior Communications Officer

RISK ASSESSMENT

If no promotion is undertaken, there is a risk that the Region will not receive the social and affordable housing opportunities that it warrants.

TIMINGS/DEADLINES

Council initiatives will commence immediately.

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

Section 58 of the *Human Rights Act 2019* specifies required conduct for public entities when acting or making a decision. Sections 15-37 of the *Human Rights Act 2019* identifies the human rights a public entity must consider in making a decision. The human rights relevant to this decision are as follows:

- Section 19 – Freedom of movement.
- Section 21 – Freedom of expression.
- Section 24 – Right to own property and not be arbitrarily deprived of property.
- Section 27 – Cultural rights – generally – all persons with a particular cultural, religious, racial or linguistic background have the right to enjoy their culture, to declare and practice their religion and use their language.
- Section 28 – Cultural rights – Aboriginal peoples and Torres Strait Islander peoples.

This decision does not limit the above identified human rights.

ALTERNATIVES CONSIDERED

N/A

Help to Home

Communications kit

About

Through Help to Home, the Queensland Government will headlease private rental properties and arrange for registered community housing providers to manage the properties and sublet them to people eligible for social housing.

We would like your assistance to promote Help to Home to property investors and property owners. You can use the email, newsletter, online banner and social media content in this communication kit.

Contact us at qhigi@chde.qld.gov.au if you need more materials.

Further information about Help to Home is available at www.qld.gov.au/housinginvestment

Email/newsletter content

Help to Home – a property investment opportunity backed by the Queensland Government

Help to Home is a secure investment opportunity, which involves leasing your existing property to the Queensland Government, for two years, with guaranteed income for the duration of the lease.

We will then lease the properties to registered community housing providers, who will sublet them to people eligible for social housing.

Investors can benefit from:

- a 2-year lease
- 3 months' rent in advance, paid each quarter
- The property returned in the condition it was received, minus fair wear and tear and damage that the lessor can claim on insurance or is otherwise required to repair.

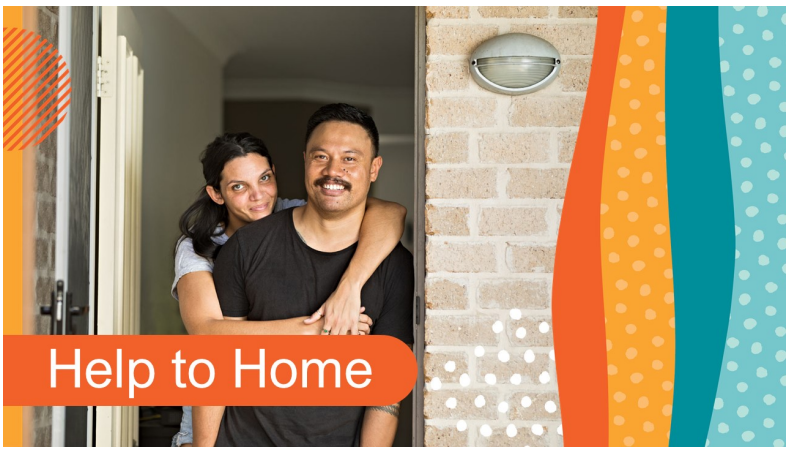
This arrangement is subject to the lease terms.

We are seeking newly-built or existing vacant properties, including stand-alone houses, single and multi-unit complexes and properties new to the private rental market, like short-stay, holiday homes or ones previously used as hotels, motels or for student accommodation.

Learn more and submit your property for consideration at www.qld.gov.au/housinginvestment

Queensland Government

Social media post



Are you thinking of renting your property? Apply for a 2-year rental lease, backed by the Queensland Government.

Through the Help to Home program, the Queensland Government is looking to lease properties across Queensland, in return for:

- a 2-year lease
- 3 months' rent in advance, paid each quarter
- The property returned in the condition it was received, minus fair wear and tear and damage that the lessor can claim on insurance or is otherwise required to repair.

This arrangement is subject to the lease terms. Properties sought include vacant, newly built, stand-alone houses, single and multi-unit properties and properties new to the private rental market like short-stay, holiday homes or ones previously used as hotels, motels or for student accommodation.

Properties will be sublet to community housing providers who support people in housing need.

For guaranteed rental income, over the next 2 years, register your interest at Help to Home | Have your say about Queensland Government programs and initiatives (engagementhq.com)

Online banner

Image options

13.3.3 - Draft Whitsunday Open Space Strategy 2022

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Jonathan Cutting - Strategic Planner

AUTHORISING OFFICER: Neil McGaffin - Director Development Services

PRESENTED FOR: Decision

ATTACHMENTS

1. Draft Whitsunday Open Space Strategy 2022 [**13.3.3.1** - 56 pages]
2. Development Manual and Open Space Strategy Community Engagement Plan [**13.3.3.2** - 21 pages]

PURPOSE

For Council to consider public consultation of the draft Open Space Strategy 2022.

OFFICER'S RECOMMENDATION

That Council endorse the public consultation of the draft Whitsunday Open Space Strategy in line with the Whitsunday Open Space Strategy Community Engagement Plan.

BACKGROUND

Whitsunday Regional Council has never had Open Space Standards that consider the local context and has relied on limited direction from the Development Manual to guide the provision of open space through existing and proposed developments.

DISCUSSION/CURRENT ISSUE

The draft Whitsunday Open Space Strategy 2022 (the "Strategy") is a key policy document for the planning, development and management of Council controlled parks and open space. The vision of the Strategy is to promote health and wellbeing in the community in a cost-effective manner. This vision will be achieved through refined desired standards of service for open space provision, identification of gaps for future investments in open space and better utilisation of existing open spaces. Revised desired standards of service will be incorporated into an amendment to the Whitsunday Development Manual and the Local Government Infrastructure Plan (the "LGIP"). The Strategy also informs projects that are considered by the State within the LGIP amendment process.

The Strategy identifies a variety of key investments to deliver equity in recreational infrastructure across the region, including existing park upgrades and the acquisition of land for parks. The Strategy seeks to minimise the creation of small local parks and consolidate existing Recreation and Sport parks that have the greatest health and liveability benefits.

The Strategy informs amendments to the Whitsunday Development Manual to include a Design Guideline: Open Space. The design guideline seeks to facilitate functional parkland responsive to community needs, low maintenance initiatives, 'green' drainage corridors, revegetation areas and ensure underutilised open space is not accrued by Council through the development process.

The Strategy provides a brief overview of the current supply of Recreational and Sporting open space. All towns have sufficient open space supply to cater for growth to 2036, albeit the Greater Airlie Beach (GAB) catchment is nearing demand for a Regional Sport Park. Other recommended upgrades to the open space network identified within the Strategy include:

Recreation parks (subject to investigation and grant funding or future Council budgets):

- Investigate demand and location for a Cemetery to service GAB.
- Master planned upgrades of Mullers Lagoon Park (Bowen) and Cannonvale Lakes Park (underway).
- Investigate expanded trails at Dingo Beach - Hydeaway Bay and Collinsville (Carpet Snake Creek).
- Advocate for mountain bike trails at Flagstaff Hill - Cape Edgecumbe (Bowen), Mt Devlin (Collinsville) and Conway National Park.
- Fill gaps in key recreational infrastructure in each town to provide better service.
- Galbraith District Park's southern portion (8.7ha) upgraded by 2031-2032 to improve parkland accessibility.

Sport parks (items subject to investigation and grant funding or future Council budgets):

- Investigate location and staged development of a Regional Sport Park in the Proserpine to Airlie Beach Growth corridor.
- Bowen Sport Complex Masterplan upgrade and expansion.
- Wangaratta Bowls Club demand for additional green.
- Denison Park upgrade to field and amenities.
- Less Stagg Oval grandstand and clubhouse upgrade.
- Airlie Beach Running & Triathlon Clubhouse.

To mitigate consultation fatigue, it is recommended that Council undertake public consultation for the Strategy alongside the Whitsunday Development Manual Amendment in accordance with the Community Engagement Plan in Attachment 1.

STATUTORY/COMPLIANCE MATTERS

There are no statutory timeframes associated with this consultation.

STRATEGIC IMPACTS

Provide a fantastic experience for our community and visitors when using our open spaces, natural features, and facilities.

FINANCIAL IMPLICATIONS

Council has budgeted for public consultation on the Strategy.

CONSULTATION/ENGAGEMENT

Director Infrastructure Services
Manager Parks & Gardens
Manager Strategic Planning
Manager Development Assessment

External consultation has included collaboration with local sporting groups and sports park managers within the Open Space Sport Survey 2020. The upcoming public consultation aims to involve industry, community, sporting and general community stakeholders. Consultation will occur in accordance with the Community Engagement Plan in Attachment 2.

RISK ASSESSMENT

Communication risks associated with public consultation are identified within the Community Engagement Plan. Risks are associated with a lack of understanding of the purpose of the strategy, desired standards of service impact open space provision and future projects identified within the Strategy. Key messages and fact sheets seek to minimise these risks.

TIMINGS/DEADLINES

The Strategy is associated with the LGIP Amendment and needs to be endorsed by Council prior to undertaking public consultation on the LGIP, anticipated later this year.

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

Section 58 of the *Human Rights Act 2019* specifies required conduct for public entities when acting or making a decision. Sections 15-37 of the *Human Rights Act 2019* identifies the human rights a public entity must consider in making a decision. The human rights relevant to this decision are as follows:

- Section 19 – Freedom of movement.
- Section 21 – Freedom of expression.
- Section 24 – Right to own property and not be arbitrarily deprived of property.
- Section 27 – Cultural rights – generally – all persons with a particular cultural, religious, racial or linguistic background have the right to enjoy their culture, to declare and practice their religion and use their language.
- Section 28 – Cultural rights – Aboriginal peoples and Torres Strait Islander peoples.

This decision does not limit the above identified human rights.

ALTERNATIVES CONSIDERED

Options	Description	Positives	Negatives
Option 2	Not consult on the Open Space Strategy	Can adopt the Strategy sooner	Community feels disempowered and under consulted and don't support the Strategy's implementation
Option 3	Consult on the Development Manual Amendment and Open Space Strategy separately	Potentially more attention is paid to each item on consultation	Consultation fatigue means the community lack interest and don't engage in the consultation process

Option 4	Don’t adopt the Open Space Strategy	None	Continue with limited direction on open space provision

Whitsunday Open Space Strategy 2022

Whitsunday Regional Council

EXECUTIVE SUMMARY

The *Whitsunday Open Space Strategy 2022* (Strategy) is a key policy document for the planning, development and management of Council controlled parks and open space. The Strategy is a wholistic analysis of recreation and sporting needs of the community, informed by local surveys, existing recreation park usage and best practice open space planning. The vision of the Strategy is to promote health and wellbeing in the community. This vision will be achieved through refined desired standards of service for open space provision and identification of gaps for future investments.

The Strategy identifies a variety of key investments to deliver equity in recreational infrastructure across the Region and define anticipated timings for new parks to appropriately service the community. Into the future, the Strategy seeks to minimise the creation of local parks and consolidate existing District, Regional Parks and Sportsparks that have the greatest use, health and liveability benefits.

Supporting the Strategy and cost-benefit improvements, an accompanying design guideline will be created to set out best practice open space design to ensure underutilised spaces and maintenance costs in future development can be decreased. The design guideline will be included in SC6.8 Development Manual Planning Scheme Policy in a future amendment to the *Whitsunday Planning Scheme 2017*.

Title	Version No.	Date	Author	Reviewer	Approved by
Whitsunday Open Space Strategy 2021	1.0	09/09/2021	Jonathan Cutting	Shane Neville 01/11/2021	
Whitsunday Open Space Strategy 2021	2.1	16/11/2021	Jonathan Cutting	Shane Neville 10/11/2021	
Whitsunday Open Space Strategy 2021	3.0	19/11/2021	Jonathan Cutting	Neil McGaffin 19/11/2021	
Whitsunday Open Space Strategy 2022	3.1	24/06/2022	Jonathan Cutting	Shane Neville 24/06/2022	Neil McGaffin 28/06/2022
Whitsunday Open Space Strategy 2022	3.2	28/06/2022	Jonathan Cutting	Neil McGaffin 28/06/2022	Neil McGaffin 28/06/2022

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1. Introduction

The Whitsunday open space network is composed of over 129ha of recreation parks, 370ha of sporting facilities and 278ha of nature reserves, which service the health and wellbeing needs of the community. This Open Space Strategy seeks to analyse the Region's open space to identify gaps in service provision and generate regionally specific standards of service. Regionally specific standards of service will optimise the open space network to meet the needs of the community and inform the timing and location of future recreation or sportspark open space.

1.1. Strategy outcomes

This Open Space Strategy has been undertaken to achieve the following outcomes:

- Identification of future investments for parks to better meet community needs;
- *Design guideline* included within Whitsunday Development Manual, informing future open space design (supplementary document);
- regionally specific desired rates of provision (ha/1,000 persons) and desired accessibility standards for new subdivisions;
- focus on consolidating investments in major recreation parks whilst minimising the creation of underutilised local parks; and
- estimated timeframes for the delivery of new recreation or sportspark based upon growth projections and existing open space utilisation.

2. Planning for Recreation Parks

2.1. Recreation parks overview in the Whitsundays

The Region is well serviced by accessible parks and natural environments, such as beaches and National Parks, which encourage people to be physically active, support good mental health, promote the Whitsunday lifestyle and provide ecosystem services that benefit urban areas[1] [2]. The rate of provision, location, size and type of recreation parks, informed by Desired standards of service, are proposed to be identified within this Strategy to align with usage and best practice open space planning.

Types of recreation parks within the Whitsunday Region and their associated characteristics are categorised in **Table 1** below.

Table 1: Categories of recreation open space.

Recreation Park category	Characteristics
Linear Park	Narrow open space containing walking, cycling paths and basic supporting infrastructure to connect residential neighbourhoods to parks.
Local park	Small park containing limited recreational infrastructure to service the immediate residential neighbourhood.
District Park*	Medium – large park containing recreational infrastructure for 3 or more user groups.
Regional Park*	Large park containing recreational infrastructure for all user groups.
Nature Park	Recreational areas for appreciating nature, including bushwalks, lookouts, beaches or swimming holes.

* Parks serving a large catchment, defined as 'trunk infrastructure' within the Local Government Infrastructure Plan, that may utilise developer contributions for upgrades or new facilities.

2.2. Park usage trends in the Whitsundays

Factors influencing open space usage are reflective of the experience of the user, from the journey to arrive at the open space, natural amenity of the park, perception of safety, lighting, shade, proximity to traffic, park size and quality recreational infrastructure available to support desired activities of each user group. These factors are analysed below and inform proposed desired standards of service and future design guidelines within the Whitsunday Development Manual.

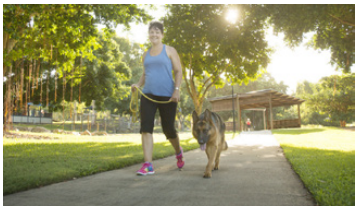
2.2.1 User group trends

Each user group desires a different experience; hence, it is important to consider the needs of each group in developing standards and designs for recreation parks in the Region[3]. **Table 2** below provides an overview of the factors that influence open space usage within each user group category, which will inform future design guidelines within the Whitsunday Development Manual.

1 (Astell-Burt, Feng, & Kolt, 2014)
2 (van den Berg , et al., 2015)
3 (Rozek, Dr Gunn, Gannet, Dr Hooper, & Professor Giles-Corti, 2018)

Table 2: User groups and examples of recreational needs.

User group	Examples of desired recreational activities	
Children and parents	Natural playgrounds Rocky boulders Safe and accessible creeks	
	Playgrounds Swings Waterparks	
	Shaded paths and shaded seating in view of kids play areas	
Adolescents & young adults (12 – 30)	Informal open space/sport fields	
	Climbing equipment Major playgrounds Large slides	
	Basketball rings Skateparks Pump track/mountain bike tracks Volleyball nets Goal posts Cricket nets	

Older adults (30+)	Designs that promote safety security, contact with nature and Opportunities for socializing, such as BBQ's and picnic facilities.	
	Fitness equipment	
	Shaded walking tracks Mountain Bike tracks	

2.2.2 Park sizes influence on usage

People are more physically active within larger parks, especially if there are features for various user groups, such as walking routes, picnic areas, playgrounds and high amenity natural areas. Larger higher quality recreation parks have attracting power to get people outdoors, with residents within 1.6km of such a park reported to be more likely to achieve the recommended 150 minutes of physical activity per week[4]. Having a larger, high-quality park within this distance may be more important for promoting sufficient health benefits than simply living close to smaller, lower-quality park. People become less likely to walk 400m to a park if it is less than 1.5ha with limited recreational equipment. These considerations inform:

- standards of service for Regional and District recreation parks being of adequate size to accommodate a range of amenities to support activities for all user groups and attract usage;
- the capacity of the Region's existing high amenity and embellished Regional recreation Foreshore parks to attract usage from a broader catchment; and
- standards of service and a network approach that focuses investments more on Regional and District parks than smaller local parks.

2.2.3 Park embellishments and design influence on usage

Quality *key recreational infrastructure* is a factor that enhances park attractiveness for users and encourages outdoor exercise[5]. *Key recreational infrastructure* items are distributed within each Township but not in every park, based upon catchment analysis and historic community surveys, this includes:

- Major attraction playground, exceeding a cost of $500,000, or three major playgrounds/ climbing equipment in close proximity which together cost over $500,000;
- Basketball court;
- Disability or special needs recreational equipment;
- Skate parks or similar;

4 (Sugiyama, Francis, Middleton, Owen, & Giles-Corti, 2010)
5 (Jansson, 2010)

- Pump track;
- Water park or lagoon;
- Goal posts;
- Cricket nets; and
- Dog parks.

Aside from infrastructure, park layout is also important. Factors that discourage open space usage include, poorly maintained areas, low perception of safety, limited or uninteresting amenities and poor or unsafe accessibility. Parks with trails are more likely to be used for physical activity than those without trails, with usage relative to the amenity of the trails being within vegetated areas, water features or pleasant views[6].

These findings inform:

- **Appendix 1 – Catchment analysis** and **Section 5 - Recommendations** which explore the location and gaps in the open space network in providing *key recreational infrastructure;* and
- *Design guideline* assessment benchmarks for future parks within the Whitsunday Development Manual.

2.2.4 Park accessibility influence on usage

Recreation park accessibility's influence on usage is dependent on factors, such as the attractiveness of the recreation park, safety and amenity of the journey and distance from home. For example:

- walking to a park is more likely for residents within a neighbourhood that has an adequately sized and embellished park within 400m or 5 minutes' walk, with walking to a park less likely at distances over 800m[7];
- an attractive park accessed by well vegetated, high amenity and safe linear parks, increases the likelihood of walking a distance of up to 1.6km[8];
- The Region's hot and wet climate may impact desirability of walking to parks for older adults and parents with children; and
- provision of quality open space accessible by walking or cycling is particularly important in areas of higher density where backyards are smaller[9].

In practical outcomes, these findings inform accessibility standards of service and highlight the need to ensure new subdivisions, in proximity to Nature, District or Regional parks, include desirable pedestrian connections or vegetated linear parks to enhance the attractiveness of walking or cycling. **Section 5.3 Planning Scheme amendments** and future design guidelines within the Whitsunday Development Manual will facilitate this.

2.2.5 Park provision influence on usage

The Whitsunday recreational lifestyle is not limited to recreation parks, with highly accessible beaches, National Parks, bush walks and maritime activities meeting the needs of the community. Despite this, the park network provides 4.57ha/1,000 persons within urban areas, which is significantly more on average than other Regional and metropolitan Councils and exceeds the common standard of 2.83ha/1,000 persons (which includes sporting facilities) defined as the benchmark Australia wide[10]. On this basis, rate of provision standards of service may justifiably be reduced into the future.

6 (Sugiyama, Francis, Middleton, Owen, & Giles-Corti, 2010)
7 (Australian Research Alliance for Children & Youth, 2009)
8 (Sugiyama, Francis, Middleton, Owen, & Giles-Corti, 2010)
9 (Australian Research Alliance for Children & Youth, 2009)
10 (J.Veal, 2013)

2.3. Historic community surveys

Open space analysis from past surveys of Works for Queensland Grant park upgrades in Collinsville, Proserpine, Bowen, Cannonvale, and Jubilee Pocket identified common themes for how the community utilises open space, and common elements they consider important to their recreational use of parks. **Table 3** provides a summary of consultation outcomes, common activities and additional elements sought in recreation parks, which helped define *key recreational infrastructure* that should be equally distributed throughout Townships. This information will guide design benchmarks set out within future design guidelines and embellishments required for trunk District or Regional parks within the *Local Government Infrastructure Plan* (LGIP).

Table 3: Desired activities and design needs from past park upgrade consultations.

Common activities	Desired recreational infrastructure requested in Parks
• Use of play equipment; • Socialising; • Walking, cycling and informal exercise; • Grassed kick about space; • Visiting the beach; • Formal exercise (i.e. group classes, Parkrun); and • Off-leash dog enclosures.	• More shade shelters and trees; • More shaded seating, particularly in proximity to playgrounds for parents; • Extended and connected walking paths through parks; • Toilet amenities in major parks; • More activities for older kids, such as climbing/ parkour and skateparks; and • Bike tracks.

2.4. Existing and proposed recreation parks desired standards of provision

Existing desired standards of service for recreation open space, defined by the LGIP, are based on general metropolitan centre standards that fail to take into consideration the Region's access to National Parks and Beaches, function of the existing open space network or local climate.

Proposed standards below are based upon on the unique Regional context, community usage of the existing open space network and analysis within **Section 2.2 – Park usage trends**.

Table 4: Existing desired rate of land provision for public parks.

Infrastructure item	Rate of provision (Ha/1000 people)	
Recreation park	District	Regional
	0.5	0.8

Table 5: Proposed desired rate of land provision for public parks, changes in red.

Infrastructure item	Rate of provision (Ha/1000 people)		
	Local	District (trunk)	Regional (trunk)
Recreation park	0.4	0.5	0.6

Table 6: Existing desired accessibility standards for public parks.

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

Table 7: Proposed desired accessibility standards for public parks, changes in red.

Infrastructure item	Accessibility standard to urban residential areas			
	Local	District (trunk)	Regional (trunk)	All parks
Desired standard	400m	1.6km	3km	As defined*
% residents within proximity	50%		75%	90%*
* Editor's note – 90% of residents are either within 400m of a Local park, 1.6km of a District park or 3km of a Regional recreation park.				

Table 8: Existing desired size of public parks.

Characteristic	Recreation park	
	District	Regional
Minimum (desired) size (Ha)	4	13
Shape of land	Preferred square to rectangular aspect ratio no greater than 2:1	
Minimum desired flood immunity (area)	20% > Q50 10% > Q100	50%> Q50 20% > Q100
Minimum desired grade	Maximum grade 1:10 for 80% of park, 1:14 where possible	Average grade 1:20, 1:50 for kick-about areas
Road frontage	30-50% of park perimeter to have direct road frontage, preferably on a collector road	

Table 9: Proposed desired size and characteristics of public parks for community facilities, changes in red.

Characteristic	Recreation park			
	Linear	Local	District (trunk)	Regional (trunk)
Minimum (desired) size (Ha)	N/A	0.08	2	4
Shape of land	No portion narrower than 10m	No portion narrower than 20m	Fits at least one 20m x 20m grassed area within, above Q50.	
Diversity of embellishments for user groups *	N/A	Embellishments for at least 1 of 3 user groups	Embellishments for at least 2 of 3 user groups	Embellishments for all user groups
Minimum embellishments	Embellishments provided in accordance with Whitsunday Development Manual DG 11.5			
Minimum desired flood/ Storm tide immunity (area)	N/A	70% > Q50	50% > Q50 20% > Q100	
Minimum desired grade	Maximum grade 1:8	Maximum grade 1:10 for 80% of park, 1:14 where possible	Maximum grade 1:10 for 80% of park, 1:14 where possible	Average grade 1:20, 1:50 for kick-about areas
Road frontage	N/A	At least 20m of direct road frontage, fronting multiple roads where possible	30-50% of park perimeter to have direct road frontage, preferably on a collector road	

*User groups and embellishments for each will be defined within Whitsunday Development Manual DG 11.5 and **Table 2.**

2.4.1 Strategic intent

Proposed Desired Standards of Service (DSS) to be included in the next LGIP amendment:

- take into consideration access to National Parks and Beaches to justify a reduced rate of recreation park provision, compared to larger cities;
- place greater importance on Regional and District parks than Local parks, as they have a greater attraction value that encourages people to get outdoors, but also walk/cycle greater distances from home;
- support **Section 6.3 - Planning Scheme Amendments,** by promoting good neighbourhood design with linear parks rather than local parks as they are more functional in getting people outdoors and encouraging healthy habits. Proposed amendments limit the creation of new local parks as they are generally underutilised, less effective in meeting the recreational needs of the community and have a relatively high cost to maintain;
- align accessibility standards with best practice open space planning and the layout of the existing open space network to encourage walking/cycling to parks and good neighbourhood design; and
- take a more holistic approach to open space provision, ensuring that up to 90% of residents in urban areas are within defined accessibility standards of a park, as per **Table 7**.

The existing open space network, under the proposed DSS, meets rates of provision and recreation park accessibility standards to 2036, with new parks anticipated to service demand beyond 2036. **Appendix 1 - Catchment analysis** defines how each catchment performs based on these proposed DSS to 2036.

3. Whitsunday Sportspark Analysis

3.1. Sportspark overview in the Whitsundays

The Whitsunday Region is well serviced by several District and Regional sportsparks, that provide facilities for mainstream sports whose competitions are spread locally, between Towns and to neighbouring Regions. Sports facilities cultivate an active and healthy community that offers benefits to liveability, health, social inclusion, community connectedness, economic activity and community pride in the local talent that is exhibited[11]. In Regional or remote communities, sport facilities are essential spaces not only for sport, but as gathering places for a broad range of events, celebrations, meetings and disaster responses, connecting people across dispersed settlements.

This Whitsunday Sportspark Analysis has been informed by the *Open Space Sport Survey 2020*. The survey sought to collaborate with local sports clubs, identify needs and aspirations, and consider diversification of these community facilities to help manage disaster responses and events that foster tourism expenditure in the Region.

Sports facilities in the Whitsundays can be categorised into six groups:

Table 10: Sportspark categories.

Sportspark category	Characteristics
Traditional sportsparks	Sports facilities that cater to traditional field and court sports which can be shared between sports.
Lawn sports, courts and golf grounds	Sports that require specific sports grounds that can't be shared between sports, such as bowls clubs, tennis, croquet and golf.
Aquatic facilities	Council owned and private commercial swimming pools or waterparks.
High impact facilities	Sports that are too noisy for urban areas or require large amounts of space to function effectively, such as motorsports and gun clubs.
Indoor facilities	Facilities for indoor sports, often court sports.
Ocean based	Clubs where location adjoining the ocean is essential, such as sailing.

3.2. Sportspark usage trends in the Whitsundays

Factors influencing sportspark usage are reflective of the culture, demographic and geography of a Regional area, which differs significantly to metropolitan centres. Regional areas have lower population density, which impacts on sports diversity, field usage, quality competition and creates barriers to participation through increased travel. Aspects that are outside the scope of this report affecting sportspark usage include: low socio-economic status; programs supporting participation (i.e. coaching clinics); inclusive club culture; lack of time; and interpersonal themes, such as family support, particularly in relation to children or adolescents relying on parents for travel [12].

3.2.1 Sport types

Regional or rural areas generally have higher participation in mainstream team sports. Team sports are a key social anchor in regional or remote areas, with limited diversity in facilities to support non-mainstream sports, participation in fewer diversity of sports naturally occurs. The Whitsunday Region reflects these regional trends, albeit non-mainstream sports like sailing and equestrian have greater participation rates than average due to the culture and coastal influence. This informs future sportsparks design and DSS that will likely support growth in mainstream team sports, whilst non-mainstream sports may be reliant on sharing facilities to establish.

11 (KPMG, 2018)
12 (Eime, Payne, Casey, & Harvey, 2008)

3.2.2 Sportspark accessibility

Travel is identified as a barrier to sport participation, particularly in remote or rural areas where accommodation and fuel costs accumulate [13]. This is a challenge for the Region, where low population density limits the creation of competitive local competitions and participation in non-mainstream sports. In the Whitsundays, it results in geographically distributed competitions requiring travel to other Towns and other Regions, such as Mackay and Townsville. This is supported by local survey data, where 85% of respondents identified that games are both within and outside of Regional boundaries. This identifies that whilst travel is a barrier, there is greater acceptance for travelling for sport than metropolitan communities. This consideration informs accessibility standards for Regional sportsparks that may serve a larger catchment than just the local Town.

3.2.3 Sportspark provision and design

The population-standardised level of facility provision (ha/1,000 persons) varies widely between Local Government Areas (LGA's) in Rural, Regional or Metropolitan areas, corresponding to population density, demography and culture. The literature suggests that Regional areas generally have higher sport participation than Metropolitan areas, despite lower rates of persons per field space as a result of sparse population distribution [14] [15] [16] [17]. Schools also provide essential sporting grounds for junior sporting groups, which are considered to be underutilised in the Region's sporting network.

A cost-efficient way to overcome travel barriers and consolidate persons per field space is by favouring Regional sportsparks that are large and cater for a diversity of sports and user groups, such that families with multiple children have a higher chance of training and games occurring at the same venue. Large Regional sportsparks better support high-quality infrastructure, which can be utilised between multiple clubs, support the emergence of non-mainstream clubs and create better spaces for large sport events.

3.3. Whitsunday Open Space Sport Survey 2020

The *Open Space Sport Survey 2020* included responses from 16 clubs, 2 sportspark managers and 5 participants associated with a sporting club in the Region. Note, survey responses account for 30% of the 70 sporting stakeholders requested for comment so only form a partial picture of the sporting trends and demands in the Region. Key statistics from survey participants included:

- Competition spread often involved inter-region travel, with 64% identifying that more than a quarter of games are outside of the Region whilst 36% had less than a quarter of games outside of the Region;
- 64% of respondents identified that their sporting facilities were adequate, 28% identified that they were inadequate and 7% identified they were very inadequate;
- Participation is generally stable or slowly growing in the majority of clubs, in line with population projections;
- Growth in juniors is strongest within respondents from Whitsunday Weightlifting, Whitsunday athletics, Bowen Junior Rugby League, Netball and Touch Football;
- Growth in seniors is strongest within Whitsunday Running Club, Netball and Whitsunday Touch;
- Sportsparks respondents catered for juniors more so than seniors in total;
- Highest participation rates are within Junior Soccer, Junior Rugby League, Rugby Union, Netball, Touch Football and Whitsunday Sailing Club; and
- Whitsunday Sportspark respondents in Jubilee Pocket identified fields are near capacity, despite recent augmentations to fields.

13 (Eime, Payne, Casey, & Harvey, 2008)
14 (Sport & Recreation Spatial, 2014)
15 (Eime, et al., 2017)
16 (Sport & Recreation Spatial, 2014)
17 (Eime, Charity, Harvey, & Payne, 2015)

Town specific outputs from the survey, including facilities in demand, gaps and aspirations of survey respondents are elaborated on within **Appendix 1 – Catchment analysis**.

3.4. Existing and proposed sportspark desired standards of provision

Existing desired standards of service for sportspark are based upon general metropolitan centre standards and defined by the *LGIP*. Proposed standards below seek to tailor DSS to the Region's existing sportspark network, considering local factors, including participation in sport, capacity of existing facilities, potential for intensification of existing facilities, future population growth and desires of the population to diversify sporting facilities available for less mainstream sports[18].

Table 11: Existing desired standards of service for accessibility to public trunk sportsparks.

Infrastructure item	Accessibility standard (km)[1]	
	District	Regional
Sportspark	5	10
Notes: 90% of population should be within this distance of a facility		

***Table 12: Proposed desired standards of service for accessibility to public trunk sportsparks.* (Changes in red)**

Infrastructure item	Accessibility standard (km)[1]	
	District	Regional
Sportspark	10	25
% residents within proximity	90% of urban residents are either within 10km of a District sportspark or 25km of a Regional sportspark.	

Table 13: Existing desired standards of service for rate of land provision for public trunk sportsparks.

Infrastructure item	Rate of provision (Ha/1,000 people)	
	District	Regional
Sportspark	1.2	1.0

***Table 14: Proposed desired standards of service for rate of land provision for public trunk sportsparks.* (Changes in red)**

Infrastructure item	Rate of provision (Ha/1,000 people)		
	District	Regional	All trunk sportspark
Sportspark	0.6	1.0	1.6

Table 15: Existing desired standards of service for size of public trunk sportsparks.

Characteristic	Sportspark	
	District	Regional
Minimum (desired) size (Ha)	6	18
Shape of land	Square or rectangle to maximise playing field area	
Minimum desired flood immunity (area)	Fields and courts > Q50 Built facilities > Q100	
Minimum desired grade	Maximum grade of 1:80 for all playing surfaces	
Road frontage	25-50% of the park perimeter to have direct road frontage	

18 (Eime, et al., 2017)

Table 16: Proposed desired standards of service for size of public trunk sportsparks. **(Changes in red)**

Characteristic	Sportspark	
	District	Regional
Minimum (desired) size (Ha)	6	18
Shape of land	Square or rectangle to maximise playing field area	
Minimum diversity of clubs/facilities	3	5
Minimum desired flood immunity (area)	Shelters, grandstands, fields and courts > Q50 All other built structures > Q100	
Minimum desired grade	Maximum grade of 1:80 for all playing surfaces.	
Road frontage	Minimum 25% of the park perimeter to have direct road frontage	

3.4.1 Strategic Intent

Proposed Desired Standards of Service to be included in the next LGIP amendment:

- preference larger Regional facilities over District facilities in rates of provision, as large sized facilities are preferred for families required to travel greater distances for sport to allow more incidences of cross-over in weekday trainings or weekend sport;
- increased accessibility standards, aligning with expectations to travel for sport in a regional setting;
- seek to consolidate sportspark land to encourage expenditure on high-quality infrastructure rather than excess spend on sporting land. High-quality infrastructure provides conditions to create competitions/events, enable the emergence of non-mainstream sport and attract more participants; and
- aim to increase the use of schools land for junior sport, to alleviate the need for District sportspark land.

4. Catchment analysis

4.1. Recreation parks catchment analysis

Council manages approximately 3.34ha/1,000 persons Region wide or 4.57ha/1,000 persons within urban areas. This value is significantly more on average than other Regional and metropolitan Councils and exceeds the common standard of 2.83ha/1,000 persons (which includes sportsparks) defined as the benchmark Australia wide[19]. No additional recreation parks are anticipated to service growth in the next 15 years. This section provides a summary of detailed analysis and mapping for each Town catchment within **Appendix 1 - Catchment Analysis.**

***Table 17: Provision and accessibility of all recreation parks* compared in the Region.**

Town	Urban Accessibility (% in proximity to a park's catchment) [1]	Supply / Deficit (ha) of existing trunk park supply at 2036 relative to DSS rate of provision [2]
Bowen	90%	District Parks + 9.66 Regional Parks + 14.73
GAB	98%	District Parks - 1.14 Regional Parks +0.32
Proserpine	100%	District Parks + 0.54 Regional Parks - 0.29
Collinsville	97%	District Parks + 0.89 Regional Parks + 2.05

[1] Percentage of urban residential blocks in the priority infrastructure area within proximity to any one of the following Local park - 400m, District park - 1.6km and Regional park - 3km (as per accessibility standards defined by **Table 7**.)

[2] DSS rate of provision for trunk recreation parks includes, District park - 0.5 ha/1,000 persons - Regional park - 0.6 ha/1,000 person.

[3] Calculations for Bowen do not include the private Bowen Lakeside Local Park that is 6.9ha in Bowen South.

All towns are oversupplied with recreation parks that meet DSS for anticipated growth until 2036, as shown by **Table 17**. No further parks are proposed in the Region until 2036, however, the following park upgrades or investigations are identified in **Section 6.1 - Schedule of works and future projects and Appendix 1 - Catchment Analysis**:

- Investigate demand and location for a new Cemetery to service the GAB;
- Masterplanned upgrades of Mullers Lagoon Park (Bowen) and Cannonvale Lakes Park;
- investigate expanded trails at Dingo Beach - Hydeaway Bay, Carpet Snake Creek(Collinsville), Flagstaff Hill - Cape Edgcumbe (Bowen) and Conway National Park for Mountain Bikes;
- fill gaps in *key recreational infrastructure* in each Town to better service the population; and
- Galbraith District Park's southern portion (8.7ha) should be upgraded to a District park standard by 2031-2032 to improve recreation park accessibility and improve District Park rate of provision at 2036 from -1.14ha to +5.62ha above DSS.

19 (J.Veal, 2013)

4.2. Sportsparks catchment analysis

Bowen, Collinsville, Gloucester and Proserpine are well catered for by sportsparks based on rate of provision as shown by **Table 18,** in comparison to a common standard of 2.83ha/1,000 persons (which includes recreation parks) defined as the benchmark Australia wide. It is anticipated that a Regional Sportspark, which may be developed in stages, is required in the next 5-10 years within Cannonvale or Cannon Valley, to better cater for the Greater Airlie Beach (GAB) sporting needs into the future. However, new sportspark development will depend on LGIP project priorities, school development, funding availability and grants.

As a result of the Whitsunday's Regional setting and lower population than comparative Regional centres and metropolitan areas, there are gaps in sporting clubs and facilities that may be considered in future sportsparks. **Table 19** highlights Regional gaps in Australia's most popular sports that may be considered for future investments or sporting group lobbying.

Table 18: Provision and accessibility of all sportsparks/facilities, excluding golf and motorsports.

Town	Urban Accessibility (% in proximity to a trunk sportspark's catchment) [1]	Supply / Deficit (ha) of existing trunk sportspark supply at 2036 relative to DSS rate of provision [2]
Bowen	100%	District - 0.55 Regional + 12.79
GAB	100%	District - 4.25 Regional - 23 (Catchment shared with Proserpine)
Proserpine	100%	District +13.06 Regional - 23 (Catchment shared with GAB)
Collinsville/Scottville	100%	District +6.92 Regional -1.75

[1] Percentage of urban residential blocks in the priority infrastructure area within proximity to any one of the following District sportspark - 10km or Regional sportspark - 25km.

[2] DSS rate of provision for trunk sportsparks includes, District sportspark - 0.6ha/1,000 persons - Regional sportspark - 1ha/1,000 person.

Table 19: Gaps in most popular sports within the Region.

Location	Gaps in sport clubs	Gaps in sport facilities
All of Region	Field hockey Baseball/Softball Basketball Water polo Volleyball	Field hockey Baseball/softball Mountain Biking (limited facilities)* Multi-purpose indoor sport facilities*
Specific to Bowen and Collinsville Region	Senior soccer Senior Rugby league AFL BMX	BMX track
Specific to Proserpine & GAB Region	Shooting/Archery sports Athletics facilities*	Shooting/Archery sports

* Identified within Whitsunday Open Space Survey and Mountain Bike Survey undertaken in 2020.

All towns except for GAB are oversupplied with sportsparks with existing facilities meeting DSS for growth anticipated to 2036, as shown by **Table 18**. Where deficits in one type of sportspark exists in Bowen, Collinsville and Proserpine, sufficient sporting facilities in total with excellent accessibility

ensure that the population is adequately serviced to 2036 in these catchments.

Whitsunday Sportspark (Jubilee Pocket) has been identified as near capacity, with population growth triggering demand for a new Regional sportspark that may service the Proserpine and GAB catchment until beyond 2036 (refer to **Appendix 1 - Catchment Analysis**). Investigations should commence to identify a suitable location and design for the proposed Regional sportspark for development in stages as population demands, considering gaps in popular sports and demand for infrastructure among local sporting clubs identified within the *Open Space Sport Survey 2020.*

Other sporting infrastructure upgrades to consolidate existing sportsparks have been identified within **Section 6.1 – Schedule of works and Future projects** and **Appendix 1 - Catchment Analysis** for consideration in future investigations and grant applications, including:

- Cannon Valley Regional Sportspark;
- Bowen Sport Complex Masterplan upgrades and expansion;
- Wangaratta Bowls Club additional green;
- Denison Park upgrades to field and amenities;
- Less Stagg Oval grandstand upgrade (complete) and clubhouse renewal; and
- Airlie Beach Running & Triathlon Clubhouse.

5. Maintenance and Open Space Design

5.1. Maintenance costs

The average cost of maintaining open space has not significantly changed over the past 4 years, averaging approximately $150 per person across the Region. Proserpine and Bowen generally have a higher cost, averaging $182 and $159 per person, whilst Cannonvale and Collinsville average $131 and $142 per person.

Compared with Ballina, Byron, Clarence, Douglas, Gold Coast and Noosa Councils, general maintenance activities, such as BBQ cleaning, table cleaning, street cleaning, bin emptying and toilet cleaning, occurred on an equally frequent basis. Activities that Whitsunday Regional Council had a far higher maintenance service than all other Councils included mowing/cutting street verges, pruning of palms, pruning of shrubs and pruning of street trees. This suggests an area of potential improvement may include facilitating new development to select more appropriate open space design that has a lower maintenance cost, whilst still providing amenity to high profile locations. Design benchmarks, principles and landscaping techniques such as this will be included within a future design guideline that will form a part of the *Whitsunday Development Manual* as a future amendment.

5.2. Maintenance issues & design response

Analysis of Open Space maintenance in comparison to other Councils and internal surveys of have revealed the following maintenance issue themes that aim to be rectified within Whitsunday Development Manual Amendment to include DG 11 - Design Guidelines - Parks and Open Space.

Table 20: Maintenance themes to be rectified within** design guideline **or future strategies.

Maintenance issue	*Design guideline* response
High maintenance shrubs	In new development or re-planting, use native grasses and low maintenance groundcovers unless otherwise desired in a high-profile area.
Coconut and Palm tree maintenance	Minimise new coconut and palm trees unless within high profile areas that seek to create a tropical sense of place.
Tree selection	Select native trees that are locally endemic, with a bias toward those that are more resilient to cyclones. Avoid plants requiring frequent de-seeding/pruning. Utilise plants that are hardier and provide the desired function i.e. shade or amenity.
Weeding garden beds	Define best practice garden bed design, including edge species composed of native grasses or ground covers that stifle weed growth on the edges and create a barrier for weeds entering the garden. Utilise a combination of fast-growing pioneer and climax tree species to provide shading and canopy cover to further reduce potential for weed growth.
Mowing underutilised open space	Sell, lease for community uses or re-vegetate existing underutilised open space areas. In new development, ensure open space provided has a function or define re-vegetation standards that reduce maintenance needs when handed to Council.
Whipper snippering large drainage corridors	In new development, avoid designs involving grassed slopes greater than 1:4 through earthworks or re-vegetating as conservation area or planted swale. Future strategies identify existing whipper snippered slopes for re-vegetation as swales or conservation areas where possible and develop best practice drainage corridor design utilising vegetation for stability and reduced weeding requirements.
Mowing between bollards	Ensure bollards are of adequate widths to permit a mower to efficiently move between, whilst keeping out vehicles.
Mowing small patches of grass	Identify small patches of grass not within a broader consolidated mowing regime and plant out with low maintenance ground covers. Avoid such patches in new developments.
High maintenance furniture or expensive asset replacement costs	Define expectations in material, design and type for all embellishments for consistent themes and reduced asset maintenance requirements.
Efficiency in service delivery	Future strategies identify smart cities infrastructure that may improve efficiency of service delivery, such as bin sensors in high use areas, smart irrigation controllers and data collection on park usage to refine levels of service.

6. Recommendations

6.1. Schedule of works and Future projects

The following parks and open space projects have been identified as gaps in the open space network within recreational and sportspark catchment analysis. These projects will be considered for future grant applications, capital works budgets and the Local Government Infrastructure Plan (LGIP) Schedule of Works. Projects do not include new minor assets, such as lighting or general asset replacement.

6.1.1 Bowen

***Table* 21:** Proposed parks projects within Bowen.

Timing	Project/Location	Estimated cost	Funding	Justification
2023-2024	Mullers Lagoon Park Masterplan	$70,000	Local Government Infrastructure Plan or Grant	This central park lacks embellishments for various user groups. Its high amenity has potential for enhanced usage through the creation of new key recreational infrastructure for adolescents and upgraded walking track that features more shade trees, seating areas, lighting and public art.
2024 - 2029 (Staged delivery)	Mullers Lagoon Park Upgrade	(Subject to Park Masterplan)	Local Government Infrastructure Plan or Grant	
2022	Case Park Walking Track	$383,500	Works for Queensland Grant funding	Upgrade and renewal required to pathways within Case Park.
Subject to design and grant funding	Hansen Park disability and/or sensory playground	TBD	Subject to grant funding	This key recreational infrastructure has been identified as gap in the network and could effectively be integrated into this Regional Park.
Subject to investigation	Cape Edgecumbe / Flagstaff Hill / Kings Beach nature trails	TBD	Subject to grant funding	Investments in Flagstaff Hill Cultural Centre may support additional usage of nature trails starting from the cultural centre and connecting to Bowen's Beaches at Cape Edgecumbe.
Subject to design and grant funding	Denison District Sportspark upgrades to lighting, field enhancements and amenities	$718,000	Subject to grant funding	Identified as in demand during *Open Space Sport Survey 2020.*
Subject to design and grant funding	Bowen Sport Complex Masterplan	TBD	Local Government Infrastructure Plan or Grant	Identified as in demand during *Open Space Sport Survey 2020.*
Subject to design and grant funding	Bowen Sport Complex car parking and traffic improvements.	TBD	Subject to grant funding	Identified as in demand during *Open Space Sport Survey 2020.*
Subject to investigation into need	Wangaratta Bowls Club additional green	$169,000 - $253,000	Subject to grant funding	Identified as in demand during *Open Space Sport Survey 2020.*

6.1.2 Proserpine

Table 22: Proposed parks projects within Proserpine.

Timing	Project/Location	Estimated cost	Funding	Justification
Subject to design and grant funding	Keith Johns Estate recreational infrastructure for youth	$40,000	Subject to grant funding	Limited Key Recreational Infrastructure for youth age 12 – 17 in the eastern portion of Proserpine. This young demographic is one of the most prominent in Proserpine.
Subject to design and grant funding	Halpannel Park disability or sensory playground key recreational infrastructure	TBD	Subject to grant funding	This key recreational infrastructure is not within Proserpine. Pioneer Park centrally located and able to cater for visitors, alongside quality disability friendly picnic infrastructure.
Clubhouse subject to design and grant funding	Less Stagg Oval Grandstand (complete) and Clubhouse renewal	Grandstand Complete Clubhouse TBD	Subject to grant funding	Identified as in demand during *Open Space Sport Survey 2020.*

6.1.3 GAB

Table 23: Proposed parks projects within GAB.

Timing	Project/Location	Estimated cost	Funding	Justification
Ongoing	Conway Mountain bike trails facilitation and lobbying	TBD	Subject to grant funding	Council to lobby for and facilitate Mountain bike expansion in the Region.
2021 - 2022	Cannonvale Lakes Masterplan upgrades	$3.2m	Grant funding (Works for QLD 2020)	Masterplan complete, upgrade will enhance usage of this District park.
2022	Cannonvale Lakes Water Management Plan	TBD	Council budget	Develop a strategy to cost efficiently maintain the water quality of Cannonvale Lake.
Subject to investigation	New Cemetery Investigation	TBD	Subject to grant funding / Annual budget	GAB is a fast growing area with many residents having lived in the Town for a significant portion of their lives.
2026	Cannon Valley Regional Sportspark Investigation & Masterplan	$75,000	Subject to grant funding / LGIP	Required to meet Proserpine/ GAB sporting demands. Determine preferred location, co-located with School or on Council owned land at Mt Marlow.
Subject to investigation	Cannonvale Lakes Linear Parks upgrades & re-vegetation projects	Subject to investigation	Subject to grant funding / Annual budget	Re-vegetated linear parks, including lighting and pathway upgrades, within existing drainage corridors will enhance accessibility and attraction of walking/cycling to Cannonvale Lakes.

Subject to investigation	Running & Triathlon Clubhouse	$322,000	Subject to grant funding	Identified as in demand during *Open Space Sport Survey 2020.*
2027 - 2028	Cannonvale / Cannon Valley Regional Sportspark construction (Stage 1)	Subject to investigation (may be delivered in stages as demand requires)	Subject to grant funding / LGIP	Required to meet the sporting needs of the community, including multi-purpose indoor facility, netball courts, traditional fields, athletics track, change rooms and criterium cycle track, as cost and consultation guides.
2031 - 2032 Subject to population growth	Galbraith District Park south Masterplan and construction	TBD	Subject to grant funding / LGIP	Required to service the accessibility and recreational needs of the future Cannon Valley growth corridor.

6.1.4 Collinsville & Scottville

Table 24: Proposed parks projects within Collinsville & Scottville.

Timing	Project/Location	Estimated cost	Funding	Justification
2021-2022	Collinsville Swimming Pool amenities upgrade and waterpark	$1,500,000	Grant funding (Works for QLD 2021)	Identified as priority projects for the community within the *Shaping Collinsville's Future* consultation. Identified within Collinsville Masterplan.
2022-2023	Darcy Munro Park Pump Track	$300,000	BRAVIS Grant Funding	
Complete	Scottville and Darcy Munro Park Playground Upgrades	$331,000	Grant funding (Works for QLD 2021)	
2021-2022	Collinsville Youth Coalition tennis court refurbishment and additional seating/shade around skate bowl.	$123,570	Grant funding (Works for QLD 2021)	
Subject to design and grant funding	Collinsville Youth Coalition car park upgrade	$298,570	Subject to grant funding	
Subject to design and grant funding	Collinsville Shared Circuit	$2,155,000	Subject to grant funding	Required to enhance pedestrian connectivity between schools, residential areas and existing parks through new pathways and shade trees that encourage walking. Identified within Collinsville Masterplan.
Ongoing	Mt Devlin Mountain bike trails facilitation and lobbying	TBD	Subject to investigation and grant funding	Council to lobby for and facilitate Mountain bike expansion in the Region.

6.1.5 Dingo Beach and Hideaway Bay

Table 25: Proposed parks projects within Dingo Beach and Hideaway Bay.

Timing	Project/Location	Estimated cost	Funding	Justification
Subject to design and grant funding	Dingo Beach to Hideaway Bay nature walk Subject to investigation and costing	Subject to design	Subject to grant funding	Create new nature trails in a high visitor and high amenity area.

6.2. Planning Scheme amendments

The following amendments to the *Whitsunday Planning Scheme 2017* are recommended to facilitate the strategic intent of this Open Space Strategy.

- Amendment of the LGIP to include Desired Standards of Service defined within **Section 2.4 and Section 3.4 - Existing and proposed desired standards of service;**
- Inclusion of *DG 11 - Design guideline - Parks and Open Space* in the Development Manual Planning Scheme Policy, including:
    - best practice park and open space design;
    - design guidance for drainage corridors, including re-vegetation and low maintenance design outcomes; and
- Amendments to the Reconfiguring a lot code and Landscaping code, as below.

6.2.1 Reconfiguring a lot code

The following principles will guide amendments to the Reconfiguring a lot code:

Lot layout and neighbourhood/estate design

- Development promotes the activation of recreation parks through road layout and subdivision design that minimises the creation of lots that back onto recreation park;
- Drainage corridors are designed with the aim of minimising maintenance by restoring natural ecosystems, and where appropriate, utilising these corridors as linear parks to connect to existing or future parks; and
- Residential subdivision design seeks to promote linear parks that channel toward existing or future Local, District or Regional recreation park.

Public parks and open space infrastructure

- Local parks are only provided in development where:
    - density exceeds 30 persons per ha, across a total of 100 dwelling units;
    - The development is located in an area that is outside of the accessibility catchment of existing or future recreation parks defined within the LGIP;
    - Local parks are designed in accordance with the outcomes identified in this Strategy;
- Open space that will become Council assets are designed in accordance with amendment to include *DG 11 - Design guideline - Parks and Open Space* in the Development Manual Planning Scheme Policy.

Proposed amendments support the proposed DSS that promote the use and enhancement of District

and Regional parks to encourage social and health benefits in the community. In order to consolidate resources in high quality District and Regional parks, linear parks should be created to promote their accessibility by walk / cycle and local parks should be avoided. Local parks are only appropriate alongside high density residential areas that are not in proximity to existing or future recreation park.

6.2.2 Landscaping code

The following principles will guide amendments to the Landscaping code:

- Buffer areas, conservations areas, drainage corridors, garden beds, entrance statements and re-vegetation occurs in accordance with amendment to include *DG 11 - Design guideline - Parks and Open Space* in the Whitsunday Development Manual Planning Scheme Policy;
- The type and location of plantings occurs in accordance with *DG 11 - Design guideline - Parks and Open Space* and *Whitsunday Planning Scheme 2017,* SC6.4.5 Planting Species List.

These proposed amendments will help counter maintenance issues that have resulted in Council carrying a greater burden on landscape maintenance than other Councils, as identified within **Section 5.0 Maintenance and Open Space Design.** The principles of open space design within the future design guideline should reduce the need for weeding, poisoning and pruning of vegetation in new developments into the future.

7. Conclusion

Strategic intent of the *Whitsunday Open Space Strategy 2022* is to guide the evolution of the open space network to consolidate infrastructure in major parks and ensure functional open space design that meets needs of the community. The strategy acknowledges that the Region is currently over serviced by parks and seeks to create a more cost-effective network with functional open spaces that deliver maximum social and health benefits to the community.

Proposed Desired Standards of Service, Planning Scheme Amendments and park network upgrades aim to facilitate quality parks are attractive and integrated with linear parks to encourage walking / cycling from home. Best practice open space planning identifies the desirability to walk to a park is directly related to the quality of the park, therefore, for the same Parks and Gardens budget, it is better to have consolidated major parks with high quality infrastructure, than high numbers of local parks with only basic infrastructure in each. The Strategy delivers benefits to the community in terms of open space usage, getting outdoors and social interaction, whilst also offering more efficient maintenance outcomes to reduce costs for ratepayers.

Appendix 1- Catchment Analysis

1. Bowen Open Space Analysis

Bowen is anticipated to grow from 8,480 persons in 2016 to 10,460 by 2036 at a rate of 1.05% per annum. Growth will be predominately focused within Bowen South (Whitsunday Paradise), with infill development also expected within Bowen North (CBD & Queens Beach surrounds). The population profile is similar to the QLD average, however, Bowen has lower than average 10-24 year olds, and higher than average 50-69 year olds. The ageing population of Bowen is anticipated to increase into the future, as the aging population of Collinsville move to Bowen for greater medical support.

The ageing population is focused around residential areas, which are closest to Mullers Lagoon Park and Queens Beach Parks (Gideon Pott, Hansen Park, Case Park and Lions Park).

1.1. Bowen Recreation open space

Proposed catchment areas defined for each park category provide excellent accessibility to the Township as shown by **Table 29** and far exceed the desired rate of provision as shown by **Table 27**. Bowen provides recreation open space at a rate of 5.08ha per 1,000 people, including trunk parks:

- central district recreation park, Mullers Lagoon; and
- three scenic and high quality Regional parks, Bowen Front Foreshore, Gideon Pott Park and Queens Beach East Parks (composed of Hansen Park, Case Park and Lions Park).

Regional recreation parks adjoining Foreshores offer a variety of recreational infrastructure for all user groups, support use of the beach and are well connected to residential areas by street pedestrian and cycle paths.

Several local parks fill gaps between major parks, servicing small recreational nodes and Low-medium density residential areas, anticipating future infill growth. These local parks feature limited recreational infrastructure, with the exception of Horseshoe Bay and Rose Bay, which include play equipment, BBQ's, shelters, amenities and picnic furniture to support the use of the beach. A large 6.9ha private local park in Bowen South (Lakeside Recreation parks) services the surrounding population at a rate of 9.5ha/1000 persons.

Within the Whitsunday Paradise Preliminary Approval, Bowen South open space includes Lakeside Recreation parks (private local park, upgrades anticipated in Stage 2) to service current demand to 2036. It is noted that the Preliminary Approval identifies the following parks to service demand beyond 2036, including, Foreshore Park, Central park and private Sportspark. A series of connecting linear and local parks will also be incorporated in the development.

Bowen has a good distribution of *key recreational infrastructure* as shown by **Figure 1**, which includes items such as basketball courts (3), skate parks (2), waterpark (1), several major playgrounds, wheelchair swing (1), off-leash dog areas (3) and recreational sport facilities, such as cricket nets. Key infrastructure is focused around Foreshore Parks, with a shortfall of key infrastructure in Mullers Lagoon to service the central Bowen residential areas. Recommendations to upgrade Mullers Lagoon are identified in **Table 26**.

Several nature walks exist in Bowen, including, Hanson Park to Horseshoe Bay (2.6km), Kings Beach Walk (1.8km), Queens Bay Beach Walk (1.6km) and Cape Edgecumbe Walking Trail, which includes the Horseshoe Bay Lions lookout (2.5km). Potential for further nature walks or mountain bike trails exist at Flagstaff Hill and Kings Beach, which are subject to investigation within the *Bowen Masterplan 2021*.

Future investments should focus on gaps in the open space network, set out in **Table 26.**

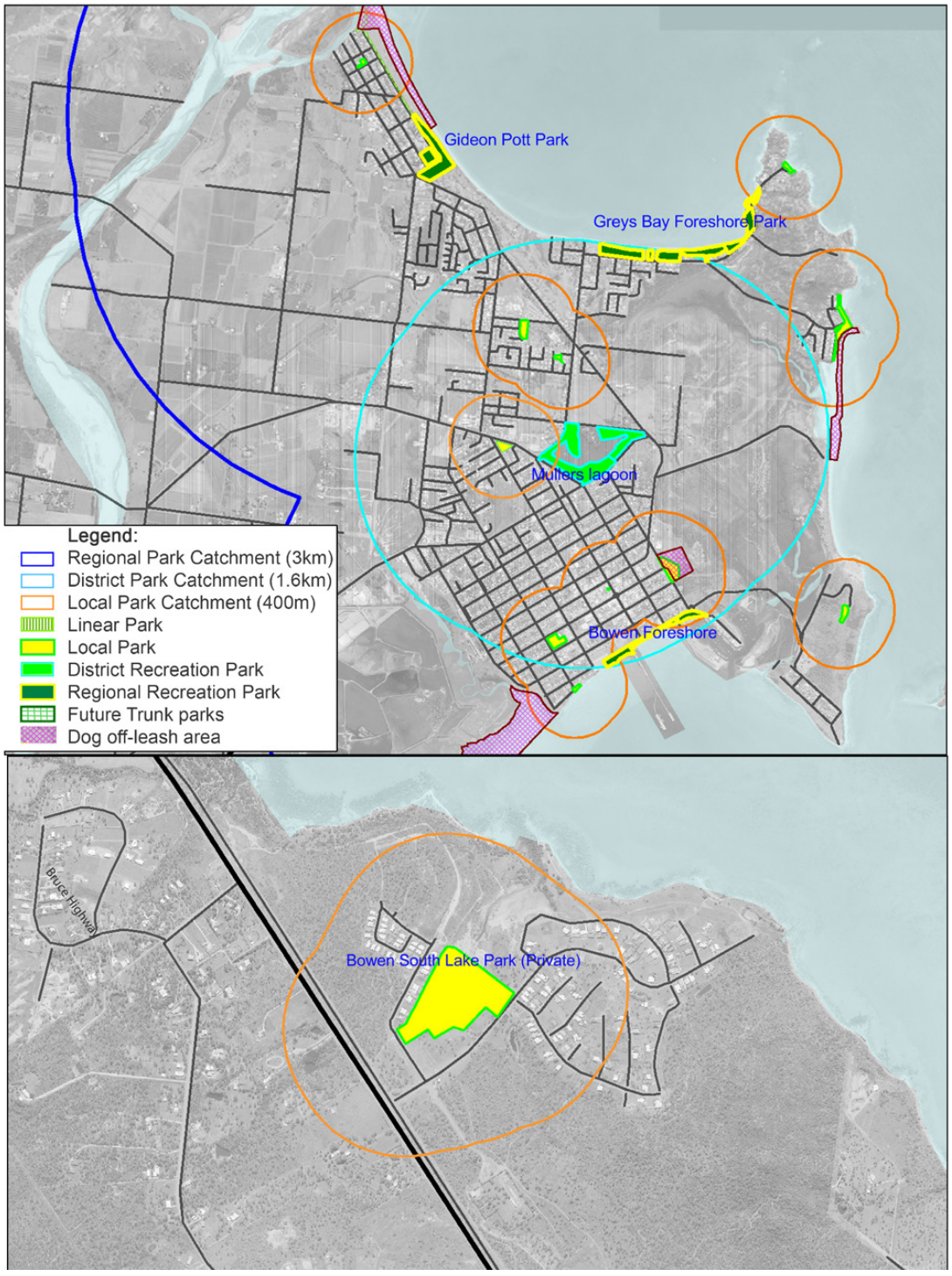


Figure 1: Bowen recreation open space network.

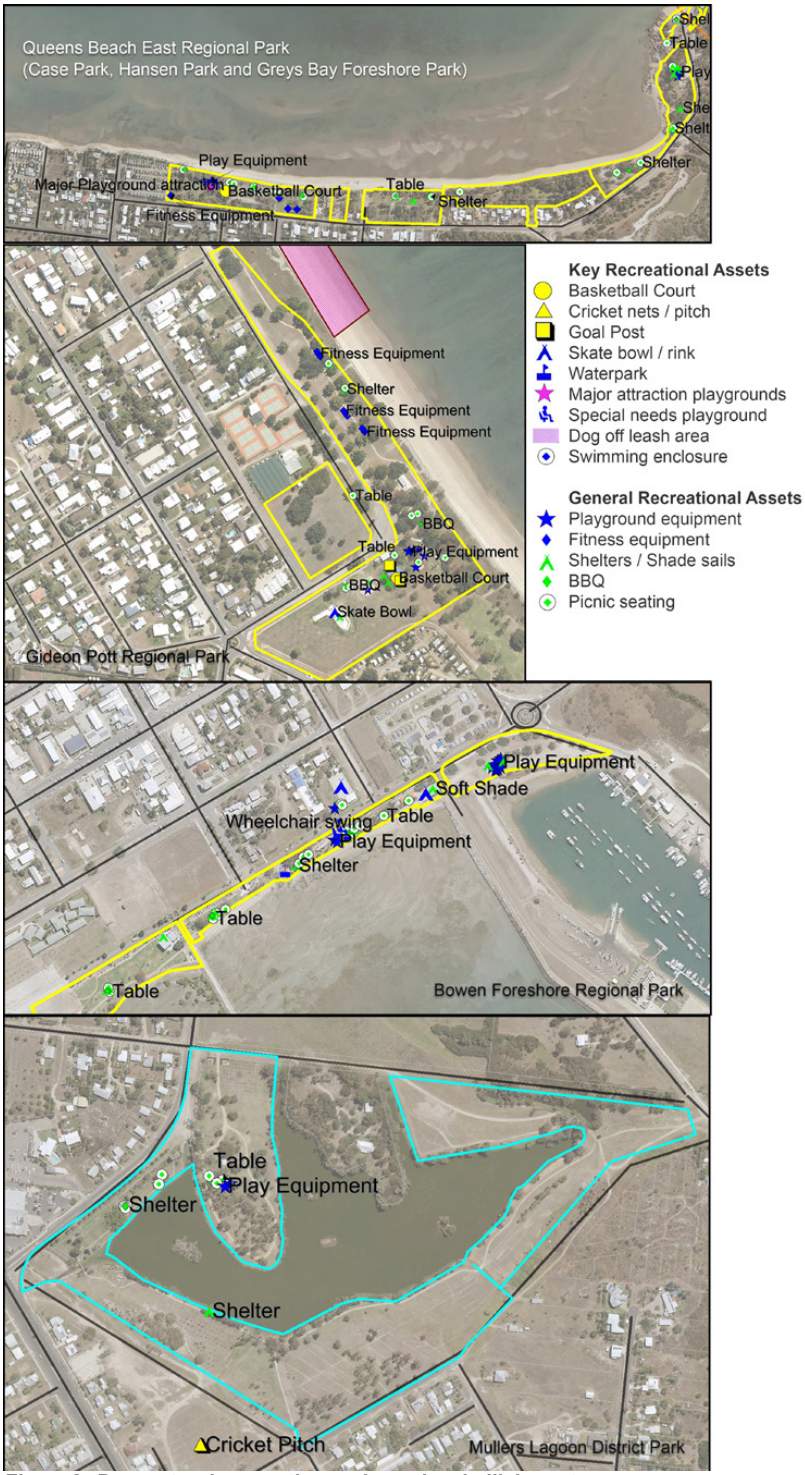


Figure 2: Bowen trunk recreation parks and embellishments.

Table 26: Recreational infrastructure gaps in Bowen open space network.

Park	Recommended Recreational infrastructure	Justification
Mullers Lagoon District Park upgrades *(2024 – 2029 - Staged delivery)*	• Walking trails and fitness equipment for aged persons and adults; and • Play equipment for young adults aged 12-17.	• Bowen has 2% higher percentage of residents aged 70-84 than the Regional average, and the majority densely located near Mullers Lagoon and Queens Beach Parks; and • The highest densities of 12-17 age group are located in proximity to Mullers Lagoon.
Queens Beach East Regional Park (Hansen Park) *(2024 – 2026)*	Disability and sensory playground equipment for special needs children.	• Bowen is limited in disability and sensory playground equipment, with only one wheelchair swing at Bowen Foreshore. Hansen Park has high quality playgrounds, beach access, variety of picnic equipment and high amenity walking paths, which make it suitable to host this key recreational infrastructure for special needs kids, so all can play together.

Table 27: Bowen rate of land provision for recreation parks.

Park category	Linear	Local	District	Regional	Total
Recreation park (ha)	1.73	8.76*	15.29	21.48	47.27
Rate of provision (Ha/1000 people) - 9,300 persons	N/A	0.94	1.64	2.31	5.08
Rate of provision (Ha/1000 people) 2036 population - 11250 persons	N/A	0.78	1.36	1.91	4.2
Estimated Future Recreation park 2036 (ha)	As new development requires	If required by medium density development	No additional recreation park proposed	No additional recreation park proposed	No additional recreation park proposed
Rate of provision (Ha/1000 people) 2036 population - 11250 persons					
* Note - 6.9ha of Private Local park in Bowen South not included in calculations. Local parks should be provided at a rate of 0.4ha/1,000 people; District parks should be provided at a rate of 0.5ha/1,000 people; Regional parks should be provided at a rate of 0.6ha/1,000 people; and Rate of provision is not an applicable measurement for linear parks, they are constructed as required to promote accessibility to major parks.					

Table 28: Bowen accessibility standards for trunk recreation parks.

Accessibility standard to urban residential areas				
Park Category	Local	District	Regional	All parks
Desired standard	400m	1.6km	3km	As defined
% residents within proximity	74%		90%	90%
50% of population should be within this distance of a Local or District facility; 75% of population should be within this distance of a Regional facility; and 90% of all residents should be within this distance to any facility.				

1.2. Bowen Sportspark open space

Currently, Bowen is composed of two trunk sportsparks, a golf club, three school fields and several other facilities, as set out within **Figure 4,** that cater for 23 clubs and provide approximately 4.89ha of sporting facilities per 1,000 persons. These facilities include cricket fields, rugby/soccer fields, netball courts, shooting complex, basic athletics infrastructure, two lawn bowls clubs, two sailing clubs, an indoor sports facility, gymnastics, swimming pool, basketball courts, squash courts and an equestrian centre.

Table 31: Bowen rate of land provision for sportsparks.

Sportsparks	Facilities sizes (ha)	ha/1,000 persons
Traditional sports parks	28.8	3.1
School facilities	11.1	1.2
Lawn sports, courts	2.4	0.3
Aquatic facilities	0.4	0.05
High impact facilities	51.5	5.5
Indoor facilities	0.3	0.03
Ocean based	0.9	0.1
Golf	27.9	3.0
Total (excl golf/motorsports)	45.5	4.89
District Trunk sport facilities from above categories	6.199	0.66
Regional Trunk sport facilities from above categories	24.03	2.58
Total trunk facilities	30.234	3.25

Trunk sportsparks are provided at a rate of 0.67ha/1,000 for District sportsparks and 2.58ha/1,000 persons for Regional sportsparks as shown by **Table 31**, including:

- Gideon Pott Park District sportspark (1.47ha), which includes lawn bowls, tennis courts and approximately 1.14ha of space for expansion in the future to include additional court sports;
- Denison District sportspark (4.73ha), which supports Seagulls Junior Rugby League, Bowen Touch Association and within the PCYC, gymnastics and squash;
- Col Leather Regional sportspark (24ha), which supports athletics, cricket, soccer, netball, polocrosse and rugby union for junior and seniors.

Trunk sportsparks provide excellent accessibility standards for Bowen with 100% of urban residents within the catchment area of Col Leather Regional Sportspark and 100% in proximity to a District sportspark as shown by **Table 33**. Desired sports lacking in the North of the Region include AFL, indoor sports and court sports.

Queens Beach State Primary School and Bowen High State School have suitable facilities to cater for traditional junior field sports, such as athletics, cricket, soccer, Rugby, baseball/softball, AFL and court sports netball/basketball and tennis.

Input from Bowen sport clubs was provided in the *Open Space Sport Survey 2020*, from Wangaratta Bowls Club and Bowen Junior Rugby League. Further information was gathered from representatives of the Bowen Sporting Complex outside of the survey. The Wangaratta Bowls Club identified demand for an additional bowling green. Two greens exist within Bowen, at a rate of 1 per 4,650 persons, with other Regional Centres recommending rates of 1:10,000-15,000 persons [20]. Further collaboration is recommended with each Bowen Bowls club to ascertain usage in light of ongoing growth in an ageing community, prior to committing support.

20 (City of Casey, 2014)

Bowen Junior Rugby League at Denison Park (District) identified demand for female / disabled amenities near Field 2, field fencing, lighting towers on Field 2 and additional mini fields behind field 2 to support recent growth to over 250 juniors. Further collaboration is recommended with Bowen JRL whom utilise the facilities to correctly ascertain demand and desired timing for proposed facilities.

Bowen Sporting Complex members have generated a conceptual Masterplan to define required improvements to car parking, traffic circulation, pedestrian safety, lighting, field lighting on Field 1, electricity servicing upgrades, toilet/change rooms for Netball, main field fencing, grandstands for main fields, hybrid turf cricket wicket, sport diversification for Hockey/AFL, and in the long-term, new Central Clubhouse. High priority items include car parking, pedestrian safety and traffic circulation. **Figure 3** below defines a conceptual plan of desired improvements to be considered in the future.

Figure 3: Bowen Sporting Complex concept plan of desired improvements for the future.

It is recommended that Council investigate upgrades to Bowen Sporting Complex and Denison Park in collaboration with local sport clubs to inform future grant or LGIP funding.

Table 32: Bowen rate of provision for trunk sportsparks.

Park category	District	Regional	Total Sportsparks
Sportspark (ha)	6.20	24.04	30.23
Rate of provision (Ha/1000 people) - 9,300	0.67	2.58	3.25
Rate of provision (Ha/1000 people) 2036 population - 11,250	0.55	2.14	2.69
Estimated future sportspark 2036 (ha)	No additional District sportsparks proposed *	No additional Regional sportsparks proposed	30.23
Rate of provision (Ha/1000 people) 2036 population - 11,250			2.69
District sportsparks should be provided at a rate of 0.6ha/1,000 people; Regional parks should be provided at a rate of 1ha/1,000 people; and All trunk sporting facilities should be provided at a rate of 1.6ha/1,000 people. * Private sportspark may be constructed in Bowen South, with timing at the developers discretion.			

Table 33: Bowen accessibility standards for trunk sportsparks.

Infrastructure item	Accessibility standard (km)[1]	
	District	Regional
Sportspark	10	25
% residents within proximity	100%	100%
90% of residents in an urban area are within either 10km of a District sportspark or 25km of a Regional sportspark.		

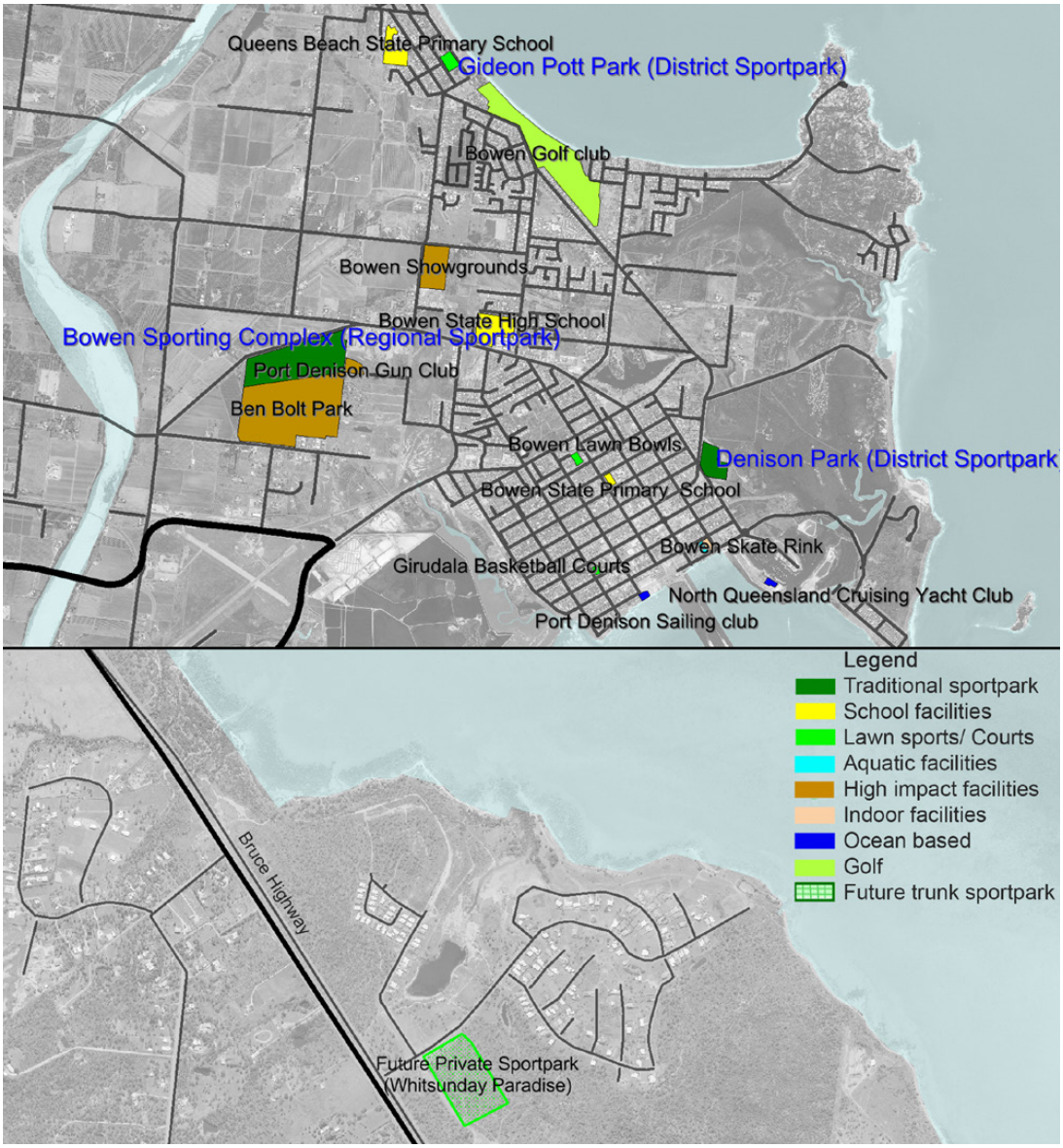


Figure 4: Bowen sporting facilities.

2. Proserpine Open Space Analysis

Proserpine is anticipated to grow from a population of 3,590 in 2016 to 3,810 by 2036, at a rate of 0.4% per annum. This low growth is anticipated to be absorbed predominately in the south of Proserpine, where new residential estates are approved but not yet developed. Beyond this, additional growth beyond 2036 may be absorbed by Emerging community zoned land to the west of the Township. The population profile varies from the QLD average, with significantly more children between 5-14-years old, significantly more 65-94-year-old but significantly less 20-39-year-old. This dynamic is reflective of the many schools in Proserpine, presence of a Regional hospital and many aged care facilities.

The highest population density is adjoining Johns Estate Regional Park and Halpannel District Park. This area also houses a higher portion of under 18's, compared to central and western portions of Proserpine, which houses a higher portion of over 65's age group. The predominate location of this older age group also aligns with greater density of persons who need of assistance due to disability.

2.1. Proserpine Recreation open space

Proposed catchment areas defined for each park category provide excellent accessibility to the Township, as shown by **Table 36,** and achieve adequate rate of provision, as shown by **Table 35**. Proserpine provides recreation open space at a rate of 2.62ha per 1,000 people, including major parks:

- District parks, Halpannel Park and Pioneer Park, servicing southern and central Proserpine respectively; and
- Regional park, Johns Estate Park, servicing eastern Proserpine.

These trunk recreation parks offer a variety of recreational infrastructure for all user groups. Halpannel Park is suited to kids and parents, Keith Johns Estate Park is more favoured by youth and Pioneer Park contains embellishments for kids, adults and Town visitors with quality picnic infrastructure.

Parks provision aligns with desired standards of service and the network has exceptional parks accessibility, meeting the needs of 5-14 year old and 65-94 year old, as shown by **Table 36.**

Key recreational infrastructure is well distributed through the Township with a waterpark (1), basketball court (1) and skatepark (1) located to the west and several major playgrounds and dog off-leash areas (1) within District and Regional Parks to the east. No disability or sensory playgrounds are located in Proserpine, with the nearest swing available in Airlie Beach Foreshore.

No nature walks / parks exist within Proserpine surrounds, with the exception of Cedar Creek Falls and Brandy Creek walks located halfway to Cannonvale. Following development of Emerging community zoned lots to the north west of the Town beyond 2050, a Regional Riverside Park could be developed to provide a linkage via the CBD to natural riparian areas adjoining Proserpine River.

Future investments should focus on gaps in the open space network, set out in **Table 34**.

Table 34: Recreational infrastructure gaps in Proserpine open space network.

Park	Recommended Recreational infrastructure	Justification
Keith Johns Estate Regional Park *(Subject to design and grant funding)*	Recreational infrastructure servicing youth aged 12-17, such as goal posts, basketball court, volleyball or pump track.	• Recreational infrastructure servicing youth in southern and eastern Proserpine is limited, with only a climbing pyramid located in Keith Johns Estate Regional Park. • 12-17 age group is most prevalent adjoining this park and utilises it more than other nearby parks due to the climbing pyramid and large space for kicking a ball.

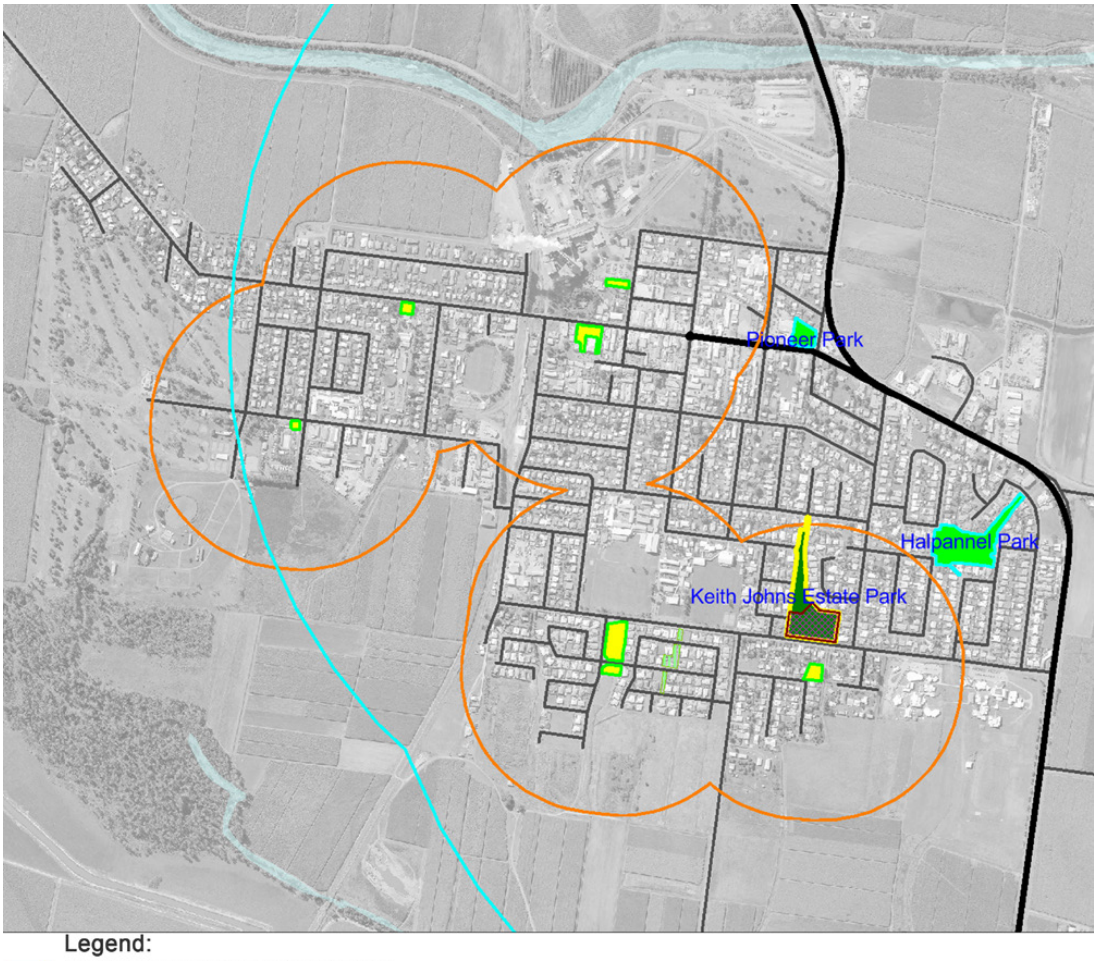
Halpannel District Park *(Subject to design and grant funding)*	Disability or sensory playground key recreational infrastructure	• Key recreational infrastructure is lacking within Proserpine. • Halpannel Park is considered most suitable to host this infrastructure, nearby the Proserpine Community Centre and with several accesses from surrounding residential areas; • Pioneer Park is an alternative option, albeit has limited space for further recreational infrastructure.

Table 35: Proserpine rate of land provision for recreation parks.

Park Category	Linear	Local	District	Regional	Total
Recreation park (ha)	0.305	1.55	2.41	1.962	9.184
Rate of provision (Ha/1000 people) - 3500	N/A	0.44	0.69	0.56	2.62
Rate of provision (Ha/1000 people) 2036 population - 3750	N/A	0.41	0.64	0.52	2.45
Estimated Future Recreation park 2036	As required by future development.	No additional recreation park proposed			
Rate of provision (Ha/1000 people) 2036 population - 44080					
Local parks should be provided at a rate of 0.4ha/1,000 people; District parks should be provided at a rate of 0.5ha/1,000 people; Regional parks should be provided at a rate of 0.6ha/1,000 people; and Rate of provision is not an applicable measurement for linear parks, they are constructed as required to promote accessibility to major parks.					

Table 36: Proserpine accessibility standards for trunk recreation parks.

Accessibility standard to urban residential areas				
Park category	Local	District	Regional	All parks
Desired standard	400m	1.6km	3km	As defined
% residents within proximity	95%		100%	100%
50% of population should be within this distance of a Local or District facility; 75% of population should be within this distance of a Regional facility; and 90% of all residents should be within this distance to any facility.				



Legend:
- Regional Park Catchment (3km)
- District Park Catchment (1.6km)
- Local Park Catchment (400m)
- Linear Park
- Local Park
- District Recreation Park
- Regional Recreation Park
- Future Trunk parks
- Dog off-leash area

Figure 5: Proserpine recreation open space

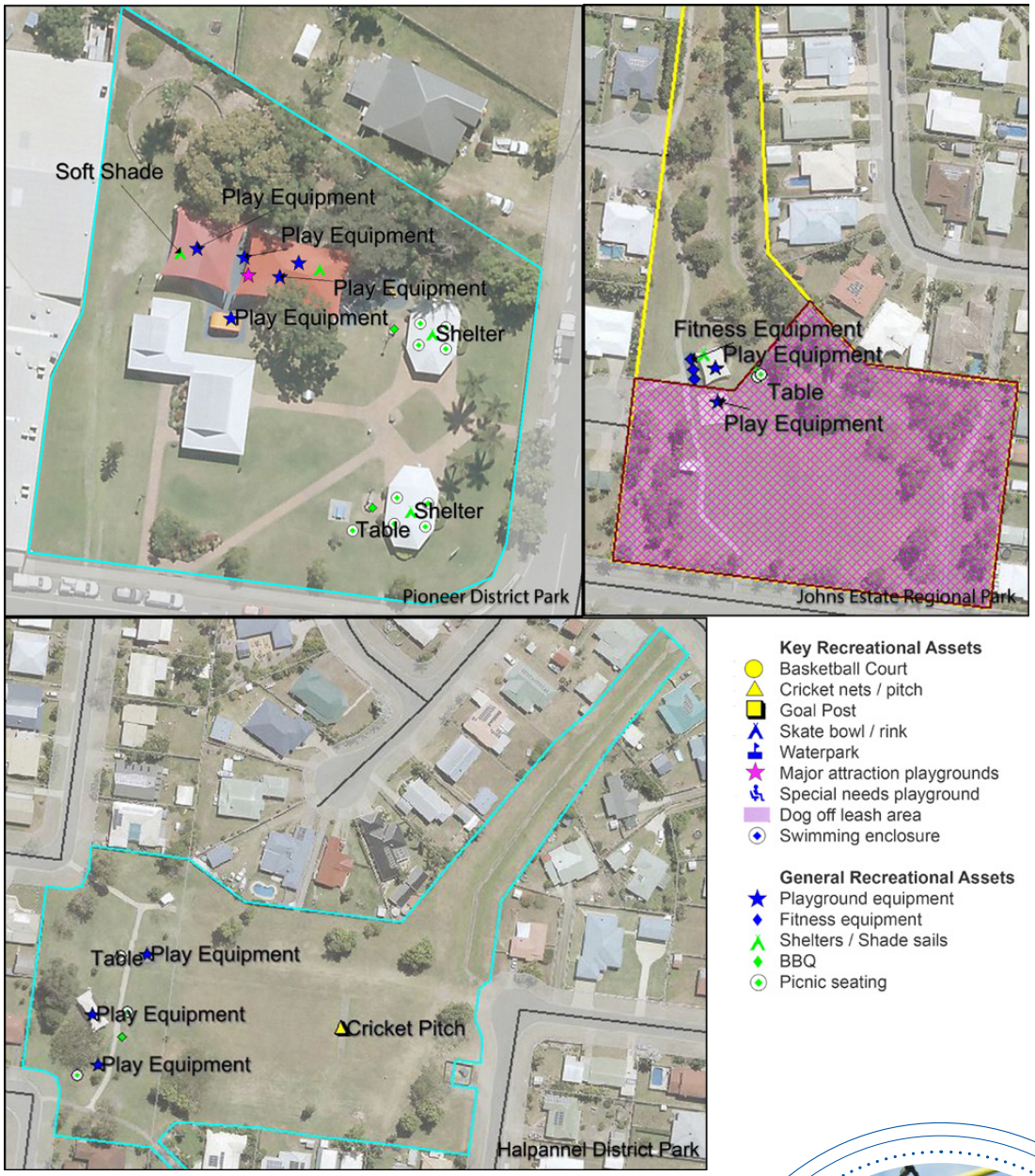


Figure 6: Proserpine Recreation parks.

2.2. Proserpine Sportspark open space

Proserpine has two trunk sportsparks, a golf club, three school fields and several other facilities, as set out within **Figure 7,** that cater for 15 clubs and provide approximately 9.8ha of sporting facilities per 1,000 persons. These facilities include cricket fields, rugby league, soccer, BMX, basic athletics infrastructure, tennis, lawn bowls, swimming, karate, motorsport and an equestrian centre. Netball and social Basketball, are catered for within the GAB area.

Table 39: Proserpine rate of land provision for sportsparks.

Sportsparks	Facilities sizes (ha)	ha/1,000 persons
Traditional sports parks	15.3	4.4
School facilities	17.2	4.9
Lawn sports, courts	1.2	0.3
Aquatic facilities	0.5	0.2
High impact facilities	47.4	13.5
Indoor facilities	0.1	0.0
Ocean based	0	0.0
Golf	40.6	11.6
Total (excl golf/motorsports)	34.4	9.8
District Trunk sport facilities from above categories	15.32	4.37
Regional Trunk sport facilities from above categories	0	0
Total trunk facilities	15.32	4.37

Trunk sportsparks are provided at a rate of 4.37ha/1,000 persons for District sportsparks, including:

- Les Stagg Oval District sportspark (3.57ha) which includes BMX, senior rugby league and a skate rink; and
- Proserpine Junior Sporting Complex District sportspark (11.75ha) which supports cricket, soccer and junior rugby league.

Trunk sportsparks provide excellent accessibility standards for Proserpine with 100% of residents within the catchment area of Proserpine Junior District Sportspark and Less Stagg District Sportspark, as shown by **Table 41**. No additional sportsparks are required within Proserpine, albeit a new Regional sportspark proposed within Cannon Valley will service both Proserpine and GAB catchments.

St Catherine's Catholic College and Proserpine State/High School have suitable facilities to cater for traditional junior field sports, such as athletics, cricket, soccer, Rugby, baseball/softball, AFL and tennis (Proserpine State School only).

Within the *Open Space Sport Survey 2020*, Proserpine Sporting Complex, Whitsunday Athletics Club Less Stagg Oval and Whitsunday Weightlifting Club identified demand for improved facilities:

- Whitsunday Athletics utilise Proserpine and Cannonvale School, which lacks a suitable long jump pit, photo finish/electric timers (to meet State Athletics expectations) and facilities likely to attract seniors, such as a running track. The stakeholder identified facilities may be most appropriate within Cannon Valley or Cannonvale, where population growth and the future of the club is most anticipated;
- Whitsunday Weightlifting Club lack their own indoor facilities, which would help earn more members and could readily be shared with gymnastics or other indoor sports;
- At the Proserpine Sporting Complex (District sportspark), renewal of the toilet block and change room facilities is urgently required, with improved drainage also requested; and
- At Less Stagg Oval, there is desire to enhance the grandstands and clubhouse to attract high profile sporting events.
- The Proserpine Junior Sporting Complex estimates field wear and occupancy is medium,

suggesting it will adequately cater for growth anticipated into the future.

It is recommended that Council investigate these facilities in collaboration with local sport clubs to inform future grant or LGIP funding.

Table 40: Proserpine rate of provision for trunk sportsparks.

Park category	District	Regional	Total Sportsparks
Sportspark (ha)	15.31	0	15.31
Rate of provision (Ha/1,000 people) – District - 3,500 persons Regional – 14,220* persons	4.37	0	4.37
Rate of provision (Ha/1,000 people) 2036 population - District - 3750 persons Regional – 23000* persons (includes GAB)	4.08	0	4.08
Estimated Future Sportspark 2036 (ha)	No additional District sportsparks proposed	Approx. 27.59 (Future Cannon Valley Regional Sportspark)	37.67
Rate of provision (Ha/1,000 people) 2036 population - District - 3750 persons Regional – 23,000* persons (includes GAB)		1.2	10.05
District sportsparks should be provided at a rate of 0.6ha/1,000 people; Regional parks should be provided at a rate of 1ha/1,000 people; and All trunk sporting facilities should be provided at a rate of 1.6ha/1,000 people.			

Table 41: Proserpine accessibility standards for trunk sportsparks.

Infrastructure item	Accessibility standard (km)[1]	
	District	Regional
Sportspark	10	25
% residents within proximity	100%	0%
90% of residents in an urban area are within either 10km of a District sportspark or 25km of a Regional sportspark.		

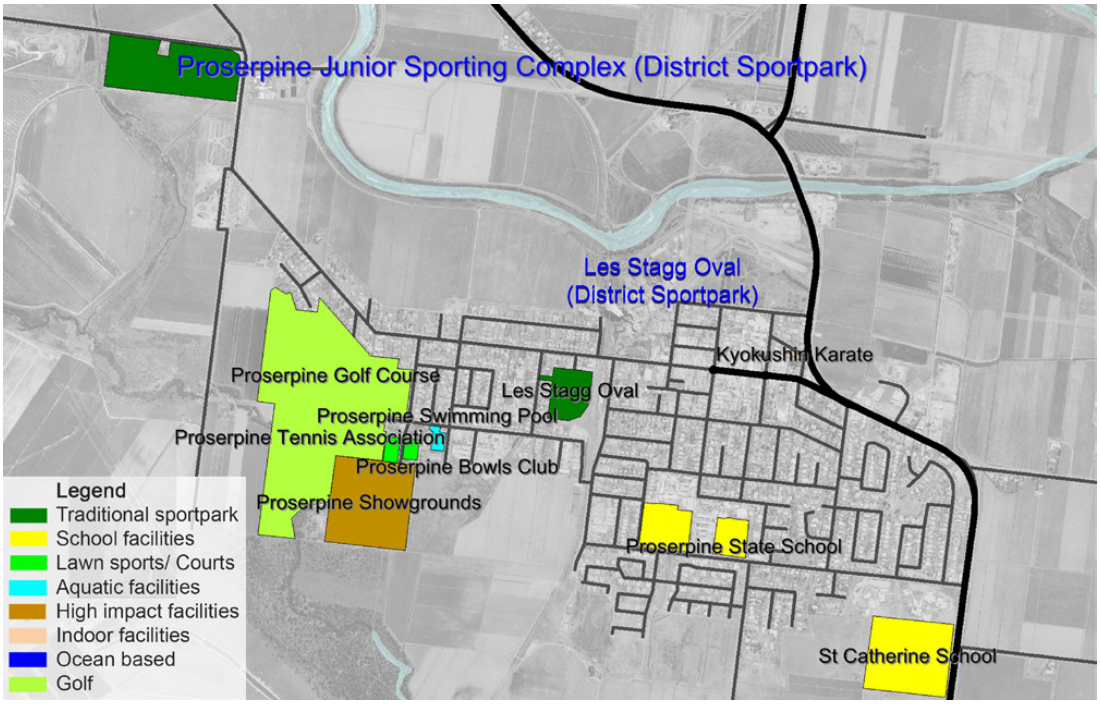


Figure 7: Proserpine sporting facilities.

3. Greater Airlie Beach Open Space Analysis

Greater Airlie Beach (GAB) is anticipated to grow from a population of 9,570 in 2016 to 18,000 by 2036, at a rate of 3.21% per annum. This growth is anticipated to be absorbed predominately in Cannonvale – Cannon Valley, but also within Jubilee Pocket. The population profile varies from the QLD average, with significantly less 10-24-year-old and residents over 70, but significantly more persons between 0-9 and 25-44-year-old. This dynamic is reflective of the backpacker tourist nature of the Township and a lack of quality high schools and tertiary education that result in young adults leaving the Region.

The highest population densities are well serviced by major parks within Airlie Beach, Cannonvale and Jubilee Pocket. Cannonvale, Cannon Valley and Jubilee Pocket have the highest prevalence of persons under 18, whilst Airlie Beach has the highest number of young adults 18 – 34 and residents over 65. The GAB area has the lowest rate of persons who need assistance due to disability in the Region, albeit, densities of special needs persons exist in Airlie Beach and surrounding Cannonvale Lakes Park.

3.1. GAB Recreation open space

Proposed catchment areas defined for each park category provide excellent accessibility to the Township, as shown by **Table 44,** and achieve rates of provision, as shown by **Table 43.** The open space network is composed of two high quality Regional parks, Cannonvale and Airlie Beach Foreshore, that are connected by coastal walkways and meet the needs of tourists and the local community. District parks, such as Wildlife park, Bicentennial park and Galbraith Park equally distribute key recreational infrastructure between Cannonvale and Jubilee Pocket. Local parks fill gaps between major parks and meet needs of isolated pockets, such as Shute Harbour and Mandalay, with the majority including basic picnic infrastructure and playground.

Key recreational infrastructure includes Airlie Beach Foreshore's major attraction playground, Airlie Beach Lagoon, several major playgrounds, dog off-leash areas (5), skate bowls (2), basketball courts (2), stinger enclosures (2), wheelchair swing (1) and cricket nets (1).

The GAB area has a good distribution of walking tracks both through National Parks and within the urban area, including the Bicentennial walkway, Mount Rooper, Swamp Bay, Coral Beach, Honeyeater lookout, Airlie Creek walk and the Great Whitsunday walk. Additional tracks on Islands are accessible by boat. The National Park network has potential for additional tracks for walking or mountain biking to better meet the recreational needs of the dominant population of 25-44 year old.

There are no identified gaps in the current parks network, however, the GAB area is the Region's fastest growing Township and additional recreation park will be required in the future within Cannonvale and Cannon Valley as the urban corridor expands. This includes:

Table 42: Recreational infrastructure gaps in GAB open space network.

Park	Recommended Recreational infrastructure	Justification
Cannonvale Lakes linear parks (*Subject to investigation*)	Footpath, lighting and landscaping	• Enhance accessibility to the Cannonvale Lakes Park and encourage outdoor exercise; • Upgrades anticipated to be completed alongside the parks upgrade and with future re-vegetation projects.

New Cemetery Investigation (*Subject to investigation)*	Subject to investigation	• GAB is a fast growing area with many residents having lived in the Town for a significant portion of their lives; • Proserpine currently services the cemetery needs of the Town, however, an investigation is warranted to determine if a local cemetery may more appropriately meet the needs of local families into the future.
Galbraith District Park South upgrade (*2031 - 2032*)	• Infrastructure servicing families, kids and youth; • Fitness equipment and walking trails; • Key recreational infrastructure.	• Families with kids and youth aged 12-17 are the predominate age groups in the surrounding area; • Fitness equipment and walking trails will promote use of the park for adults and parents with kids, which will be serviced in the future by linear parks adjoining Galbraith Creek; • Key recreational infrastructure is warranted in the District park, to attract usage and service this fast growing residential corridor.

Table 43: GAB rate of land provision for recreation parks.

Park Category	Linear	Local	District	Regional	Total
Recreation park (ha)	2.53	7.23	8.49	11.87	30.12
Rate of provision (Ha/1000 people) – 10,720 persons	N/A	0.67	0.79	1.11	2.81
2036 population (Ha/1000 people) - 19250 persons	N/A	0.38	0.44	0.62	1.56
Estimated Future Recreation park 2036 (ha)	As new development requires	As medium density development requires	17.179 (Galbraith South - 8.7ha)	Nil	58.81
Rate of provision (Ha/1000 people) 2036 population - 19250 persons			0.89	0.62	3.05
Local parks should be provided at a rate of 0.4ha/1,000 people; District parks should be provided at a rate of 0.5ha/1,000 people; Regional parks should be provided at a rate of 0.6ha/1,000 people; and Rate of provision is not an applicable measurement for linear parks, they are constructed as required to promote accessibility to major parks.					

Table 44: GAB accessibility standards for trunk recreation parks.

Infrastructure item	Accessibility standard to urban residential areas			
Park category	Local	District	Regional [2]	All parks
Desired standard	400m	1.6km	3km	As defined
% residents within proximity	92%		91%	98%
50% of population should be within this distance of a Local or District facility; 75% of population should be within this distance of a Regional facility; and 90% of all residents should be within this distance to any facility.				

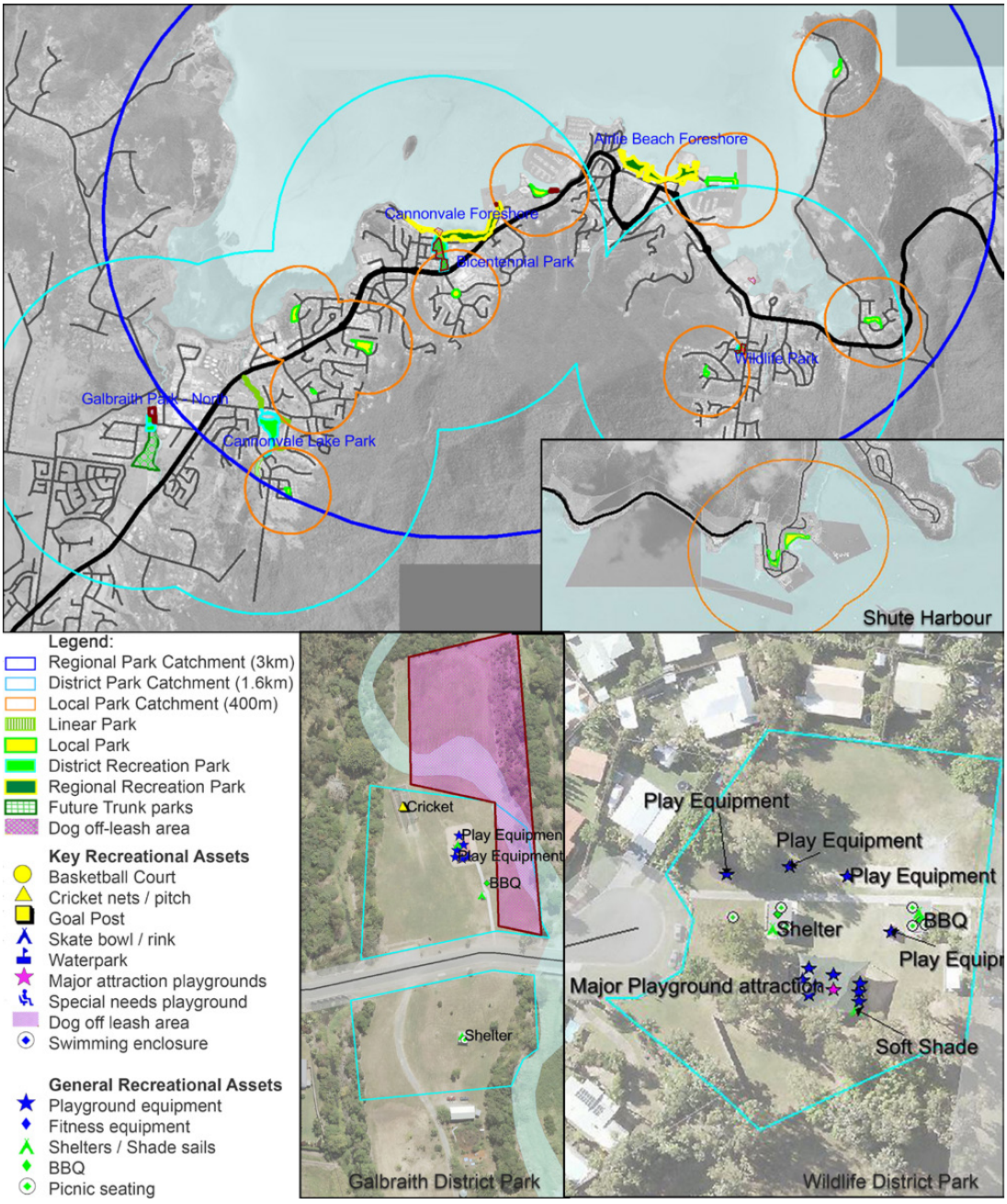


Figure 8: GABA recreation open space.

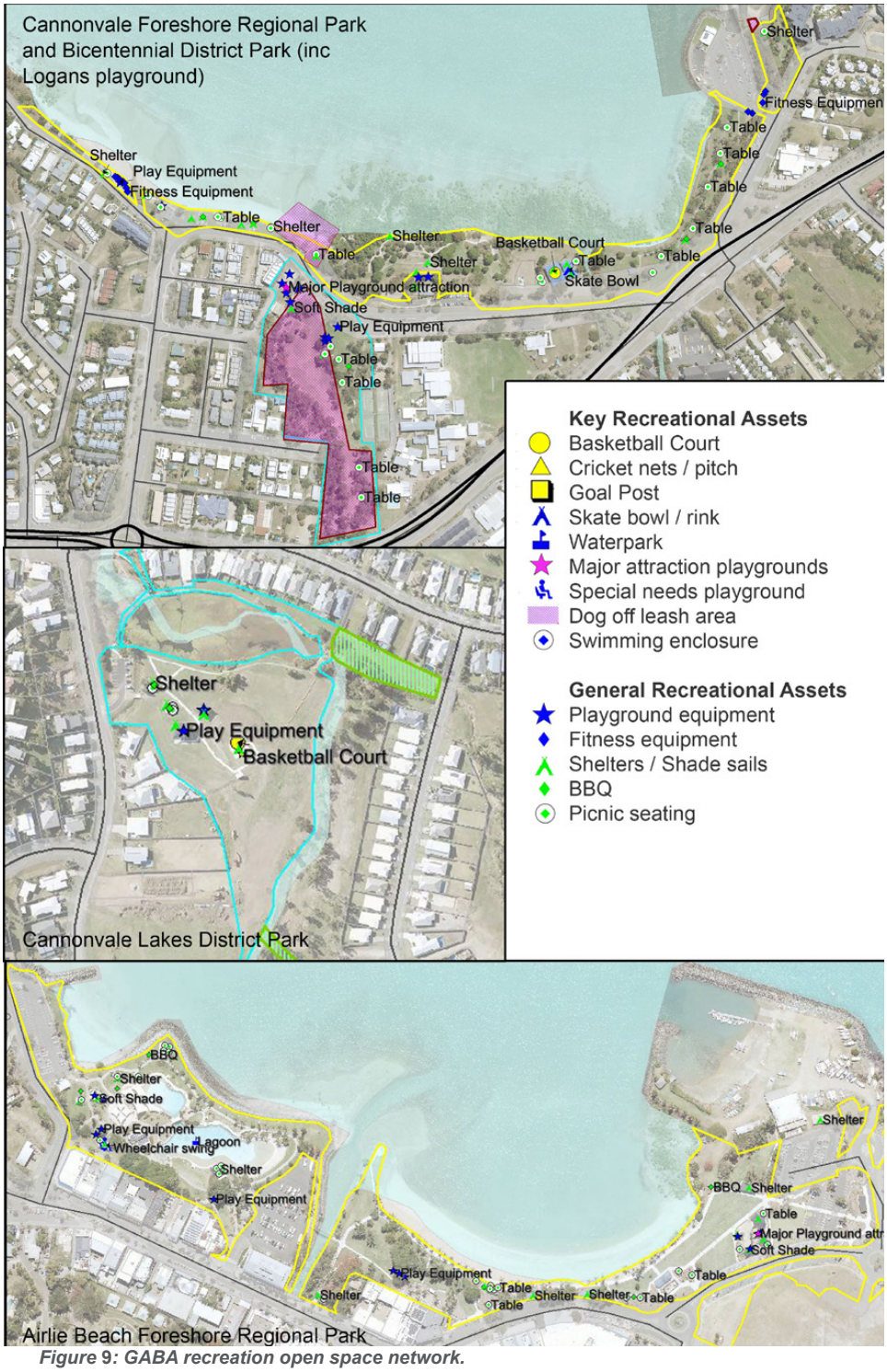


Figure 9: GABA recreation open space network.

3.2. GAB Sportspark open space

Currently, the GAB is composed of one district sportspark, golf pitch-n-putt, two school fields and several other facilities, as set out within **Figure 10,** that cater for 15 clubs and provide approximately 1.5ha of sporting facilities per 1,000 persons. These facilities include, rugby union, soccer, AFL, an indoor sport facility, lawn bowls, squash, ocean paddling, sailing, swimming, martial arts, equestrian and tennis. Local schools support basic athletics infrastructure, including long jump pits, which is infrastructure lacking within sportsparks.

Table 47: GAB rate of land provision for sportsparks.

Sportsparks	GAB ha	ha/1,000 persons
Traditional sportsparks	7.2	0.7
School facilities	2.8	0.3
Lawn sports, courts	0.6	0.1
Aquatic facilities	0.1	0.0
High impact facilities	3.1	0.3
Indoor facilities (forms part of Whitsunday sportspark)	0.3	0.0
Ocean based	2.6	0.2
Golf	6.3	0.6
Total (excl golf)	16.5	1.5
District Trunk sport facilities from above categories	7.23	0.68
Regional Trunk sport facilities from above categories	0	0
Total trunk facilities	7.23	0.68

Trunk sportsparks are provided at a rate of 0.68ha/1,000 persons with no Regional sportspark servicing the southern portion of the Region. Whitsunday District sportspark (7.2ha) includes rugby union, soccer, AFL and PCYC indoor facility.

Whitsunday District sportspark provides sportpark accessibility for the GAB with 100% of residents within its catchment area. Future growth will predominately sprawl toward Cannon Valley, which is on the boundaries of Whitsunday Sportspark's 10km catchment, highlighting the need for a future Regional sportspark to service this growth corridor and Proserpine, to maintain accessibility and rates of provision standards in the future.

The Whitsunday Sportspark in Jubilee Pocket is presently undergoing $8.25M of renewal, which will promote this Sportspark as a prime senior sport destination capable of hosting sport tourism events. Further funding may also fix netball courts, which are cracking as a result of unstable ground.

Existing schools are limited in available space for sport, albeit each has an oval that may cater for junior cricket or soccer, with Whitsunday Christian College also having a basketball court.

Within the *Open Space Sport Survey 2020*, respondents identified need for a multi-purpose indoor facility, athletics facilities and large sportspark within Cannon Valley, to enable equal access for Proserpine residents. Specific requests also included a desire for a clubhouse or storage facilities for the Triathlon and Running club in Airlie Beach, expanded berthing at the Sailing Club and a velodrome or cycle track, which could be included around a boundary of a future sportspark. It is recommended that Council investigate these facilities in collaboration with local sport clubs to inform future grant or LGIP funding.

Table 48: GAB rate of provision for trunk sportsparks.

Park category	District	Regional	Total sportsparks
Sportspark (ha)	7.30	0	7.3
Rate of provision (Ha/1,000 people) - District - 10720 persons Regional - 14,220* persons	0.68	0	0.68
Rate of provision (Ha/1,000 people) 2036 population - District - 19250 persons Regional – 23000 persons (Includes Proserpine)	0.38	0	0.38
Estimated Future Sportspark 2036 (ha)	No additional District sportsparks proposed	Approx. 27.59 (Cannon Valley Regional Sportspark)	34.59
Rate of provision (Ha/1,000 people) 2036 population - District - 19250 persons Regional – 23000 persons (Includes Proserpine)		1.2	1.79
District sportsparks should be provided at a rate of 0.6ha/1,000 people; Regional parks should be provided at a rate of 1ha/1,000 people; and All trunk sporting facilities should be provided at a rate of 1.6ha/1,000 people.			

Table 49: GAB accessibility standards for trunk sportsparks.

Infrastructure item	Accessibility standard (km)[1]	
	District	Regional
Sportspark	10	25
% residents within proximity	100%	0%
90% of residents in an urban area are within either 10km of a District sportspark or 25km of a Regional sportspark.		

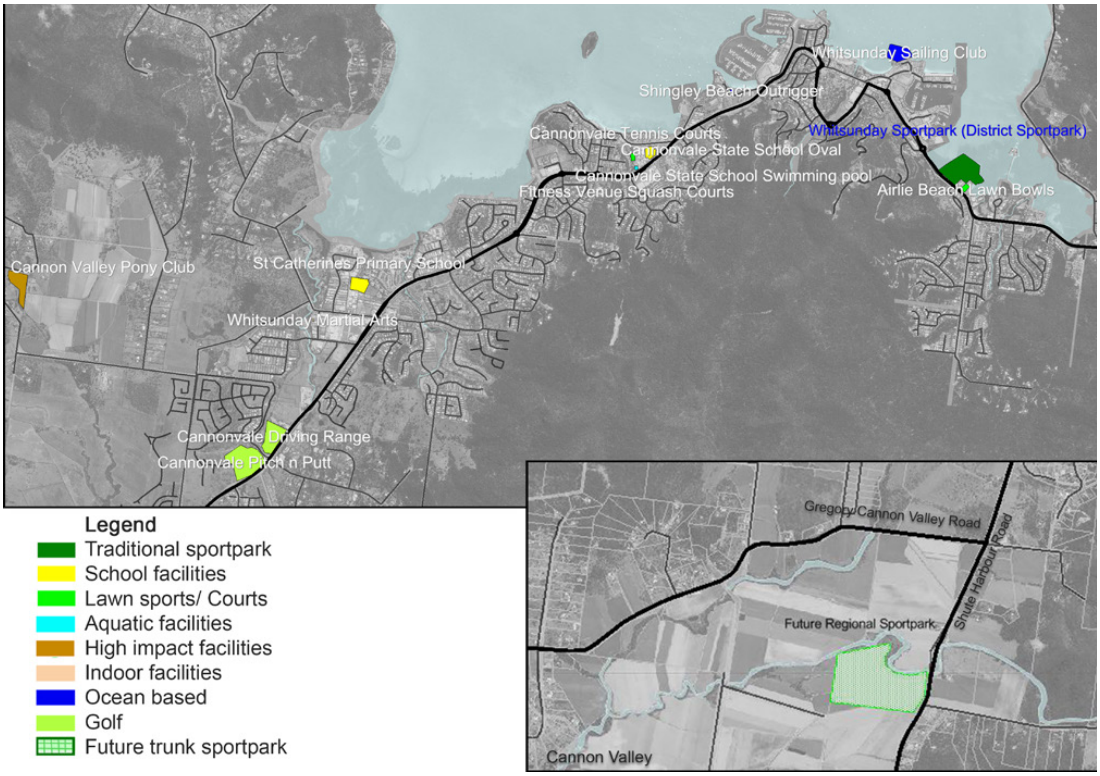


Figure 10: GABA sporting facilities.

4. Collinsville & Scottville Open Space Analysis

Collinsville and Scottville are anticipated to grow from a population of 1,370 in 2016 to 1,750 by 2036, at a rate of 1.23% per annum. The population profile varies from the QLD average, with significantly less 10-24-year-old but significantly more seniors over the age of 50 years old.

There is no statistically significant congregation of youth, family or old populations within pockets of Collinsville and Scottville, with age groups evenly spread across the urban area.

4.1. Collinsville & Scottville Recreation open space

Collinsville and Scottville have an open space network that is suitable for the demographic of the area, providing excellent accessibility, as shown by **Table 52,** and very high rates of provision in total as shown by **Table 51**. The network includes one Regional park, one District park and several Local parks, as shown by **Figure 11**.

District parks have *key recreational infrastructure*, including basketball courts (2), skate bowl (1), skate rink (1), fitness equipment and several minor playgrounds, with a community garden within Walker Street Local Park. Additional *key recreational infrastructure* is anticipated for construction utilising Works for Queensland grant funding in 2021 - 2022, including a waterpark, pump track and two new playground upgrades at Scottville and Darcy Munro Park.

All local parks have picnic infrastructure, with some also including toilets, BBQ and playground equipment. Carpet Snake Creek linear park provides connectivity between residential areas, schools and the RV park. Gaps in the walkway and a lack of tree shading along existing paths are barriers in the linear parks use, that may be addressed by future projects identified in the Collinsville Masterplan (subject to grant funding).

The *Shaping Collinsville's Future* consultation identified community desires for additional recreational infrastructure, including:

- More activities for older kids and transformation of the Lions Park to an all-ages park, with waterpark associated with the adjoining pool, playground equipment for teens and enhanced playgrounds for kids;
- Fence around Darcy Munro Park;
- Improvements to the Collinsville Youth Coalition, remarked lines on the Basketball courts and new line marking within the indoor shed for a mix of informal sports;
- Pump track at Darcy Munro Park;
- Mountain biking tracks around Mount Devlin; and
- Dog-off leash area.

Future projects will focus on gaps in the open space network, as identified by the *Shaping Collinsville's Future* consultation completed in June 2021, set out below:

Table 50: Recreational infrastructure gaps in Collinsville open space network.

Park	Recommended Recreational infrastructure	Justification
Collinsville Swimming pool / Lions Park *(2021 – 2022)*	Waterpark and amenities upgrades	• Key recreational infrastructure identified as priority projects for the community within the *Shaping Collinsville's Future* consultation and within Collinsville Masterplan; • Will meet recreational needs of kids and promote liveability in the Township.
Darcy Munro Park *(2022 – 2023)*	Pump track	• Key recreational infrastructure identified as priority projects for the community within the *Shaping Collinsville's Future* consultation and within Collinsville Masterplan; • Will meet recreational needs of kids and promote liveability in the Township.

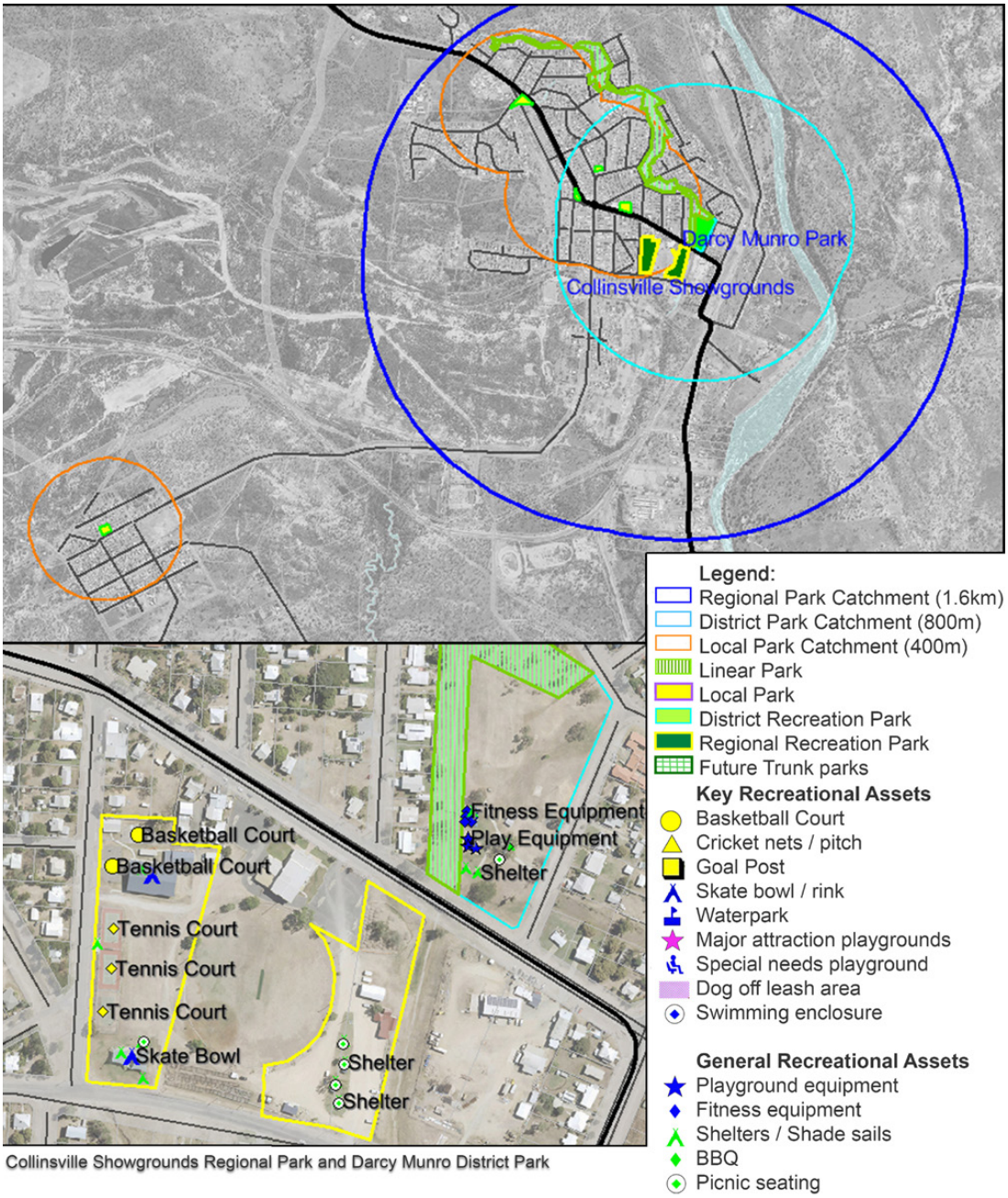
Scottville and Darcy Munro Park *(Complete)*	Playground Upgrades	• Identified as priority projects for the community within the *Shaping Collinsville's Future* consultation and within Collinsville Masterplan; • Will meet recreational needs of kids and promote liveability in the Township.
Collinsville Showgrounds *(2021 – 2022)*	Collinsville Youth Coalition tennis court refurbishment and additional seating/ shade around skate bowl.	• Identified as priority projects for the community within the *Shaping Collinsville's Future* consultation and within Collinsville Masterplan; • Will meet recreational needs of kids and promote liveability in the Township.
Carpet Snake Creek Linear Park *(Subject to design and grant funding)*	Collinsville Shared Circuit	• Will promote improved access to Showgrounds Regional Park and Darcy Munro District Park from residential areas, promoting outdoor exercise and health.
Mt Devlin Mountain bike trails *(Subject to investigation)*	Facilitation and lobby for Mountain bike trails	• Council to lobby for and facilitate Mountain bike expansion in the Region.

Table 51: Collinsville & Scottville rate of land provision for recreation parks.

Park category	Linear	Local	District	Regional	Total
Recreation park (ha)	10.349	1.37	1.76	3.1	16.58
Rate of provision (Ha/1000 people) - 1,380 persons	N/A	1	1.28	2.25	12.01
Rate of provision 2036 (Ha/1000 people) - 1750 persons	N/A	0.78	1.01	1.77	9.47
Estimated Future Recreation park 2036	No additional recreation park proposed				
Rate of provision (Ha/1000 people) 2036 population - 44,080 persons					
Local parks should be provided at a rate of 0.4ha/1,000 people; District parks should be provided at a rate of 0.5ha/1,000 people; Regional parks should be provided at a rate of 0.6ha/1,000 people; and Rate of provision is not an applicable measurement for linear parks, they are constructed as required to promote accessibility to major parks.					

Table 52: Collinsville & Scottville accessibility standards for trunk recreation parks.

Infrastructure item	Accessibility standard to urban residential areas			
	Local	District	Regional [2]	All parks
Desired standard	400m	1.6m	3km	As defined
% residents within proximity	96%		83%	97%
50% of population should be within this distance of a Local or District facility; 75% of population should be within this distance of a Regional facility; and 90% of all residents should be within this distance to any facility.				



Collinsville Showgrounds Regional Park and Darcy Munro District Park

Figure 11: Collinsville & Scottville recreation open space network.

4.2. Collinsville & Scottville Sportspark open space

Currently, Collinsville & Scottville have two district sportsparks, golf course, lawn bowls, rodeo grounds and swimming pool, as shown by **Figure 12,** that cater for 6 clubs and provide approximately 13.6ha of sporting facilities per 1,000 persons. These facilities include, rugby league, cricket, soccer, lawn bowls, swimming, equestrian, rodeo grounds and tennis. Local schools support cricket/football fields and basic athletics infrastructure, including a long jump pits.

Table 54: Collinsville and Scottville rate of provision for sport facilities.

Sportsparks	Collinsville & surrounds ha	ha/1,000 persons
Traditional sports parks	12.44	9.02
School facilities	5.28	3.83
Lawn sports, courts	0.59	0.43
Aquatic facilities	0.374	0.27
High impact facilities	53.13	38.50
Indoor facilities	0	0
Ocean based	0	0.00
Golf	35.91	26.02
Total (excl golf & high impact facilities)	18.69	13.55
District Trunk sport facilities from above categories	7.96	5.77
Regional Trunk sport facilities from above categories	0	0

Trunk sportsparks provide excellent accessibility, as shown by **Table 56,** with rate of provision of 5.77ha/1,000 persons, as shown by **Table 55**, including:

- Collinsville Junior Rugby League fields (5ha) (District sportspark); and
- Collinsville Showgrounds (2.96ha) (District sportspark), which also function as a recreation park, including cricket field, tennis courts and basketball court.

Trunk sportsparks provide excellent accessibility for Collinsville, with 100% of residents within the catchments of the two District sportsparks. A Regional sportspark is not required for this small population given limited usage of the existing sportsparks and variety of fields within schools.

The *Shaping Collinsville's Future* consultation identified community desires for additional sporting infrastructure, including:

- At Collinsville Youth Coalition (CYC) (Showgrounds), formalised and safe car parking, remarked lines on basketball courts, new line marking within the indoor shed for a mix of informal sports and surface maintenance of tennis courts (complete); and
- support in sport coaching as limited volunteers existed to set-up kids team sports.

Upgrades at the CYC have been included within the Collinsville Masterplan for future grant funding. Enlisting additional sport coaches is considered to be outside of Council's influence.

Table 55: Collinsville and Scottville rate of provision for trunk sportsparks.

Park category	District	Regional	Total Sportsparks
Sportspark (ha)	7.97	No Regional Sportspark	7.97
Rate of provision (Ha/1000 people) - 1,380 persons	5.77		5.77
Rate of provision (Ha/1000 people) 2036 population - 1750 persons	4.55		4.55
Estimated Future Sportspark 2036 (ha)	No additional District sportsparks proposed		-
District sportsparks should be provided at a rate of 0.6ha/1,000 people; Regional parks should be provided at a rate of 1ha/1,000 people; or All trunk sporting facilities should be provided at a rate of 1.6ha/1,000 people.			

Table 56: Collinsville accessibility standards for trunk sportsparks.

Infrastructure item	Accessibility standard (km)[1]	
	District	Regional
Sportspark	10	25
% residents within proximity	100%	0%
90% of residents in an urban area are within either 10km of a District sportspark or 25km of a Regional sportspark.		

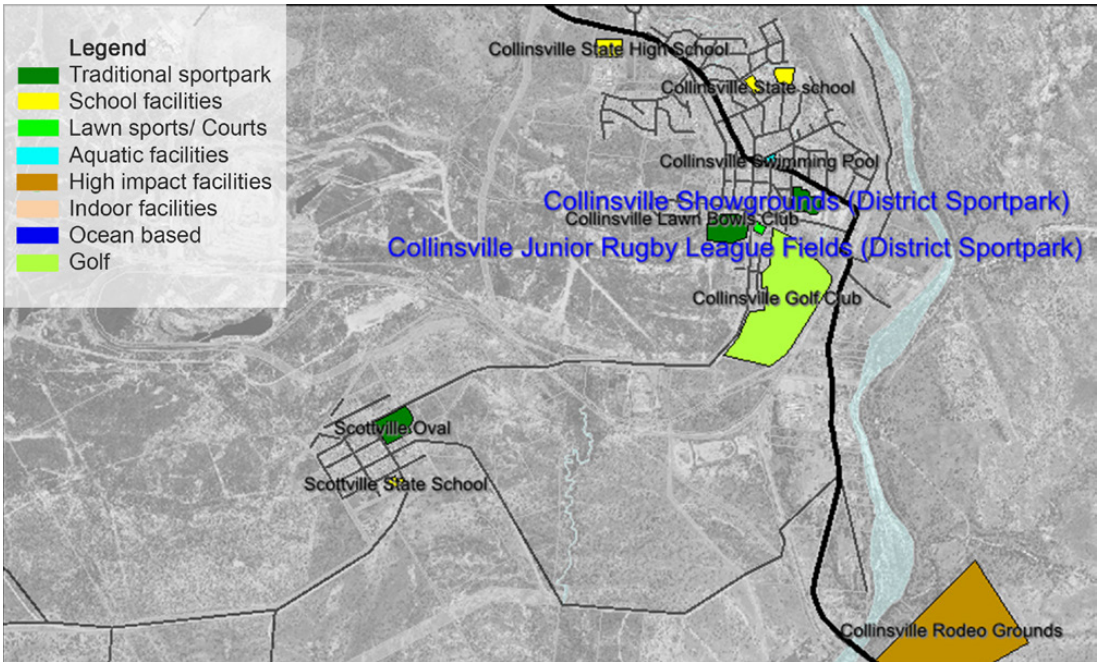


Figure 12: Collinsville and Scottville sporting facilities.

5. Gloucester & Conway Open Space Analysis

Dingo Beach and Hideaway Bay have a population of 378 persons composed predominately of an older demographic between 50 and 75 years old. Hideaway Bay has capacity to absorb some additional population growth, anticipated to be predominately retirees given the areas unique lifestyle attraction for this age group.

Conway and Wilson Beach have a population of approximately 140 persons, composed predominately of an older demographic between 60-70 years old. No population growth is anticipated in these locations due to a lack of available land.

5.1. Gloucester & Conway Recreation Open Space

The Region's beach side Towns accommodate small local and visitor populations. Foreshore parks at each of these Towns are designed to accommodate beach goers with basic picnic infrastructure and playgrounds, as shown by **Figure 13**. *Key recreational infrastructure* includes basketball court and swimming enclosure at Dingo Beach. Dingo Beach Foreshore Park is categorised as a District recreation park given its *key recreational infrastructure* and diversity of picnic equipment. All other parks are local parks with each having a several picnic areas to support beach goers.

No future parks are anticipated in these areas given high rates of provision per person and accessibility standards, albeit future investments may seek to better connect Hideaway and Dingo Beach via a nature walk, subject to future grant funding.

Table 57: Dingo & Hideaway Bay rate of land provision for recreation parks.

Park category	Linear	Local	District	Regional	Total
Recreation park (ha)	Nil	8.89	6.51	nil	5.4
Rate of provision (Ha/1,000 people) - 378 persons	N/A	23.51	17.2	N/A	40.74
Local parks should be provided at a rate of 0.4ha/1,000 people; District parks should be provided at a rate of 0.5ha/1,000 people; Regional parks should be provided at a rate of 0.6ha/1,000 people; and Rate of provision is not an applicable measurement for linear parks, they are constructed as required to promote accessibility to major parks.					

Table 58: Dingo and Hideaway Bay accessibility standards for trunk recreation parks.

Accessibility standard to urban residential areas				
Park category	Local	District	Regional [2]	All parks
Desired standard	400m	800m	1.6km	As defined
% residents within proximity	100%		0%	100%
50% of population should be within this distance of a Local or District facility; 75% of population should be within this distance of a Regional facility; and 90% of all residents should be within this distance to any facility.				

Table 59: Wilson and Conway Beach rate of land provision for recreation parks.

Recreation park					
Park category	Linear	Local	District	Regional	Total
Recreation park (ha)	Nil	2.07	nil	nil	2.07
Rate of provision (Ha/1000 people) - 140 persons	N/A	14.8	N/A	N/A	14.8
Local parks should be provided at a rate of 0.4ha/1,000 people; District parks should be provided at a rate of 0.5ha/1,000 people; Regional parks should be provided at a rate of 0.6ha/1,000 people; and Rate of provision is not an applicable measurement for linear parks, they are constructed as required to promote accessibility to major parks.					

Table 60: Wilson and Conway Beach accessibility standards for recreation parks.

Accessibility standard to urban residential areas				
Park category	Local	District	Regional [2]	All parks
Desired standard	400m	800m	1.6km	As defined
% residents within proximity	100%		0%	100%
50% of population should be within this distance of a Local or District facility; 75% of population should be within this distance of a Regional facility; and 90% of all residents should be within this distance to any facility.				

5.1.1 Gloucester and Conway Sportspark open space

No trunk sportsparks exist within Gloucester or Conway, although Conway townships may be within the catchment of a future Regional sportspark in Cannon Valley. Gloucester sport complex (0.55ha) services Dingo and Hideaway Beach populations, with a tennis court and lawn bowls green.

Works for Queensland grant funding will deliver improvements to access and car parking at the Gloucester Sport Complex between 2021-2024.

Table 62: Rate of provision of sporting facilities within Gloucester. Note it is a non-trunk sport facility.

Sportsparks	Gloucester ha	ha/1,000 persons
Lawn sports, courts	0.55	1.46

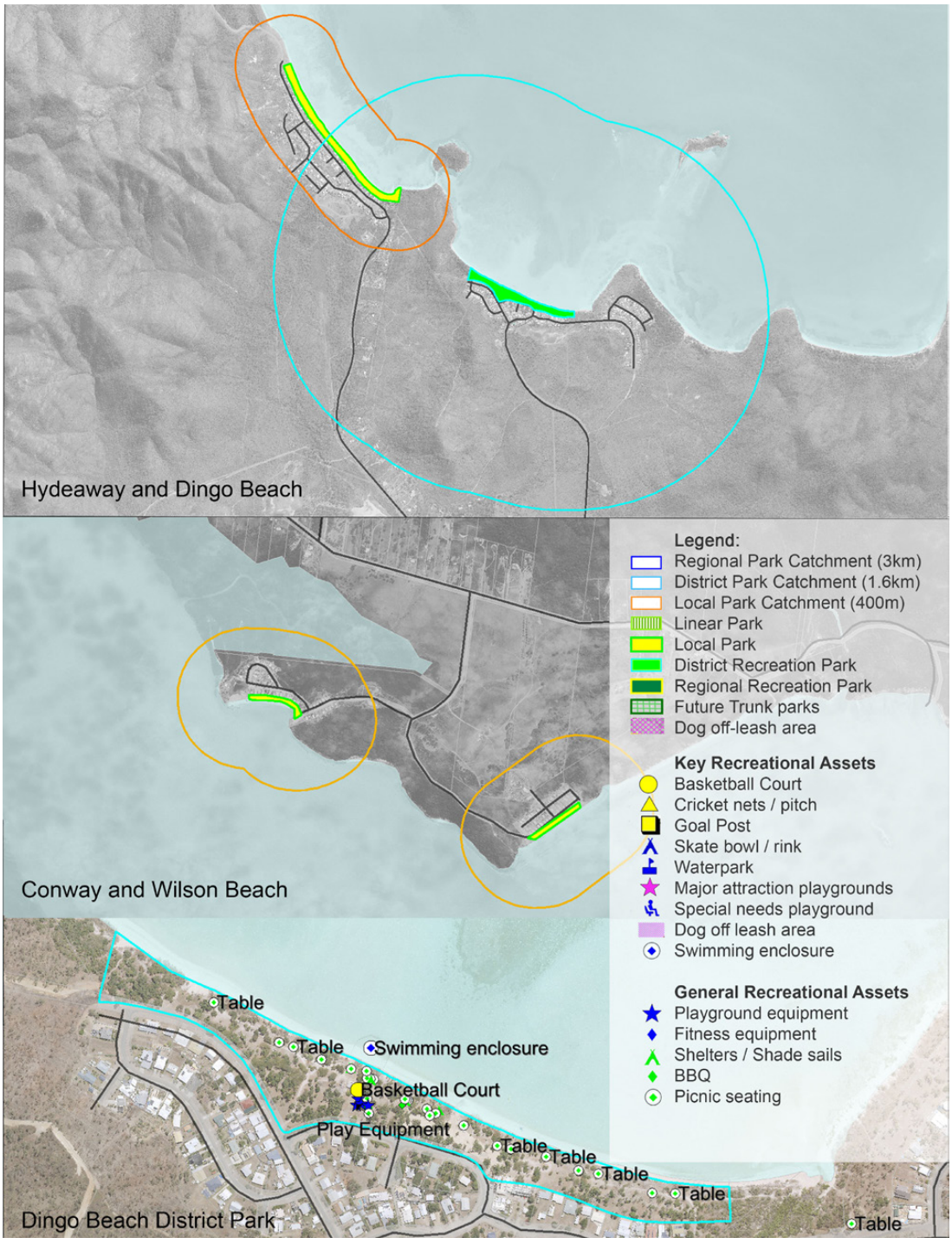


Figure 13: Gloucester and Conway recreation open space network.

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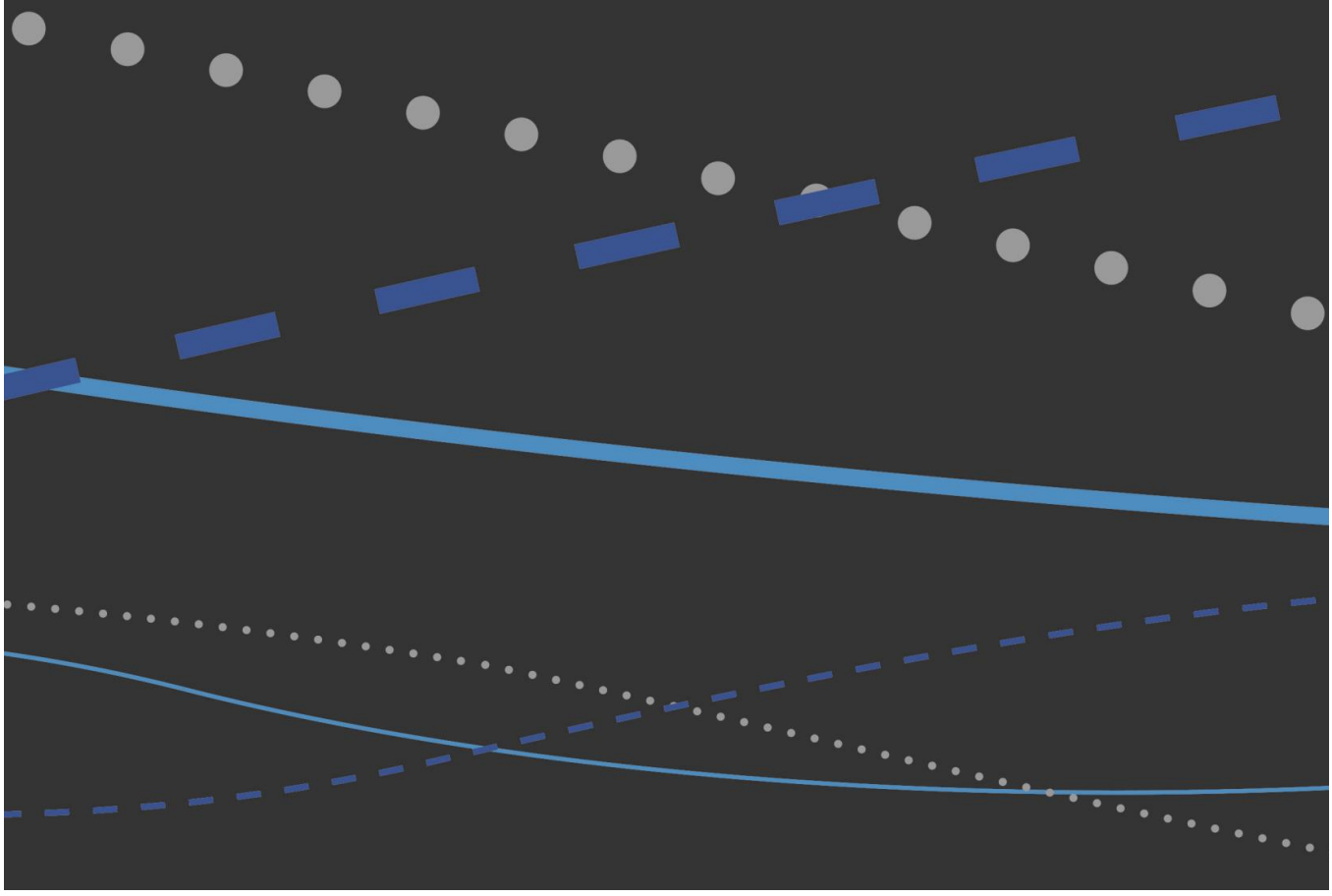
Whitsunday Regional Council

Whitsunday Development Manual Amendment and Draft Open Space Strategy 2022

Community Engagement Plan



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Document History

Title	Version No.	Date	Author	Reviewer	Approved by
Report	1.0	21/06/2022	Jonathan Cutting		
Report	1.1	28/06/2022	Jonathan Cutting	Neil McGaffin	

1. Introduction

1.1 Background

Whitsunday Regional Council (WRC) has prepared the *Draft Open Space Strategy 2022 and* an amendment to the *Whitsunday Development Manual Planning Scheme Policy* (Development Manual). The Development Manual was last amended on the 21 December 2018.

The Development Manual specifies the technical requirements for development infrastructure to become a Council asset. Several amendments are proposed and will be formalised in accordance with the process stipulated within the *Ministers Guidelines and Rules 2020.* Council's network asset owners have developed a range of amendments to the Development Manual in response to updated Australian standards, rectifying historical issues and ongoing continuous improvement.

The Development Manual Amendment is intrinsically linked with other Planning Scheme consultations occurring in 2022, including the *Whitsunday Planning Scheme 2017 Major Amendment* and the *Local Government Infrastructure Plan Amendment.* The Development Manual is 'extrinsic material' to the *Local Government Infrastructure Plan* (LGIP) *Amendment* and forms part of the amendments review process, as it contains reference to standards for trunk infrastructure but will undergo its own amendment process.

The *Draft Open Space Strategy 2022* is a network analysis of parks and open space, it informs parks design within the Development Manual and is 'extrinsic material' to the LGIP Amendment.

This Community Engagement Plan outlines the communication processes, methods and action plan to engage with the community during the 20-business day consultation period in July - August.

1.2 Purpose and Aim of the Community Engagement Plan

This Community Engagement Plan (The Plan) will support the project to ensure all communication activities are appropriate, consistent and delivered in a timely manner. It outlines key messages, objectives and aims to increase participation by the community during the engagement process. This Plan identifies and defines the roles of persons involved in this project, formally defining who should be given specific information, when information will be delivered and what communication channels will be used to deliver the information.

1.3 Communication Objectives

Open and transparent communication and stakeholder management plays a key role in enabling effective engagement. The key objectives of this Plan are to:

- Ensure a transparent and open process where all affected residents and key stakeholders are provided with information in a consistent and timely manner;
- Identify and manage communication issues and risks throughout the project; and
- Enhance stakeholder and community awareness, understanding and confidence by following best-practice communication and engagement principles.

1.4 Communication Objectives by Project Phase

The Development Manual and Open Space Strategy consultation will have several clear phases and communication objectives, outlined in Table 1.

Table 1 Communication Objectives

Project Milestones	Indicative Timing	Level of Engagement	Communication Objectives
1. Community Engagement Plan developed	June	Involve	To engage with internal stakeholders during the planning process and develop a communications and engagement strategy.
2. Prepare Consultation materials	July	Involve	To prepare materials for the consultation and/or engagement process, and gain approvals from the Project Manager and relevant Director.
3. Launch Community Consultation	July	Consult	To inform and engage with all directly affected residents and key stakeholders and undertake engagement activities.
4. Close Community Consultation and prepare Consultation Report	August - September	Inform	To inform the community that consultation has closed and prepare the Consultation Report and Summary.
5. Close the Loop – Report back to the community	December	Inform	To provide all participants with a copy of the Consultation Summary and publish this document on the website.

1.5 Communication Principles

Several key consultation principles have been developed, summarised in Table 2 below:

Table 2 - Summary of Consultation Principles

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 respects 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. Stakeholder Identification

A stakeholder is defined as any individual, group of individuals, organisation or political entity with an interest in the outcome of a decision. They may be, or perceive that they may be, affected directly or indirectly by the outcome of a decision. To ensure the best outcome when communicating, stakeholders must be identified, and level of engagement determined.

2.1 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. Based on the levels of engagement, outlined below in Table 3, Council will:

- ***Inform*** *the wider community throughout every phase of the project; and*
- ***Consult*** *key stakeholders.*

Table 3 – IAP2 Public Participation Spectrum

IAP2'S PUBLIC PARTICIPATION SPECTRUM

The IAP2 Federation has developed the Spectrum to help groups define the public's role in any public participation process. The IAP2 Spectrum is quickly becoming an international standard.

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.

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2.2 Stakeholder Analysis

A summary list of potential stakeholders has been developed below, demonstrating the level of consultation and communication methods best suited to each stakeholder group.

Table 4 - Project stakeholders and level of consultation

Stakeholder Category	Representative/Member	Level of consultation
Local Government		
Whitsunday Regional Council executive leadership	Mayor, CEO & Councillors Customer Service Roads & Drainage Branch Economic Development Branch Development Assessment Branch Water and Waste Corporate Services Communications & Marketing	Consult
Government Representatives and Bodies		
Department of Natural Resources, Mines and Energy (DNRME)	Representatives	Consult
Department of Transport and Main Roads (DTMR)	Representatives	Consult
Department State Development and Infrastructure Planning (DSDIP)	Representatives	Consult
WRC - Development Assessment Branch - Environmental Health Branch - Infrastructure Services - Natural Resources Management Branch	Representatives	Collaborate
Affected Organisations		
All known industry stakeholders identified in Appendix A - Planning - Engineering - Building	Representatives	Consult
Interested community, recreation and sporting stakeholders identified in Appendix A	Representatives	Consult
General Community		
Wider public		Consult

3. Roles and Responsibilities

The project team's roles and responsibilities have been outlined below in Table 5:

Table 5 – Roles and Responsibilities

Project Team Roles	Responsibilities
Project Manager (Shane Neville)	Manage and coordinate the project's deliverables, keep project phases on track and budget, and approve all communications materials.
Project Support Officer (Jonathan Cutting)	Support Project Team with administration tasks and assist Project Manager in reporting.
Executive Project Director (Neil McGaffin)	Approve all major planning and communications strategies prior to implementation. Act as media spokesperson when the Mayor is unavailable.
Communications & Marketing Support (Lisa Maher)	Assist Project Team by preparing strategy to communicate with key stakeholders and residents, draft and review communications and marketing materials, coordinate engagement activities, prepare reporting.
Communications & Marketing Manager (Greg Martin)	Manage all media enquiries and issues which may arise during the project, act as liaison between Councillors and the Project Team, approve all media communications and external communications.

4. Identify Risks of Poor Communication

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 effectiveness of the project. Several potential risks may be associated with this project due to existing community concerns. These potential risks will require management throughout the communication process, and have been identified below in a risk assessment table:

Table 6 – Risk Assessment

Identified Risk	Level of Impact (High, Medium, Low)	Mitigation Method
Lack of understanding of the role of the Development Manual, in relation to the Planning Scheme	Medium	• Clarify how the Development Manual supports codes within the Planning Scheme, by specifying 'how to build' infrastructure.
Community unable to understand the ramifications of technical engineering changes.	Medium	• Communicate intent of key changes relevant to core community concerns that are predominately focused on the environment and parks. • Clarify that majority of changes are technical that impact upon developers and industry, intended to align with best practice, Australian standards or minimise ongoing operational costs.
Concern over the economic impact of engineering changes on development industry.	Medium	• Identify that proposed changes are in accordance with best practice, updated Australian standards and/or are intended to minimise ongoing operational costs.

		• Highlight key changes relevant to each occupation - planners, engineers and builders.
Concern over proposed design outcomes for future parks, including desired embellishments in each.	Medium	• Utilise fact sheet to highlight best practice open space design themes in that seek to meet the needs of the community, identified within the *Draft Open Space Strategy 2022* and historic community surveys.
Re-iteration of historic community concerns related to engineering standards for protection of turtles and migratory sea birds from artificial light.	Medium	• Utilise fact sheets to identify proposed amendments that ensure lighting impacts on marine life in roads and open space are mitigated.
Re-iteration of historic community concerns related poor management of development sites erosion and sediment.	Medium	• Utilise fact sheets to identify proposed amendments that ensure seek to improve the reporting and implementation of erosion and sediment controls in development.
Re-iteration of historic community concerns related to vegetation clearing for development.	Medium	• Utilise fact sheets to identify proposed amendments that facilitate re-vegetation of underutilised open space to promote ecological outcomes and reduce maintenance requirements.
Lack of understanding of the purpose of the Draft Open Space Strategy and community involvement in its development.	Low	• Fact sheet to summarise the Strategy as a wholistic network plan to identify gaps in needs for future investment, promote equity across all Townships and develop sustainable desired standards of service that promote liveability without increasing the cost of operating the open space network per-capita. • The Draft Open Space Strategy was developed in collaboration with the community through the *Open Space Sport Survey 2020,* historic recreation park consultations and literature review of best practice open space planning to ensure outcomes met the needs of the community and contribute to the Region's liveability.
Confusion over the link between the Draft Open Space Strategy, desired standards of service and LGIP.	Medium	• Fact sheets and key messaging explain the purpose of the network analysis to inform desired standards of service that will influence park provision into the future and importance of recognising key projects for future investments by Council or grants.
Concern over proposed desired standards of service within the Draft Open Space Strategy not meeting community needs.	Medium	• Fact sheets and key messaging communicate purpose of revised desired standards of service in balancing investment, operational costs and outcomes that promote liveability in the community.
Desire to include additional future open space projects within the	Medium	• Highlight projects identified in collaboration with the community through the *Open*

Open Space Strategy's Schedule of works.		*Space Sport Survey 2020* and analysis of the open space network to identify gaps.
Expectation that all projects identified within the Schedule of works and future projects will be delivered.	High	• Re-iterate that many projects are subject to grant funding for design and construction. • Recognise importance of identifying a wish list of priority projects for the open space network to support future grant applications and Council investment.

5. Communication Strategy

The Plan has been broken down into several different elements, enabling Council to appropriately inform and engage with the Regional community during the 20-business day consultation period. The key elements of this section include communication management, communication tools and an Action Plan.

5.1 Communication Management

5.1.1 Communication Protocol and Media Spokesperson

The following protocols will be followed throughout the consultation process:

- All media enquiries will be directed through Council's Communications & Marketing Manager and the Project Director.
- The Whitsunday Regional Council Mayor will be the key spokesperson for any media statements or releases. If the Mayor is not available, the Project Director will be media spokesperson for the project.
- All other enquiries will be directed to the Project Manager who will notify the Communications & Marketing Manager, if necessary.
- All formal external communication materials will be reviewed and approved by the Project Manager, Project Director, and the Communications & Marketing Manager.
- 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.

5.2 Internal Communication Tools

The following tools will be used to facilitate effective communication within the project team to respond to and manage potential issues with the community:

- Email/phone
- Meetings/briefings
- Progress reports, and
- Project meetings.

5.3 External Communication Tools

The following engagement tools may be used during the consultation process:

- Newspaper public notice (mandatory)
- Public display (mandatory)
- Website
- Media releases and Facebook Postings
- Email

- Key messages
- Online submissions to Yoursay.whitsunday.qld.gov.au, and
- Fact sheets.

5.3.1 Newspaper Public Notice (mandatory)

A Public notice will be placed in local newspapers to notify of the proposed consultation at consultation start and one week prior to consultation end. The Public notice may be viewed in **Appendix 2.**

5.3.2 Public display at Council offices (mandatory)

The Public notice, fact sheets and submission templates will be available at each Council office in Cannonvale, Proserpine, Bowen and Collinsville. The Development Manual will also be available for viewing digitally or in hardcopy, if requested.

5.3.3 Whitsunday Regional Council websites

A dedicated page will be available on Your Say Whitsunday with project updates, links to public notices and fact sheets.

5.3.4 Media Releases

Media releases may be used at strategic points throughout the project stages, announcing important milestones and information. Any media releases to be newsworthy and relevant.

5.3.5 Email

Council will email key industry stakeholders identified within Table 4 to provide a brief overview of the amendment and encourage engagement.

5.3.6 Meetings with key stakeholders

Council will offer meetings with key industry stakeholders or community groups to answer any queries on the *Development Manual Amendment* or *Draft Open Space Strategy 2022*.

5.3.7 Social Media

Council's social media platforms, Facebook, Twitter and YouTube, may be used to distribute information to the public throughout the duration of the project. Each of these platforms requires a different approach to content, so all content will be drafted and released strategically to ensure it is relevant to each platform's audience. Social media can be a great tool for engaging with the wider community and encourages sharing of information.

5.3.8 Fact sheets

Fact sheets and explanatory information will be made available on Yoursay consultation website and offered to customers making inquiries about the *Draft Open Space Strategy 2022* or *Development Manual Amendment*. Proposed fact sheets will include:

1. Summary of the Amendment for the general community and industry stakeholders
2. Summary of *Draft Open Space Strategy 2022*
3. Detailed overview of key changes for each Council asset type, Parks, Stormwater, Roads, Water/Sewer, and
4. How to make a 'properly made' submission template, within **Appendix 3**.

5.3.9 Key Messages

The following key messages have been drafted to communicate about the project and mitigate communication risks. Key messages will be updated regularly with new information, as required:

Development Manual Amendment - General

- Development Manual is a Planning Scheme Policy that specifies the technical requirements for infrastructure created by private development to become a Council asset.
- Council's network asset owners have developed a range of amendments to the Development Manual in response to updated Australian standards, rectifying historical issues and ongoing continuous improvement.
- Highlights for topics of community interest include amendments to:
    - Improve erosion & sediment control and stormwater quality management
    - Include Parks and Open Space Design Guideline
    - Re-vegetation and watercourse re-vegetation standards
    - Revised road hierarchy and provision of pedestrian / cycle paths, and
    - Various technical amendments to stormwater, water and sewer infrastructure requirements.

Development Manual Amendment – Erosion & sediment control

- Clarification of reporting requirements and qualifications for Erosion and Sediment Control Strategy and Plans, subject to the scale of disturbance.
- Expansion of requirements to be included within reports to aid assessment and compliance.
- Introduction of hold point for Council to ensure installed controls are in accordance with the approved Strategy/Plan.

Development Manual Amendment - Parks

- Inclusion of Park and Open Space Design Guideline.
- Guidance on park design to promote functional open space that meet the needs of the community and required embellishments for each park type.
- Re-vegetation area design and handover expectations.
- Drainage corridor design and handover expectations.

Development Manual Amendment - Roads

- Amended road hierarchy in accordance with *IPWEA Street Design Manual* Australian Standard and various flow on amendments.
- Amended standards for pathways and bikeways in accordance with updates to AUSTROADS standards.
- Updated requirements for JJ Richards rubbish trucks turning circles.

Development Manual Amendment – Stormwater

- Guidance on flood study development, to ensure consistent approach in accordance with Councils methodology.
- Ensure integration with Council drainage study, catchment or waterway management plans, as they are developed.
- Improve guidance for inter-allotment drainage.
- Guidance on open channels and integration with parks and open space design guideline for watercourse re-vegetation.

Development Manual Amendment – Water and Sewer

- Ensuring chlorinated water utilised for flushing new lines is adequately de-chlorinated prior to entering the environment.
- Facilitating improved network stability by requiring water connections to loop between cul-de-sac heads rather than dead ends.
- Ensuring infrastructure is designed to consider connection of future undeveloped urban zoned land and associated demand.
- Specification of pipes that are preferred within the pressurised water network, excluding lower quality pipes.
- Requirement for SEQ code compliant pre-cast manholes.

Draft Open Space Strategy 2022

- Council undertakes wholistic infrastructure network plans, such as the *Draft Open Space Strategy*, to inform Desired standards of service (DSS), investment gaps and ensure equity across the Region.
- DSS are related to the performance of the infrastructure network in meeting the community's needs. Parks DSS are proposed to be amended within the LGIP, informed by the *Draft Open Space Strategy*.
- The Strategy was developed in collaboration with the community through the *Open Space Sport Survey 2020*, historic recreation park consultations and literature review of best practice open space planning to identify community needs, investment gaps and revised DSS that contribute to the Region's liveability.
- Proposed Schedule of Works identifies priorities for grant funding in recreation and sport parks to better service community needs and promote equity across townships.
- Amended DSS within the Strategy:
    - take into consideration access to National Parks and Beaches to inform an amended rate of recreation park provision.
    - place greater importance on Regional and District recreation parks than Local parks, as they have a greater attraction value that encourages people to get outdoors, but also walk/cycle greater distances from home.
    - preference larger Regional sport facilities over District facilities, as large sized facilities are preferred for families required to travel greater distances for sport to allow more incidences of cross-over in weekday trainings or weekend sport.
    - consolidate existing sportspark land to encourage expenditure on high-quality infrastructure rather than excess spend on sporting land. High-quality infrastructure provides conditions to create competitions/events, enable the emergence of non-mainstream sport and attract more participants, and
    - aim to increase the use of school's land for junior sport, to alleviate the need for District Sport Park land

6. Action Plan

An Action Plan has been developed to provide a consistent structure to developing and implementing the communication strategy (**Table 7** below). This Action Plan will continue to be reviewed and updated as the project progresses.

Table 7 – Communications Action Plan

Step		Timing	Aim	Objective	How
1	Community Engagement Plan developed	June	Develop a Community Engagement plan	To engage with internal stakeholders during the planning process	▪ Direct contact by email and phone with key stakeholders ▪ Face-to-face meetings with project team
2	Prepare Communications / Consultation Materials	July	Prepare engaging, easy-to-understand key messages and materials for distribution	To provide clear, consistent and engaging communications	▪ Council websites updates ▪ Media materials ▪ Newspaper Public notice ▪ 'Properly made' Submission templates ▪ Fact sheets
4	Launch Community Consultation (20 B.D)	July - August	Engage and inform the community	To provide opportunities for affected stakeholders and residents to get involved and give feedback	▪ Media release ▪ Social Media ▪ Website updates ▪ Newspaper public notice ▪ Public notice, Development Manual and *Draft Open Space Strategy* available in Council offices
5	Close Consultation and prepare Consultation Report	September - October	Analyse feedback results and prepare the Consultation Report and one-page Summary	To advise affected stakeholders and residents that consultation has closed, and reporting is underway	▪ Website updates ▪ Media Release ▪ Social media
6	Close the Loop – report back to the community	December	Report back to the community by publishing the Consultation Summary	To inform participants and key stakeholders about the key results and outcomes of the consultation process	▪ Website updates ▪ Social media update ▪ Direct emails to Participants

7. Feedback and Integration

7.1 Next steps

Community Engagement materials will now be developed in preparation for the consultation activities to commence in September, for a period of 20 business days.

At each phase of community engagement, the public will be advised of the project milestones and next steps by web update, media release and newspaper ad.

It is recommended that stakeholder and community engagement continue throughout each project phase. This Plan will continue to be updated to reflect ongoing community engagement.

7.2 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 one-page 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.

Appendix 1 – Key Stakeholders

Affected Community Stakeholders

Includes interested community groups, industry leaders and sporting groups.

Bowen and Collinsville Enterprise (BCE) Bowen Business Chamber Bowen Lions Club Bowen Rotary Club Bowen Tourism and Business Bowen Sport Complex Bowen PCYC Collinsville Community Association Collinsville Connect Collinsville Youth Coalition Denison Park Sport Complex Dingo Beach Progress Association Hydeaway Bay Progress Association 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. Port of Airlie Proserpine Chamber of Commerce Proserpine Community Centre Proserpine District Lawn Tennis Association	Proserpine Junior Sport Complex Proserpine Hack & Pony Club Proserpine Junior Cricket Proserpine Junior League Proserpine Ladies Bowls Club Proserpine Ladies Squash Club Proserpine Lions Club Proserpine Pool Proserpine Progress Association Proserpine Progress Community Group Proserpine Rodeo Association Inc Proserpine Rugby League Football Club Inc Proserpine Taipans Junior Soccer Proserpine Whitsunday Raiders Rugby Union Reef Catchments Rotary Airlie Beach RSL Airlie Beach Whitsunday Sub Branch Save Our Foreshore Inc Tourism Whitsundays Whitsunday PCYC Whitsunday Sportspark Whitsunday Fauna Rescue Whitsunday Conservation Council Whitsunday Coast Chamber of Commerce Whitsunday Organic Community Gardens Whitsunday Ratepayers Association Whitsunday Region Ratepayers Association Whitsunday Running Club & Festival Whitsunday Zonta Zonta Club of Bowen

Affected Industry Stakeholders

AAA Building Consultants	Department of Natural Resources, Mines and Energy (DNRME)
Abell Builders	Department of Transport and Main Roads (Marine infrastructure)
Agile Approvals	Department State Development and Infrastructure Planning (DSDIP)
Airlie Beach and Whitsunday Real Estate	Derek Hansen
Airlie Beach Constructions	Dixon Homes
Airlie Beach Plumbing & Gasfitting	EcoDrill -
Airlie Builders	First National Real Estate Whitsunday Coast
Airlie Plumbing	Flanagans Engineering

Alan Jamieson	Focus on Water
Allen Build	Front line Constructions
Allen Trinder Building	Gary Goddard Engineering
Apex Home Constructions	Gary Molloy Building
BBS Developments	Gary Taylor
BC Constructions	GJ Gardner Homes
Beachtech Designs	Greg Dibben
Ben - Blue Palm Property	Greg Matthews
Bernie McErlane	GT Homes
Berry Excavations	Hermsa Constructions
Blue Diamond Constructions	Hutchinson Builders
Bluewater Plumbing	Hydeaway Plumbing & Gas Fitting Service
Bob Bogie & Co Solicitors	Ideal Gas & Plumbing
Bob Thomson	Integral Building
Brad Penhallurick	Jaremus Constructions
Brahman Builders	Jason Bartz
Brazilbuilt	Jeff Day Plumbing
Brian Smith Constructions	Jeremy Smith Constructions
Bruce Absolon	Jim Stace Carpentry & Construction
Cane Civil Constructions	JM Constructions
Cannonvale Plumbing	John Harris - PRD Whitsunday
Century 21	Justin Daley
Century 21 Bowen	Kegsawers
Chris Bailey Pools	Kendall Nash
Chris Russell Constructions	Laser Plumbing
Clarkco Pty Ltd	Latitude 20 Homes
Colin Hounsell	Laurie Smith
Colony Building Group	Lawto's Barefoot Real Estate
Coral Sea Carpentry	Leith Michell Builder
Crear Construction	Sandra Hansche
Cumberland Homes	SMEC Engineering
Dan McCormack	Spannys Real Estate
LJ Hooker Bowen	Splash Pools
Lindsay Bates Building	STA Engineering
LJ Solid Constructions	Steve Knight
Lowcock Builders	Steve Paine Builder
Macrossan & Amiet Solicitors Proserpine	Steve Williams
Marco Deboni	Stewart Lester
Matt Kelly	Sunstate Shed
McNeill Building	Sunsteel Homes
Merrick Constructions	Tap Out Plumbing

Milford Planning	Taylors Property Specalists
Moloko Homes	Terry Kemp
Morton Plumbing	Terry Peach
Neil Sempf	Think Water
Northarm Constructions	Titan Homes
O'Connor Plumbing	Totally Drained Plumbing
Paragon Engineering	Town & Country Builders
Paul Smith	Trevor Glasson Engineering
PD Law	Trevor Harrison
Peter Town Homes	Trevor Yuskan
Petos Constructions	Veris
Piccinelli Builders	Vision Surveys
Pichers Industries	Wakefield Plumbing
PRDnationwide Whitsunday	Wayne Borellini
Premise	Whaleback Plumbing
Premise	Whit Spec
Professional Whitsundays	Whitsunday Law
Queensland Parks and Wildlife Service	Whitsunday Reality
Queensland Rail	Winterburn Constructions
Ray White Whitsunday	Winterburn Pools
Real Estate for Sale	Wynne Planning & Development
Reece Milburn	Plants Whitsunday
Reece Plumbing	
Ricciardi Builders	
Rob Jeffrey	
Rob Taylor	
Ross Smith	
RPS Group	
Rudd Constructions	

Appendix 2 – Public notice

Whitsunday Development Manual Amendment and Draft Open Space Strategy 2022 Newspaper advertisement mandatory information

The information provided in the box below is the mandatory information for advertising in the Region's local newspapers in accordance with *Ministers Guidelines and Rules 2020.*

Whitsunday Regional Council

Public Consultation for the *Draft Open Space Strategy 2022 and Whitsunday Development Manual Planning Scheme Policy Amendment* will occur between 8am 18 July 2022 – 5pm 16 August 2022. The purpose of the Development Manual Amendment is to include a variety of updates to technical requirements and standard drawings that inform design of development infrastructure to become a Council asset. Amendments are related to updates in Australian standards, rectifying historical issues and design improvement within the following themes:

- Erosion & sediment control
- Parks and open space design
- Stormwater management
- Roads hierarchy and design standards
- Water and sewer design standards

The *Draft Open Space Strategy 2022* is a wholistic network plan that informs park and open space design in the Development Manual, amendments to the Desired Standards of Service in the Local Government Infrastructure Plan and priorities for future investment in the Open Space network.

The *Draft Open Space Strategy 2022 and* proposed *Whitsunday Development Manual Amendment* and supporting information are available for inspection at http://yoursay.whitsundayrc.qld.gov.au/ and at Council's Customer Centres:

Cannonvale	Shop 23, Whitsunday Plaza
Bowen	67 Herbert Street
Collinsville	Corner of Stanley & Conway Streets
Proserpine	83 Main Street

Written submissions about any aspect of the *Draft Open Space Strategy 2022 or Whitsunday Development Manual Amendment* may be made to the Whitsunday Regional Council by any person. A properly made submission must include your name, address, signature and be received in the public consultation period. For further information on making submissions please refer to the Project Page at http://yoursay.whitsundayrc.qld.gov.au/ for a submission template.

If you have any enquiries about the proposed Development Manual Amendment, please contact Council's Strategic Planning Branch on (07) 4945 0263 or email us at submissions@whitsundayrc.qld.gov.au

Appendix 3 – Submission template

HAVE YOUR SAY ON THE DRAFT OPEN SPACE STRATEGY AND WHITSUNDAY DEVELOPMENT MANUAL AMENDMENT

Whitsunday Regional Council is undertaking public consultation on the proposed Development Manual Amendment. Public consultation begins on **18 July 2022** and will close at **5pm on 16 August 2022**. On completion of the consultation period Council will consider and respond to all submissions. Submissions and submission responses will be placed online and submitters will be notified by mail in the beginning of 2022.

Council encourages your review and submission on the *Draft Open Space Strategy 2022 and Whitsunday Development Manual Amendment* by mail, online or in person to a Council Customer Centre. Please lodge your submission by **5pm, 16 August 2022**. The attached template has been prepared for your convenience.

Making a Submission – Hints and Tips

- Properly made submissions must include your name, address, signature and be received in the Consultation period closing at **5pm, 16 August 2022**.
- A submission may be in regard any part of the *Draft Open Space Strategy 2022 or Whitsunday Development Manual Amendment*.
- If the submission is regarding a specific component of the *Draft Open Space Strategy 2022 or Whitsunday Development Manual Amendment*, outline which part, your grounds for concern/support, examples grounding that concern/support and any alternate outcome you are seeking.
- If the submission is more general, consider using the headings in the document then your grounds for concern/support, the information and examples grounding that concern/support and any alternate outcomes you are seeking.
- To assist Council in understanding your views include evidence, documentation, photographs and maps to assist in justifying specific points in the submission.
- The submission should be easy to read, using dot points, short sentences and plain English.

Submitter Details

<table>
<tr><td rowspan="4">Your details

(Required)</td><td>Title:</td><td>First name:</td><td colspan="2">Last name:</td></tr>
<tr><td colspan="4">Postal address:</td></tr>
<tr><td colspan="2">Suburb:</td><td>State:</td><td>Postcode:</td></tr>
<tr><td colspan="4">Email address:</td></tr>
<tr><td rowspan="2">(Optional)</td><td colspan="4">Are you completing this survey as a private individual or as a representative of an organisation?
☐ Individual
☐ Organisation – Please specify the name of the organisation below.</td></tr>
<tr><td colspan="4">Organisation:</td></tr>
<tr><td rowspan="2">(Required)</td><td colspan="4">Submitting your comments
Your completed submission must be received by 5pm, 16 August 2022 via:
Mail: Whitsunday Regional Council, PO Box 104, Proserpine, QLD, 4800;
Email: submissons@whitsundayrc.qld.gov.au;
Online portal: yoursay.whitsundayrc.qld.gov.au; or
In person: to a Customer Centre:
Cannonvale Shop 23, Whitsunday Plaza
Bowen 67 Herbert Street
Collinsville Corner of Stanley & Conway Streets
Proserpine 83 Main Street
If you require more space than this form provides, please attach additional pages.
Thank you for your submission.</td></tr>
<tr><td colspan="4">Signature:_____ Date:_____</td></tr>
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Submission

13.3.4 - Whitsunday Planning Scheme Policy (Development Manual) Amendment

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Jonathan Cutting – Strategic Planner

AUTHORISING OFFICER: Neil McGaffin - Director Development Services

PRESENTED FOR: Decision

ATTACHMENTS

1. Development Manual and Open Space Strategy Community Engagement Plan [**13.3.4.1** - 21 pages]
2. WRC Development Manual [**13.3.4.2** - 482 pages]

PURPOSE

That Councillors consider commencing public consultation on the Whitsunday Planning Scheme Policy (Development Manual) Amendment.

OFFICER'S RECOMMENDATION

That Council resolve to undertake public consultation for the Whitsunday Planning Scheme Policy (Development Manual) Amendment V3.8 in accordance with *Chapter 3, Part 1* of the *Ministers Guidelines and Rules 2020* and in line with the Development Manual and Open Space Strategy Community Engagement Plan.

BACKGROUND

Council commenced the Planning Scheme Policy (Development Manual) of the Whitsunday Planning Scheme 2017 in December 2018.

Council resolved to amend the current Planning Scheme Policy (Development Manual) of the Whitsunday Planning Scheme 2017 at the 27 April 2022 Ordinary Council Meeting.

DISCUSSION/CURRENT ISSUE

The *Whitsunday Development Manual* is a Planning Scheme Policy that specifies the technical requirements for development infrastructure to become a Council asset. Several amendments are proposed and will be formalised in accordance with the process stipulated within the *Ministers Guidelines and Rules 2020*. The Development Manual Amendment is linked with other Planning Scheme consultations occurring in 2022, including the *Whitsunday Planning Scheme 2017 Major Amendment* and the *Local Government Infrastructure Plan Amendment*.

The *Development Manual* is associated with the L*ocal Government Infrastructure Plan Amendment* as it contains reference to standards for trunk infrastructure.

Collaboration has occurred with network asset owners to develop a range of desired amendments to the *Development Manual* in response to updated Australian standards, rectifying historical issues and ongoing continuous improvement. Key components of the proposed Development Manual Amendment include:

- Amendments to required information in engineering reports to aid assessment
- Inclusion of Open Space Design Guidelines to optimise low maintenance outcomes, including:
    - best practice park and open space design
    - re-vegetation area design and handover expectations, and
    - drainage corridor design and handover expectations.
- Updates to road hierarchy standards, pertaining to road classification and associated design standards - i.e. local road, collector road, sub-arterial road.
- Technical amendments to roads requirements - i.e. better accommodate rubbish truck manoeuvring specifications.
- Technical amendments to stormwater infrastructure - i.e. expectations for flood & stormwater reports, easements, inter-allotment drainage and managing overland flow.
- General updates and technical amendments to water and sewer network - i.e. improving connectivity of water network in developments involving cul-de-sac, preferred pipe types.
- Updates to erosion and sediment requirements in accordance with WRC Erosion & Sediment Control Program 2019.
- Lighting requirements for Parks and Roads that are sensitive to Turtles if located near beaches.
- Updated standard drawings – i.e. specifying table drain dimensions in rural roads.
- Various administrative amendments.

To formalise the amendment the following steps are required by the *Ministers Guidelines and Rules 2020:*

1. Resolution to amend the Development Manual (Complete).
2. Collaboration with network owners to prepare amendments (Complete).
3. Public consultation on the proposed amendment, for a period of 20 business days, in accordance with draft Consultation Plan:
    a) Focused engagement with key industry stakeholders.
    b) Focused engagement with key community stakeholders on specific interests (erosion and sediment, turtle sensitive lighting).
    c) Notification of general community.
4. Consideration of submissions and resolution to adopt, amend or reject the proposed amendment.
5. Placement of a public notice in the QLD gazette and notify the Chief Executive (State) of adoption.

Where amendments after public consultation result in a version significantly different from what was advertised, a second round of consultation will be required.

To mitigate consultation fatigue, the Development Manual may be advertised alongside the *Draft Open Space Strategy 2022* and the *Whitsunday Planning Scheme Major Amendment*. A Community Engagement Plan for the *Development Manual Amendment* and *Draft Open Space Strategy 2022* has been developed (Attachment 1).

STATUTORY/COMPLIANCE MATTERS

Public consultation will occur in accordance with *Chapter 3, Part 1* of the *Ministers Guidelines and Rules 2020,* amending a Planning Scheme Policy.

STRATEGIC IMPACTS

Monitor development and land use to ensure compliance with statutory requirements and development conditions.
Provide a consistent and transparent strategic framework and direction for the development industry and community.
Improve our transport network with a focus on meeting the economic needs for the region including road safety, road building, maintenance processes, and renewal of aging infrastructure.

FINANCIAL IMPLICATIONS

Public consultation associated with the Development Manual Amendments has been budgeted for.

CONSULTATION/ENGAGEMENT

The Development Manual Amendment was developed in collaboration with:

- Director Infrastructure Services
- Director Development Services
- Coordinator Natural Resource Management & Climate
- Coordinator Transport Planning and Assets
- Manager Parks & Gardens
- Manager Strategic Planning

Consultation with external parties predominately focuses on industry stakeholders that will be directly impacted by the changes. Targeted consultation will also occur with some community groups that have an interest in environmental sustainability related amendments. Consultation will occur in accordance with the Community Engagement Plan (Attachment 1).

RISK ASSESSMENT

Communication risks associated with public consultation are identified within the Community Engagement Plan in Attachment 1. Risks are associated with a lack of understanding of technical changes and concern over impacts on industry. Key messages and fact sheets seek to minimise these risks.

TIMINGS/DEADLINES

No deadline exists for the Development Manual, however, the longer it takes for updated standards to be adopted, the higher likelihood that issues being addressed through the Amendment may persist in new development.

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

Section 58 of the Human Rights Act 2019 specifies required conduct for public entities when acting or making a decision. Sections 15-37 of the Human Rights Act 2019 identifies the human rights a public entity must consider in making a decision. The human rights relevant to this decision are as follows:

- Section 19 – Freedom of movement.
- Section 21 – Freedom of expression.
- Section 24 – Right to own property and not be arbitrarily deprived of property.
- Section 27 – Cultural rights – generally – all persons with a particular cultural, religious, racial or linguistic background have the right to enjoy their culture, to declare and practice their religion and use their language.
- Section 28 – Cultural rights – Aboriginal peoples and Torres Strait Islander peoples.

This decision does not limit the above identified human rights.

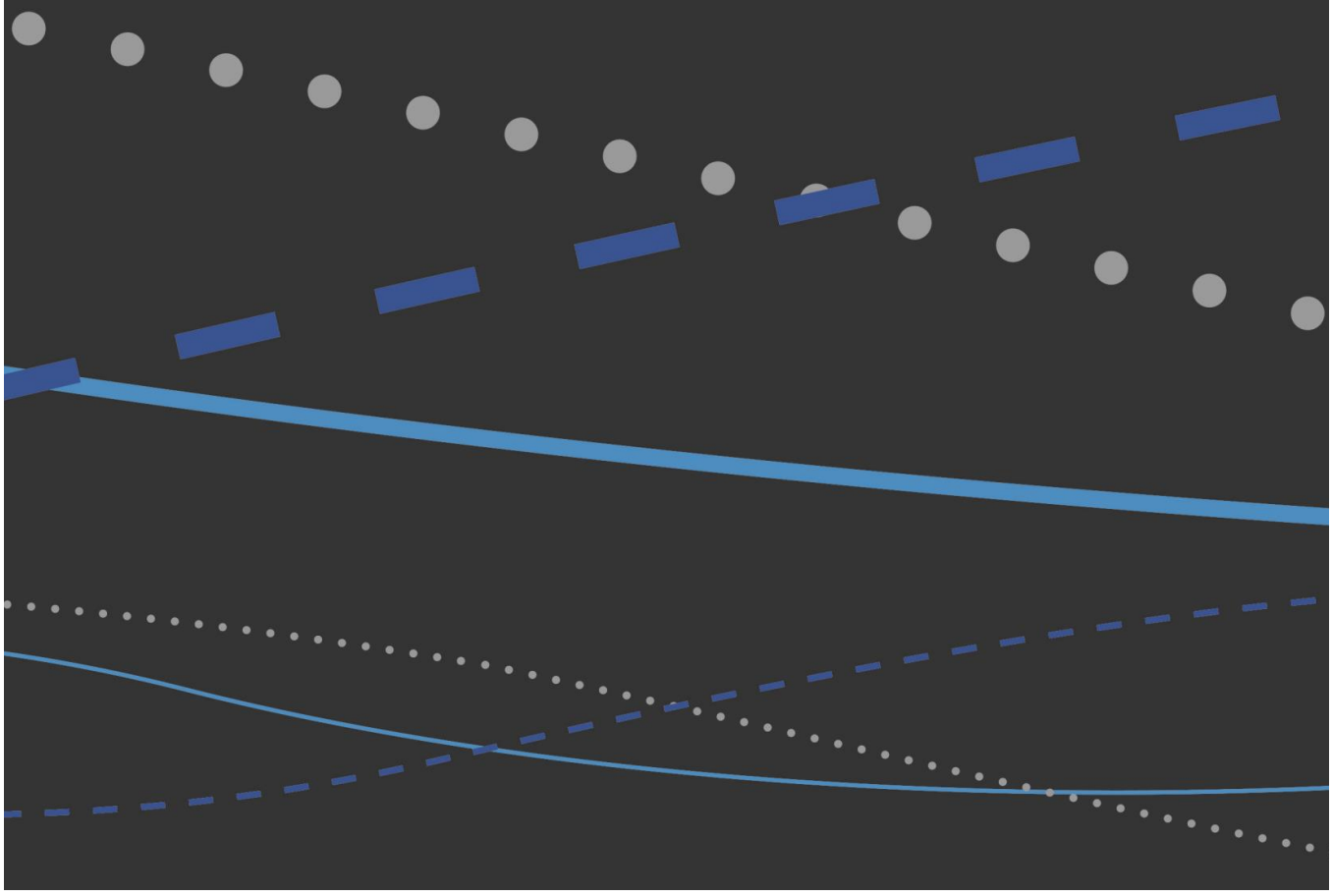
ALTERNATIVES CONSIDERED

Options	Description	Positives	Negatives
Option 2	Not move forward with the Development Manual Amendment.	None	Standards remain out of date, errors remain on-going issues persist.
Option 3	Consult on the Development Manual Amendment and Open Space Strategy separately.	Potentially more attention is paid to each item on consultation	Consultation fatigue means the community lack interest and don't engage in the consultation process.

Whitsunday Regional Council

Whitsunday Development Manual Amendment and Draft Open Space Strategy 2022

Community Engagement Plan



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Document History

Title	Version No.	Date	Author	Reviewer	Approved by
Report	1.0	21/06/2022	Jonathan Cutting		
Report	1.1	28/06/2022	Jonathan Cutting	Neil McGaffin	

1. Introduction

1.1 Background

Whitsunday Regional Council (WRC) has prepared the *Draft Open Space Strategy 2022 and* an amendment to the *Whitsunday Development Manual Planning Scheme Policy* (Development Manual). The Development Manual was last amended on the 21 December 2018.

The Development Manual specifies the technical requirements for development infrastructure to become a Council asset. Several amendments are proposed and will be formalised in accordance with the process stipulated within the *Ministers Guidelines and Rules 2020.* Council's network asset owners have developed a range of amendments to the Development Manual in response to updated Australian standards, rectifying historical issues and ongoing continuous improvement.

The Development Manual Amendment is intrinsically linked with other Planning Scheme consultations occurring in 2022, including the *Whitsunday Planning Scheme 2017 Major Amendment* and the *Local Government Infrastructure Plan Amendment.* The Development Manual is 'extrinsic material' to the *Local Government Infrastructure Plan* (LGIP) *Amendment* and forms part of the amendments review process, as it contains reference to standards for trunk infrastructure but will undergo its own amendment process.

The *Draft Open Space Strategy 2022* is a network analysis of parks and open space, it informs parks design within the Development Manual and is 'extrinsic material' to the LGIP Amendment.

This Community Engagement Plan outlines the communication processes, methods and action plan to engage with the community during the 20-business day consultation period in July - August.

1.2 Purpose and Aim of the Community Engagement Plan

This Community Engagement Plan (The Plan) will support the project to ensure all communication activities are appropriate, consistent and delivered in a timely manner. It outlines key messages, objectives and aims to increase participation by the community during the engagement process. This Plan identifies and defines the roles of persons involved in this project, formally defining who should be given specific information, when information will be delivered and what communication channels will be used to deliver the information.

1.3 Communication Objectives

Open and transparent communication and stakeholder management plays a key role in enabling effective engagement. The key objectives of this Plan are to:

- Ensure a transparent and open process where all affected residents and key stakeholders are provided with information in a consistent and timely manner;
- Identify and manage communication issues and risks throughout the project; and
- Enhance stakeholder and community awareness, understanding and confidence by following best-practice communication and engagement principles.

1.4 Communication Objectives by Project Phase

The Development Manual and Open Space Strategy consultation will have several clear phases and communication objectives, outlined in Table 1.

Table 1 Communication Objectives

Project Milestones	Indicative Timing	Level of Engagement	Communication Objectives
1. Community Engagement Plan developed	June	Involve	To engage with internal stakeholders during the planning process and develop a communications and engagement strategy.
2. Prepare Consultation materials	July	Involve	To prepare materials for the consultation and/or engagement process, and gain approvals from the Project Manager and relevant Director.
3. Launch Community Consultation	July	Consult	To inform and engage with all directly affected residents and key stakeholders and undertake engagement activities.
4. Close Community Consultation and prepare Consultation Report	August - September	Inform	To inform the community that consultation has closed and prepare the Consultation Report and Summary.
5. Close the Loop – Report back to the community	December	Inform	To provide all participants with a copy of the Consultation Summary and publish this document on the website.

1.5 Communication Principles

Several key consultation principles have been developed, summarised in Table 2 below:

Table 2 - Summary of Consultation Principles

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 respects 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. Stakeholder Identification

A stakeholder is defined as any individual, group of individuals, organisation or political entity with an interest in the outcome of a decision. They may be, or perceive that they may be, affected directly or indirectly by the outcome of a decision. To ensure the best outcome when communicating, stakeholders must be identified, and level of engagement determined.

2.1 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. Based on the levels of engagement, outlined below in Table 3, Council will:

- ***Inform*** *the wider community throughout every phase of the project; and*
- ***Consult*** *key stakeholders.*

Table 3 – IAP2 Public Participation Spectrum

IAP2'S PUBLIC PARTICIPATION SPECTRUM

The IAP2 Federation has developed the Spectrum to help groups define the public's role in any public participation process. The IAP2 Spectrum is quickly becoming an international standard.

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.

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2.2 Stakeholder Analysis

A summary list of potential stakeholders has been developed below, demonstrating the level of consultation and communication methods best suited to each stakeholder group.

Table 4 - Project stakeholders and level of consultation

Stakeholder Category	Representative/Member	Level of consultation
Local Government		
Whitsunday Regional Council executive leadership	Mayor, CEO & Councillors Customer Service Roads & Drainage Branch Economic Development Branch Development Assessment Branch Water and Waste Corporate Services Communications & Marketing	Consult
Government Representatives and Bodies		
Department of Natural Resources, Mines and Energy (DNRME)	Representatives	Consult
Department of Transport and Main Roads (DTMR)	Representatives	Consult
Department State Development and Infrastructure Planning (DSDIP)	Representatives	Consult
WRC - Development Assessment Branch - Environmental Health Branch - Infrastructure Services - Natural Resources Management Branch	Representatives	Collaborate
Affected Organisations		
All known industry stakeholders identified in Appendix A - Planning - Engineering - Building	Representatives	Consult
Interested community, recreation and sporting stakeholders identified in Appendix A	Representatives	Consult
General Community		
Wider public		Consult

3. Roles and Responsibilities

The project team's roles and responsibilities have been outlined below in Table 5:

Table 5 – Roles and Responsibilities

Project Team Roles	Responsibilities
Project Manager (Shane Neville)	Manage and coordinate the project's deliverables, keep project phases on track and budget, and approve all communications materials.
Project Support Officer (Jonathan Cutting)	Support Project Team with administration tasks and assist Project Manager in reporting.
Executive Project Director (Neil McGaffin)	Approve all major planning and communications strategies prior to implementation. Act as media spokesperson when the Mayor is unavailable.
Communications & Marketing Support (Lisa Maher)	Assist Project Team by preparing strategy to communicate with key stakeholders and residents, draft and review communications and marketing materials, coordinate engagement activities, prepare reporting.
Communications & Marketing Manager (Greg Martin)	Manage all media enquiries and issues which may arise during the project, act as liaison between Councillors and the Project Team, approve all media communications and external communications.

4. Identify Risks of Poor Communication

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 effectiveness of the project. Several potential risks may be associated with this project due to existing community concerns. These potential risks will require management throughout the communication process, and have been identified below in a risk assessment table:

Table 6 – Risk Assessment

Identified Risk	Level of Impact (High, Medium, Low)	Mitigation Method
Lack of understanding of the role of the Development Manual, in relation to the Planning Scheme	Medium	• Clarify how the Development Manual supports codes within the Planning Scheme, by specifying 'how to build' infrastructure.
Community unable to understand the ramifications of technical engineering changes.	Medium	• Communicate intent of key changes relevant to core community concerns that are predominately focused on the environment and parks. • Clarify that majority of changes are technical that impact upon developers and industry, intended to align with best practice, Australian standards or minimise ongoing operational costs.
Concern over the economic impact of engineering changes on development industry.	Medium	• Identify that proposed changes are in accordance with best practice, updated Australian standards and/or are intended to minimise ongoing operational costs.

		• Highlight key changes relevant to each occupation - planners, engineers and builders.
Concern over proposed design outcomes for future parks, including desired embellishments in each.	Medium	• Utilise fact sheet to highlight best practice open space design themes in that seek to meet the needs of the community, identified within the *Draft Open Space Strategy 2022* and historic community surveys.
Re-iteration of historic community concerns related to engineering standards for protection of turtles and migratory sea birds from artificial light.	Medium	• Utilise fact sheets to identify proposed amendments that ensure lighting impacts on marine life in roads and open space are mitigated.
Re-iteration of historic community concerns related poor management of development sites erosion and sediment.	Medium	• Utilise fact sheets to identify proposed amendments that ensure seek to improve the reporting and implementation of erosion and sediment controls in development.
Re-iteration of historic community concerns related to vegetation clearing for development.	Medium	• Utilise fact sheets to identify proposed amendments that facilitate re-vegetation of underutilised open space to promote ecological outcomes and reduce maintenance requirements.
Lack of understanding of the purpose of the Draft Open Space Strategy and community involvement in its development.	Low	• Fact sheet to summarise the Strategy as a wholistic network plan to identify gaps in needs for future investment, promote equity across all Townships and develop sustainable desired standards of service that promote liveability without increasing the cost of operating the open space network per-capita. • The Draft Open Space Strategy was developed in collaboration with the community through the *Open Space Sport Survey 2020,* historic recreation park consultations and literature review of best practice open space planning to ensure outcomes met the needs of the community and contribute to the Region's liveability.
Confusion over the link between the Draft Open Space Strategy, desired standards of service and LGIP.	Medium	• Fact sheets and key messaging explain the purpose of the network analysis to inform desired standards of service that will influence park provision into the future and importance of recognising key projects for future investments by Council or grants.
Concern over proposed desired standards of service within the Draft Open Space Strategy not meeting community needs.	Medium	• Fact sheets and key messaging communicate purpose of revised desired standards of service in balancing investment, operational costs and outcomes that promote liveability in the community.
Desire to include additional future open space projects within the	Medium	• Highlight projects identified in collaboration with the community through the *Open*

Open Space Strategy's Schedule of works.		*Space Sport Survey 2020* and analysis of the open space network to identify gaps.
Expectation that all projects identified within the Schedule of works and future projects will be delivered.	High	• Re-iterate that many projects are subject to grant funding for design and construction. • Recognise importance of identifying a wish list of priority projects for the open space network to support future grant applications and Council investment.

5. Communication Strategy

The Plan has been broken down into several different elements, enabling Council to appropriately inform and engage with the Regional community during the 20-business day consultation period. The key elements of this section include communication management, communication tools and an Action Plan.

5.1 Communication Management

5.1.1 Communication Protocol and Media Spokesperson

The following protocols will be followed throughout the consultation process:

- All media enquiries will be directed through Council's Communications & Marketing Manager and the Project Director.
- The Whitsunday Regional Council Mayor will be the key spokesperson for any media statements or releases. If the Mayor is not available, the Project Director will be media spokesperson for the project.
- All other enquiries will be directed to the Project Manager who will notify the Communications & Marketing Manager, if necessary.
- All formal external communication materials will be reviewed and approved by the Project Manager, Project Director, and the Communications & Marketing Manager.
- 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.

5.2 Internal Communication Tools

The following tools will be used to facilitate effective communication within the project team to respond to and manage potential issues with the community:

- Email/phone
- Meetings/briefings
- Progress reports, and
- Project meetings.

5.3 External Communication Tools

The following engagement tools may be used during the consultation process:

- Newspaper public notice (mandatory)
- Public display (mandatory)
- Website
- Media releases and Facebook Postings
- Email

- Key messages
- Online submissions to Yoursay.whitsunday.qld.gov.au, and
- Fact sheets.

5.3.1 Newspaper Public Notice (mandatory)

A Public notice will be placed in local newspapers to notify of the proposed consultation at consultation start and one week prior to consultation end. The Public notice may be viewed in **Appendix 2.**

5.3.2 Public display at Council offices (mandatory)

The Public notice, fact sheets and submission templates will be available at each Council office in Cannonvale, Proserpine, Bowen and Collinsville. The Development Manual will also be available for viewing digitally or in hardcopy, if requested.

5.3.3 Whitsunday Regional Council websites

A dedicated page will be available on Your Say Whitsunday with project updates, links to public notices and fact sheets.

5.3.4 Media Releases

Media releases may be used at strategic points throughout the project stages, announcing important milestones and information. Any media releases to be newsworthy and relevant.

5.3.5 Email

Council will email key industry stakeholders identified within Table 4 to provide a brief overview of the amendment and encourage engagement.

5.3.6 Meetings with key stakeholders

Council will offer meetings with key industry stakeholders or community groups to answer any queries on the *Development Manual Amendment* or *Draft Open Space Strategy 2022*.

5.3.7 Social Media

Council's social media platforms, Facebook, Twitter and YouTube, may be used to distribute information to the public throughout the duration of the project. Each of these platforms requires a different approach to content, so all content will be drafted and released strategically to ensure it is relevant to each platform's audience. Social media can be a great tool for engaging with the wider community and encourages sharing of information.

5.3.8 Fact sheets

Fact sheets and explanatory information will be made available on Yoursay consultation website and offered to customers making inquiries about the *Draft Open Space Strategy 2022* or *Development Manual Amendment*. Proposed fact sheets will include:

1. Summary of the Amendment for the general community and industry stakeholders
2. Summary of *Draft Open Space Strategy 2022*
3. Detailed overview of key changes for each Council asset type, Parks, Stormwater, Roads, Water/Sewer, and
4. How to make a 'properly made' submission template, within **Appendix 3**.

5.3.9 Key Messages

The following key messages have been drafted to communicate about the project and mitigate communication risks. Key messages will be updated regularly with new information, as required:

Development Manual Amendment - General

- Development Manual is a Planning Scheme Policy that specifies the technical requirements for infrastructure created by private development to become a Council asset.
- Council's network asset owners have developed a range of amendments to the Development Manual in response to updated Australian standards, rectifying historical issues and ongoing continuous improvement.
- Highlights for topics of community interest include amendments to:
    - Improve erosion & sediment control and stormwater quality management
    - Include Parks and Open Space Design Guideline
    - Re-vegetation and watercourse re-vegetation standards
    - Revised road hierarchy and provision of pedestrian / cycle paths, and
    - Various technical amendments to stormwater, water and sewer infrastructure requirements.

Development Manual Amendment – Erosion & sediment control

- Clarification of reporting requirements and qualifications for Erosion and Sediment Control Strategy and Plans, subject to the scale of disturbance.
- Expansion of requirements to be included within reports to aid assessment and compliance.
- Introduction of hold point for Council to ensure installed controls are in accordance with the approved Strategy/Plan.

Development Manual Amendment - Parks

- Inclusion of Park and Open Space Design Guideline.
- Guidance on park design to promote functional open space that meet the needs of the community and required embellishments for each park type.
- Re-vegetation area design and handover expectations.
- Drainage corridor design and handover expectations.

Development Manual Amendment - Roads

- Amended road hierarchy in accordance with *IPWEA Street Design Manual* Australian Standard and various flow on amendments.
- Amended standards for pathways and bikeways in accordance with updates to AUSTROADS standards.
- Updated requirements for JJ Richards rubbish trucks turning circles.

Development Manual Amendment – Stormwater

- Guidance on flood study development, to ensure consistent approach in accordance with Councils methodology.
- Ensure integration with Council drainage study, catchment or waterway management plans, as they are developed.
- Improve guidance for inter-allotment drainage.
- Guidance on open channels and integration with parks and open space design guideline for watercourse re-vegetation.

Development Manual Amendment – Water and Sewer

- Ensuring chlorinated water utilised for flushing new lines is adequately de-chlorinated prior to entering the environment.
- Facilitating improved network stability by requiring water connections to loop between cul-de-sac heads rather than dead ends.
- Ensuring infrastructure is designed to consider connection of future undeveloped urban zoned land and associated demand.
- Specification of pipes that are preferred within the pressurised water network, excluding lower quality pipes.
- Requirement for SEQ code compliant pre-cast manholes.

Draft Open Space Strategy 2022

- Council undertakes wholistic infrastructure network plans, such as the *Draft Open Space Strategy*, to inform Desired standards of service (DSS), investment gaps and ensure equity across the Region.
- DSS are related to the performance of the infrastructure network in meeting the community's needs. Parks DSS are proposed to be amended within the LGIP, informed by the *Draft Open Space Strategy*.
- The Strategy was developed in collaboration with the community through the *Open Space Sport Survey 2020*, historic recreation park consultations and literature review of best practice open space planning to identify community needs, investment gaps and revised DSS that contribute to the Region's liveability.
- Proposed Schedule of Works identifies priorities for grant funding in recreation and sport parks to better service community needs and promote equity across townships.
- Amended DSS within the Strategy:
    - take into consideration access to National Parks and Beaches to inform an amended rate of recreation park provision.
    - place greater importance on Regional and District recreation parks than Local parks, as they have a greater attraction value that encourages people to get outdoors, but also walk/cycle greater distances from home.
    - preference larger Regional sport facilities over District facilities, as large sized facilities are preferred for families required to travel greater distances for sport to allow more incidences of cross-over in weekday trainings or weekend sport.
    - consolidate existing sportspark land to encourage expenditure on high-quality infrastructure rather than excess spend on sporting land. High-quality infrastructure provides conditions to create competitions/events, enable the emergence of non-mainstream sport and attract more participants, and
    - aim to increase the use of school's land for junior sport, to alleviate the need for District Sport Park land

6. Action Plan

An Action Plan has been developed to provide a consistent structure to developing and implementing the communication strategy (**Table 7** below). This Action Plan will continue to be reviewed and updated as the project progresses.

Table 7 – Communications Action Plan

Step		Timing	Aim	Objective	How
1	Community Engagement Plan developed	June	Develop a Community Engagement plan	To engage with internal stakeholders during the planning process	▪ Direct contact by email and phone with key stakeholders ▪ Face-to-face meetings with project team
2	Prepare Communications / Consultation Materials	July	Prepare engaging, easy-to-understand key messages and materials for distribution	To provide clear, consistent and engaging communications	▪ Council websites updates ▪ Media materials ▪ Newspaper Public notice ▪ 'Properly made' Submission templates ▪ Fact sheets
4	Launch Community Consultation (20 B.D)	July - August	Engage and inform the community	To provide opportunities for affected stakeholders and residents to get involved and give feedback	▪ Media release ▪ Social Media ▪ Website updates ▪ Newspaper public notice ▪ Public notice, Development Manual and *Draft Open Space Strategy* available in Council offices
5	Close Consultation and prepare Consultation Report	September - October	Analyse feedback results and prepare the Consultation Report and one-page Summary	To advise affected stakeholders and residents that consultation has closed, and reporting is underway	▪ Website updates ▪ Media Release ▪ Social media
6	Close the Loop – report back to the community	December	Report back to the community by publishing the Consultation Summary	To inform participants and key stakeholders about the key results and outcomes of the consultation process	▪ Website updates ▪ Social media update ▪ Direct emails to Participants

7. Feedback and Integration

7.1 Next steps

Community Engagement materials will now be developed in preparation for the consultation activities to commence in September, for a period of 20 business days.

At each phase of community engagement, the public will be advised of the project milestones and next steps by web update, media release and newspaper ad.

It is recommended that stakeholder and community engagement continue throughout each project phase. This Plan will continue to be updated to reflect ongoing community engagement.

7.2 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 one-page 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.

Appendix 1 – Key Stakeholders

Affected Community Stakeholders

Includes interested community groups, industry leaders and sporting groups.

Bowen and Collinsville Enterprise (BCE) Bowen Business Chamber Bowen Lions Club Bowen Rotary Club Bowen Tourism and Business Bowen Sport Complex Bowen PCYC Collinsville Community Association Collinsville Connect Collinsville Youth Coalition Denison Park Sport Complex Dingo Beach Progress Association Hydeaway Bay Progress Association 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. Port of Airlie Proserpine Chamber of Commerce Proserpine Community Centre Proserpine District Lawn Tennis Association	Proserpine Junior Sport Complex Proserpine Hack & Pony Club Proserpine Junior Cricket Proserpine Junior League Proserpine Ladies Bowls Club Proserpine Ladies Squash Club Proserpine Lions Club Proserpine Pool Proserpine Progress Association Proserpine Progress Community Group Proserpine Rodeo Association Inc Proserpine Rugby League Football Club Inc Proserpine Taipans Junior Soccer Proserpine Whitsunday Raiders Rugby Union Reef Catchments Rotary Airlie Beach RSL Airlie Beach Whitsunday Sub Branch Save Our Foreshore Inc Tourism Whitsundays Whitsunday PCYC Whitsunday Sportspark Whitsunday Fauna Rescue Whitsunday Conservation Council Whitsunday Coast Chamber of Commerce Whitsunday Organic Community Gardens Whitsunday Ratepayers Association Whitsunday Region Ratepayers Association Whitsunday Running Club & Festival Whitsunday Zonta Zonta Club of Bowen

Affected Industry Stakeholders

AAA Building Consultants	Department of Natural Resources, Mines and Energy (DNRME)
Abell Builders	Department of Transport and Main Roads (Marine infrastructure)
Agile Approvals	Department State Development and Infrastructure Planning (DSDIP)
Airlie Beach and Whitsunday Real Estate	Derek Hansen
Airlie Beach Constructions	Dixon Homes
Airlie Beach Plumbing & Gasfitting	EcoDrill -
Airlie Builders	First National Real Estate Whitsunday Coast
Airlie Plumbing	Flanagans Engineering

Alan Jamieson	Focus on Water
Allen Build	Front line Constructions
Allen Trinder Building	Gary Goddard Engineering
Apex Home Constructions	Gary Molloy Building
BBS Developments	Gary Taylor
BC Constructions	GJ Gardner Homes
Beachtech Designs	Greg Dibben
Ben - Blue Palm Property	Greg Matthews
Bernie McErlane	GT Homes
Berry Excavations	Hermsa Constructions
Blue Diamond Constructions	Hutchinson Builders
Bluewater Plumbing	Hydeaway Plumbing & Gas Fitting Service
Bob Bogie & Co Solicitors	Ideal Gas & Plumbing
Bob Thomson	Integral Building
Brad Penhallurick	Jaremus Constructions
Brahman Builders	Jason Bartz
Brazilbuilt	Jeff Day Plumbing
Brian Smith Constructions	Jeremy Smith Constructions
Bruce Absolon	Jim Stace Carpentry & Construction
Cane Civil Constructions	JM Constructions
Cannonvale Plumbing	John Harris - PRD Whitsunday
Century 21	Justin Daley
Century 21 Bowen	Kegsawers
Chris Bailey Pools	Kendall Nash
Chris Russell Constructions	Laser Plumbing
Clarkco Pty Ltd	Latitude 20 Homes
Colin Hounsell	Laurie Smith
Colony Building Group	Lawto's Barefoot Real Estate
Coral Sea Carpentry	Leith Michell Builder
Crear Construction	Sandra Hansche
Cumberland Homes	SMEC Engineering
Dan McCormack	Spannys Real Estate
LJ Hooker Bowen	Splash Pools
Lindsay Bates Building	STA Engineering
LJ Solid Constructions	Steve Knight
Lowcock Builders	Steve Paine Builder
Macrossan & Amiet Solicitors Proserpine	Steve Williams
Marco Deboni	Stewart Lester
Matt Kelly	Sunstate Shed
McNeill Building	Sunsteel Homes
Merrick Constructions	Tap Out Plumbing

Milford Planning	Taylors Property Specalists
Moloko Homes	Terry Kemp
Morton Plumbing	Terry Peach
Neil Sempf	Think Water
Northarm Constructions	Titan Homes
O'Connor Plumbing	Totally Drained Plumbing
Paragon Engineering	Town & Country Builders
Paul Smith	Trevor Glasson Engineering
PD Law	Trevor Harrison
Peter Town Homes	Trevor Yuskan
Petos Constructions	Veris
Piccinelli Builders	Vision Surveys
Pichers Industries	Wakefield Plumbing
PRDnationwide Whitsunday	Wayne Borellini
Premise	Whaleback Plumbing
Premise	Whit Spec
Professional Whitsundays	Whitsunday Law
Queensland Parks and Wildlife Service	Whitsunday Reality
Queensland Rail	Winterburn Constructions
Ray White Whitsunday	Winterburn Pools
Real Estate for Sale	Wynne Planning & Development
Reece Milburn	Plants Whitsunday
Reece Plumbing	
Ricciardi Builders	
Rob Jeffrey	
Rob Taylor	
Ross Smith	
RPS Group	
Rudd Constructions	

Appendix 2 – Public notice

Whitsunday Development Manual Amendment and Draft Open Space Strategy 2022 Newspaper advertisement mandatory information

The information provided in the box below is the mandatory information for advertising in the Region's local newspapers in accordance with *Ministers Guidelines and Rules 2020.*

Whitsunday Regional Council

Public Consultation for the *Draft Open Space Strategy 2022 and Whitsunday Development Manual Planning Scheme Policy Amendment* will occur between 8am 18 July 2022 – 5pm 16 August 2022. The purpose of the Development Manual Amendment is to include a variety of updates to technical requirements and standard drawings that inform design of development infrastructure to become a Council asset. Amendments are related to updates in Australian standards, rectifying historical issues and design improvement within the following themes:

- Erosion & sediment control
- Parks and open space design
- Stormwater management
- Roads hierarchy and design standards
- Water and sewer design standards

The *Draft Open Space Strategy 2022* is a wholistic network plan that informs park and open space design in the Development Manual, amendments to the Desired Standards of Service in the Local Government Infrastructure Plan and priorities for future investment in the Open Space network.

The *Draft Open Space Strategy 2022 and* proposed *Whitsunday Development Manual Amendment* and supporting information are available for inspection at http://yoursay.whitsundayrc.qld.gov.au/ and at Council's Customer Centres:

Cannonvale	Shop 23, Whitsunday Plaza
Bowen	67 Herbert Street
Collinsville	Corner of Stanley & Conway Streets
Proserpine	83 Main Street

Written submissions about any aspect of the *Draft Open Space Strategy 2022 or Whitsunday Development Manual Amendment* may be made to the Whitsunday Regional Council by any person. A properly made submission must include your name, address, signature and be received in the public consultation period. For further information on making submissions please refer to the Project Page at http://yoursay.whitsundayrc.qld.gov.au/ for a submission template.

If you have any enquiries about the proposed Development Manual Amendment, please contact Council's Strategic Planning Branch on (07) 4945 0263 or email us at submissions@whitsundayrc.qld.gov.au

Appendix 3 – Submission template

HAVE YOUR SAY ON THE DRAFT OPEN SPACE STRATEGY AND WHITSUNDAY DEVELOPMENT MANUAL AMENDMENT

Whitsunday Regional Council is undertaking public consultation on the proposed Development Manual Amendment. Public consultation begins on **18 July 2022** and will close at **5pm on 16 August 2022**. On completion of the consultation period Council will consider and respond to all submissions. Submissions and submission responses will be placed online and submitters will be notified by mail in the beginning of 2022.

Council encourages your review and submission on the *Draft Open Space Strategy 2022 and Whitsunday Development Manual Amendment* by mail, online or in person to a Council Customer Centre. Please lodge your submission by **5pm, 16 August 2022**. The attached template has been prepared for your convenience.

Making a Submission – Hints and Tips

- Properly made submissions must include your name, address, signature and be received in the Consultation period closing at **5pm, 16 August 2022**.
- A submission may be in regard any part of the *Draft Open Space Strategy 2022 or Whitsunday Development Manual Amendment*.
- If the submission is regarding a specific component of the *Draft Open Space Strategy 2022 or Whitsunday Development Manual Amendment*, outline which part, your grounds for concern/support, examples grounding that concern/support and any alternate outcome you are seeking.
- If the submission is more general, consider using the headings in the document then your grounds for concern/support, the information and examples grounding that concern/support and any alternate outcomes you are seeking.
- To assist Council in understanding your views include evidence, documentation, photographs and maps to assist in justifying specific points in the submission.
- The submission should be easy to read, using dot points, short sentences and plain English.

Submitter Details

<table>
<tr><td rowspan="4">Your details

(Required)</td><td>Title:</td><td>First name:</td><td colspan="2">Last name:</td></tr>
<tr><td colspan="4">Postal address:</td></tr>
<tr><td colspan="2">Suburb:</td><td>State:</td><td>Postcode:</td></tr>
<tr><td colspan="4">Email address:</td></tr>
<tr><td rowspan="2">(Optional)</td><td colspan="4">Are you completing this survey as a private individual or as a representative of an organisation?
☐ Individual
☐ Organisation – Please specify the name of the organisation below.</td></tr>
<tr><td colspan="4">Organisation:</td></tr>
<tr><td rowspan="2">(Required)</td><td colspan="4">Submitting your comments
Your completed submission must be received by 5pm, 16 August 2022 via:
Mail: Whitsunday Regional Council, PO Box 104, Proserpine, QLD, 4800;
Email: submissons@whitsundayrc.qld.gov.au;
Online portal: yoursay.whitsundayrc.qld.gov.au; or
In person: to a Customer Centre:
Cannonvale Shop 23, Whitsunday Plaza
Bowen 67 Herbert Street
Collinsville Corner of Stanley & Conway Streets
Proserpine 83 Main Street
If you require more space than this form provides, please attach additional pages.
Thank you for your submission.</td></tr>
<tr><td colspan="4">Signature:_____ Date:_____</td></tr>
</table>

Submission

Whitsunday Regional Council Development Manual

Version No. 3.8

Issued 24/06/2022

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
IPWEAQ	Institute of Public Works Engineering Australasia, Queensland
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, models, calculations, drawings and specifications are to be submitted as supporting information to an application for a Development Permit for Operational Works;

1.01.8 Where the works are to be constructed over or nearby to existing infrastructure the RPEQ responsible for the works shall take into consideration the protection of existing asset and the ability to replace or realign the asset at a future point in time.

1.01.9 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 including:

- 1.02.1.1 Stormwater design approach including:
  - 1.02.1.1.1 Lawful Point of discharge as per DG 4.6. Any design intent to change flow characteristics on adjoining land, natural overland flow paths or waterways requires the developer/ applicant to provide in-kind written consent to discharge by land owners. Ensuring all effected landowners are notified and consent prior to detailed design and later easement agreements where required.
  - 1.02.1.1.2 Provide initial stormwater due diligence assessment as per Section DG4.7.
- 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 Existing infrastructure and the protection of the affected assets (water and sewer mains).
- 1.02.1.6 Connection points for water supply and available pressure and discharge capacities;
- 1.02.1.7 Discharge points for sewerage;
- 1.02.1.8 setback distances from watercourses for on-site wastewater treatment and disposal;
- 1.02.1.9 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;
- 1.02.1.10 Site Conditions;
- 1.02.1.11 Development Permit Conditions for the particular development;
- 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 Request for Council to contribute towards some aspects of the work.
- 1.02.4.2 Build over permits were necessary. If a build over permit is permitted the designer must take into consideration replacement or realignment of the asset in the future.

1.02.5 Resolution of these issues, particularly those requiring a decision of Council (i.e. amendments to conditions of approval, diversion from Standards 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 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 by or 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 all supporting documentation as per AP1.08 shall be provided prior to Council approval.

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 models, calculations or documentation as supporting information.

1.05.4 One complete submission 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 and Australian Standards) 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 designer shall submit a design report with all plans lodged. Report to include all the necessary design assumptions and calculations, correspondence, and all other relevant information to allow Council to check the design submission.

1.08.9 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.

1.08.10 The Design Report must be on company letterhead and shall contain the following minimum details:

- 1.08.10.1 The project details and list of plans including all sheet names and numbers associated with the project.
- 1.08.10.2 A completed 'Statement of Compliance – Operational Works Design' (Form 1) endorsed by the designer and RPEQ engineer.
- 1.08.10.3 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.
- 1.08.10.4 A copy of all separate approvals given by Council for variations to the minimum standard in relevant Guidelines.
- 1.08.10.5 Design details of alternative design proposed which depart from the development manual/development conditions with supporting arguments for how the alternative meets Council's objectives.
- 1.08.10.6 Records of pre-submission discussions with Council including confirming correspondence.
- 1.08.10.7 Copies of letters of approved consent from adjoining property owners for any works or stormwater discharge on the properties.

1.08.10.8	Evidence that negotiations have been entered into regarding provision of supply with service authorities such as Ergon Energy and Telstra (including approved reticulation/service plans, if available).
1.08.10.9	Site photographic report confirming the designer has visited the site and all constraints have been considered and addresses.
1.08.10.10	Stormwater drainage calculations spreadsheet and modelling to be provided in accordance with QUDM as per Section DG 4.
1.08.10.11	Stormwater Drainage Catchment Plan detailing external catchments and internal sub catchments.
1.08.10.12	Design calculations for detention basins, dissipaters, scour protection and water quality control structures.
1.08.10.13	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.
1.08.10.14	The street lighting design prepared by a suitably qualified professional engineer including evidence of both horizontal and vertical lighting requirements are compliant. To include any impacts to existing street lighting where lighting is removed include measures to ensure existing illumination levels are not reduced during and after construction.
1.08.10.15	An Erosion and Sediment Control Strategy (ESCS) addressing erosion and sediment management during construction.
1.08.10.16	Traffic Management Plan in accordance with the Austroads Guide to Temporary Traffic Management, Queensland Guide to Traffic Management, AS1742 Manual of Uniform Traffic Control Devices prepared by a traffic management designer holding the relevant qualifications.
1.08.10.17	Traffic Impact Assessment to justify road layouts, intersection treatments and use of traffic calming devices.
1.08.10.18	Water and sewerage reticulation networks analysis shall be supplied in a format compatible with Council's network systems, including the location and relative levels of existing infrastructure impacted by the development.
1.08.10.19	If the water supply is from a newly developed source, provide information on quality, quantity, disinfection and infrastructure proposed.
1.08.10.20	Pavement and wearing surface design, assumptions, and calculations. Include records of geotechnical tests indicating subgrade CBRs in cuts where the design has been based, adopted traffic load, requirements for subsoil drainage and subsoil drainage design by geotechnical engineer. Copies of the geotechnical reports are to be included in the design report.
1.08.10.21	Where additional subsoil drainage is required above Council's minimum requirements, pavement design shall include details for pavement drainage prepared by a Geotechnical engineer.
1.08.10.22	Geotechnical reports, where relevant, relating to slope and batter stability, in situ materials etc.

1.08.10.23 Structural and geotechnical certification of design of miscellaneous structures including retaining walls, non-standard headwalls, drainage structures, reservoirs etc.

1.08.10.24 Design parameters and operating regimes for water supply and sewerage pump stations.

1.08.10.25 Full design drawings and pre-commissioning plan for water and sewerage pump stations.

1.08.10.26 Landscaping design drawings for development involving open space to become a Council asset, showing details of Park/reserve planting, Street tree planting, buffer zone planting, and any hill slope development works if applicable.

1.08.10.27 For staged development, master plans showing the overall design concept shall be submitted at Stage 1 and updated copies provided with subsequent stages. Subsequent development plans will show the "as constructed" information of all the earlier stages. Master plans to include the following as a minimum;

- 1.08.10.27.1 Water including pump stations.
- 1.08.10.27.2 Sewer including pump stations.
- 1.08.10.27.3 Stormwater.
- 1.08.10.27.4 Stormwater Management Plans.
- 1.08.10.27.5 Road works.
- 1.08.10.27.6 Earthworks.
- 1.08.10.27.7 Road hierarchy.
- 1.08.10.27.8 Pathways.
- 1.08.10.27.9 Public transport.
- 1.08.10.27.10 Lighting and other services.
- 1.08.10.27.11 Easements, freehold lots and land to be deeded to Council for accommodating the works.
- 1.08.10.27.12 Open space areas.
- 1.08.10.27.13 Erosion and sediment control strategy and location of permanent survey marks.

1.08.10.28 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).

1.08.10.29 Bill of quantities completed by suitably qualified engineer and estimate of construction costs.

1.08.10.30 All necessary supporting details for any request by a developer for Council to financially contribute towards the development.

1.08.10.31 Any other relevant information sought by Council.

1.08.10.32 Completed Design Certification Report by RPEQ – refer to Annexure A.

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 Existing water and sewer infrastructure.
1.19.1.8 Appropriate flood levels in accordance with Council's policies.
1.19.1.9 Northpoint.
1.19.1.10 Locations and levels of permanent survey Marks, reference stations etc used as datum for the works.

1.19.1.11 Vegetation including trees proposed to be removed in days to be retained.
1.19.1.12 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 of all tangent points on curves.
1.20.1.5 All horizontal curve details including radius and arc length, tangent length of each curve. Maximum superelevation and design speed of road curves and include labelling to identify relevant curve.
1.20.1.6 Road centrelines or other construction lines, including bearings and chainages at intersecting points. Set out co-ordinates table to be shown on a separate drawing.
1.20.1.7 Kerb lines including kerb type, kerb radii, and chainage of all tangent points of the kerb line.
1.20.1.8 Footpaths/bikeways and pram ramp locations.
1.20.1.9 Proposed street tree schedule, plant key for species identification and root barrier locations
1.20.1.10 Fencing.
1.20.1.11 Access road extents where required to be constructed.
1.20.1.12 Edge of pavement, where no kerb is to be constructed.
1.20.1.13 Dimensioned road reserve, footpath and pavement widths, where these differ from the standard cross-section.
1.20.1.14 Existing and finished surface contours, highlighting cut and fill areas.
1.20.1.15 Drainage line locations, pipe diameters and type
1.20.1.16 Boundary extents of drainage easements, where required
1.20.1.17 Drainage structures and pit details including pit benching details where required and open channel design details.
1.20.1.18 Label all drainage structures and lines e.g ½ structure 1 on line 2.
1.20.1.19 Subsoil drain locations and flush points.
1.20.1.20 Overland drainage paths including levels.
1.20.1.21 Riverine and Coastal areas erosion protection works.
1.20.1.22 Location of existing utilities and other existing works within the site.
1.20.1.23 Location of all service clashes including levels of services and clearance distance.
1.20.1.24 Location and levels of PSM's, benchmarks and reference pegs.
1.20.1.25 Northpoint.
1.20.1.26 Line marking and signing*.
1.20.1.27 Guideposts and guardrails
1.20.1.28 All other traffic control devices*.
1.20.1.29 Creek protection works and the like.
1.20.1.30 Street name signs*.
1.20.1.31 Property boundaries, street number and lot numbers including existing and proposed.

1.20.1.32 Property accesses where required to be constructed.
1.20.1.33 Dimensions of road reserves where they are not able to meet the standard minimum requirements otherwise shown on the type cross section plans.
1.20.1.34 Public Transport Infrastructure meeting the Public Transport Infrastructure Manual

*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.
1.21.1.3 Design Road centreline levels.
1.21.1.4 Cut and fill depths at each chainage.
1.21.1.5 Design road grades.
1.21.1.6 Chainages and levels of grade intersection points.
1.21.1.7 Vertical curve details including location, length, radius and all crest and sag locations.
1.21.1.8 Sections on control lines or superelevated curves (i.e. pavement edges, kerb or lane edges), curve widening and superelevation details.
1.21.1.9 Location of services where they cross the centre of the road.

AP 1.22 Standard Type Cross-Sections

1.22.1 A type cross-section shall be shown for each new or reconstructed road, including:
1.22.1.1 Road reserve with.
1.22.1.2 Pavement widths including medians (as applicable).
1.22.1.3 Footpath and Cycleway widths.
1.22.1.4 Cross falls of pavement and verge including footpaths.
1.22.1.5 Pavement depth and material type for roadway, footpath and/or cycleway.
1.22.1.6 Type of kerb and channel.
1.22.1.7 Sub – soil drainage.
1.22.1.8 Table drain details for rural roads.
1.22.1.9 Batter slopes.
1.22.1.10 Standard type cross section intervals for urban roads at 20m intervals and rural roads at 50m intervals and all tangent points and reduce interval to 5m or 10m where necessary due to horizonal or vertical curvature.

AP 1.23 Cross-Sections of Roads

1.23.1 A cross-section shall be shown for each new or reconstructed road 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 Crossfall of pavement/verges and footpaths, widths of pavement/ verges and footpaths, depth of pavement/ verge and footpath wherever these differ from the standard cross-section.
1.23.1.6 Chainage of cross-section.
1.23.1.7 Control Line
1.23.1.8 Location of services in any aspect of the pavement, verge, footpath, or cycleway where it varies from the standard details.

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 For each new or reconstructed drainage line (including open channel), a longitudinal section shall be provided, showing;
1.25.1.1 Chainages.
1.25.1.2 Existing surface levels.
1.25.1.3 Longitudinal grade of each drainage line.
1.25.1.4 Design finished surface level and invert levels.
1.25.1.5 Chainage of drainage structures including and any offsets.
1.25.1.6 Pipe diameter/size, material type and grade.
1.25.1.7 Hydraulic grade line and water surface level.
1.20.1.35 Label each drainage structure including line and structure number. E.g. ½ structure 1 on line 2. Include reference to separate detailed drawing where relevant.
1.25.1.8 Crossing of any services including location, service type, invert level, details of pipe material type and size.

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 Proposed street tree schedule and plant key for species identification
1.30.1.6 Existing tree schedule and plant key for species identification Layout and numbering of individual lots, including street names.
1.30.1.7 Layout and numbering of individual lots, including street names.
1.30.1.8 Existing parks, reserves etc.
1.30.1.9 adjoining land uses, access corridors.
1.30.1.10 Existing watercourses, watersheds, gullies, with a buffer zone to either side of creeks, where required.
1.30.1.11 Revegetation areas including extent, type, technique and erosion prevention proposals.
1.30.1.12 North point

On-Street Works

1.30.1.13 Alignment and location of proposed concrete foot paths and bike paths.
1.30.1.14 Grass establishment areas.
1.30.1.15 Lighting proposals and street furniture, if appropriate

Traffic Islands and Roundabouts

1.30.1.16 Alignment of kerb and channel and concrete backing to roadside kerb.
1.30.1.17 Soil mixed type and depth.
1.30.1.18 Proposed planting layout and plant schedule, including species, number, size, set out and staking.
1.30.1.19 Mulch types and depth.
1.30.1.20 Irrigation proposals.

Public Open Space

1.30.1.21 Dimensions and landscape treatment to buffer zones.

1.30.1.22 Location and dimension of all off-road bikeways and pedestrian pathways, with trees at 15 m intervals, showing size and species.
1.30.1.23 Location of boundaries to parkland, reserves and easements, including fencing proposals and details of removable vehicle barriers.
1.30.1.24 Location and type of play equipment, if applicable, including type, extent and edge treatment to satisfy surfacing.
1.30.1.25 Proposed lighting.
1.30.1.26 Mounding, showing base, Crown, levels and gradients.
1.30.1.27 Proposed furniture including benches, bins, BBQ's, shade structures, signage.
1.30.1.28 Tabs, drinking fountains, irrigation couplings.
1.30.1.29 Proposed planting and mulched garden beds.
1.30.1.30 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 planting schedule showing key, botanical name, common name, quantity, pot size, minimum height, comments
1.30.2.3 Exercise equipment
1.30.2.4 Universal access to key recreational infrastructure and picnic areas
1.30.2.5 The plant schedule.
1.30.2.6 Revegetation requirements.
1.30.2.7 Grass establishment.
1.30.2.8 Mulch.
1.30.2.9 Hard landscaping.
1.30.2.10 Hard / soft shading i.e. shelters or vegetation
1.30.2.11 Furniture and lighting.
1.30.2.12 Irrigation, if applicable, including mainline and lateral pipes, type and size of pipe, BPD position, and details, valve and sprinkler positions, type, controller cables, hydraulic data and watering programs

AP 1.31 Erosion and Sediment Control Strategy

1.31.1 Erosion and Sediment Control planning and reporting should be commensurate to the scale and complexity of development or disturbance, undertaken by suitably qualified person, in accordance with **Table AP 1.1** below:

Table AP 1.1 Training levels for the design and implementation of an Erosion and Sediment Control Strategy, Plan and control measures.

Development / Sediment control	ESC Plan	ESC Strategy	Site Water Quality objectives	Soil testing	ESC report with modelling and calculations	Minimum training level (Definition below table)
Land disturbance 400m^2 to 1000m^2 – slope <15%	✓					Level 1
Land disturbance 400m^2 to 1000m^2 – slope >15%	✓					Level 4
Land disturbance 1000m^2 to 2500m^2 – slope <15%	✓	✓				Level 2
Land disturbance 1000m^2 to 2500m^2 – slope >15%	✓	✓				Level 4
Land disturbance >2500m^2 and <15% slope	✓	✓	✓	✓	✓	* Level 4 – RPEQ
Land disturbance >2500m^2 and >15% slope	✓	✓	✓	✓	✓	CPESC ** and/or RPEQ with level 4
Type 1 – Sediment basin	Identified within above reporting, as necessary					RPEQ with level 4
Type 2 – Rock filter dams, sediment weirs	Identified within above reporting, as necessary					Level 4 and/or CPSS
Type 3 – Sediment fence and sediment traps	Identified within above reporting, as necessary					Level 1** or Level 2

Notes:

1. * RPEQ with Erosion & Sediment Control training
2. ** qualification acceptable if low risk i.e. presence of watercourses and slope over 15%
3. CPESC means Certified Professional in Erosion and Sediment Control
4. CPSS means Certified Professional Soil Scientist
5. Level 1, 2, 3 or 4 means IPWEAQ or AUSTIECA recognised Erosion & Sediment Control training.
6. Construction phase water quality objectives are in accordance with *Whitsunday Planning Scheme 2017 – Construction Management Code*

1.31.2 As required, an Erosion and Sediment Control Strategy (ESCS) must be submitted for review and approval by Council at operational works stage. An ESCS provides a wholistic overview of erosion and sediment control over the lifetime of the construction phase.

1.31.3 The ESCS informs detailed *Erosion and sediment control plans* in accordance with CP1.05, that may be created for each stage, phase or weather condition.

The Erosion and Sediment Control Strategy needs to be communicated to all involved – sub-contractors, private certifiers, homeowners and Council – how stormwater pollution is to be controlled on the site and who is responsible for its control at each phase of construction.

1.31.4 The Erosion and Sediment Control Strategy shall include:

Erosion and Sediment Control Strategy	**Supplied (✓)**
Overview Map (s)	
A plan of development showing the road, allotment boundaries,	
Existing and finished surface contours at an interval close enough to define terrain.	
Contours shall extend beyond the limits of the development site to fully define the limits of external catchments and identify all areas over 15% slope.	
Existing drainage paths, watercourses and drainage infrastructure.	
Extent of clearing and trees to be removed or retained.	
Line diagram of drain lines and drainage structures.	
Works Overview / Analysis	
Description of construction methodology and staging program. Description must describe construction phases and triggers for altering or installing new erosion and sediment controls to inform detailed *CP1.05 Erosion and sediment control plans*. A detailed Erosion and sediment control plan may be required for each stage.	
Location of underground services, permanent site stabilisation (i.e. retaining wall, channels, cut & fill) and neighbouring adjoining structures that may channel, re-direct or be impacted by run-off.	
Soil testing and description of soil type if disturbing more than >2500m^2.	
Location of stabilised entry/exit (rumble pad).	
Location of stockpile areas.	
Location of sensitive and restricted access areas.	
If development directly discharging into an on-site or adjoining watercourse, pre-development baseline water quality measure of total suspended solids in Nephalometric units (NTU) and description of weather conditions or surrounding development preceding test.	
Existing significant vegetation to be retained and vegetation buffer strips.	
Location of re-vegetation works (as required)	
Stormwater Quality Management	
Calculations are to be submitted in accordance with QUDM and based on soil type(s) of the site in accordance with IECA calculations.	
Calculations identify compliance with stormwater management design objectives – construction phase, within the *Whitsunday Planning Scheme 2017* for nominated design events.	
Erosion & Sediment Control Plan inputs	
Overview of ESCP to be employed for each stage of the construction process. As a minimum this is to include stripping/earthworks, trenching/services installation and when stormwater and roadways are completed.	
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.	
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 each ESCP or construction stage when the site is disturbed, including who is responsible for establishing and maintaining all erosion and sediment measures.	

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 Lux contours and street light pole details for intersection designs
- 1.32.1.11 Essential details of all roads, traffic facilities or public open space areas to be lit.
- 1.32.1.12 Location of Electricity Authority's Cables and Facilities paying particular attention to connection to existing power supply.
- 1.32.1.13 Electrical reticulation plans.
- 1.32.1.14 Gas pipes, valve, syphon points and storage facilities.
- 1.32.1.15 Mandatory requirements to be provided and demonstrated compliance of the design as specified in Appendix D of AS/NZS 1158.1.1 and Appendix E of AS/NZS 1158.3.1

AP 1.33 Stormwater Catchment Plan/Drainage Calculations Tabulation.

1.33.1 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/ levels (in different line types and at interval close enough to define the terrain) and clearly define the sub- Catchments.
- 1.33.1.4 Contours shall extend beyond the Limits of the Development Site to fully define the limits of all external catchments, existing and future.
- 1.33.1.5 Catchment and Sub- catchment boundary labels and areas.
- 1.33.1.6 Line diagram of drainage 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 easement boundary extents.

1.33.1.11 Stormwater calculation table shall be in a format in accordance with QUDM. This tabulation to include flow width in roadway to each pit, depth of ponding at sag points and a bypass flow value at all 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 Unique signage, placemaking or artwork installations
1.35.1.15 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 the following Forms:

Form 1 – Statement of compliance Operational works design

Form 2 – Security Lodgement Form

Form 3 – Inspection Certificate for Witness/Hold Point

Form 4 – Works Acceptance Inspection Checklist

Form 5 – Registered Engineer's Certification of "As Constructed" Works

Form 6 – Registered Surveyor's Certification of "As Constructed" Works

1.04.1.9 allocate competent and experienced after site inspection and testing;
1.04.1.10 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 The contractor shall prepare an Erosion and Sediment Control Plan (ESCP) for review and approval by Council at operational works stage. The ESCP must 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) (as required) and shall take into consideration the contractor's proposed construction methodology and program. Note, if land disturbance is between 400m^2 to 1000m^2 and slope <15%, an ESCS may not be required.

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 relevant suitably qualified person for the alternative strategy prior to submitting to Council for approval.

1.05.4 The contractor's ESCP must be prepared by a suitably qualified person in accordance with **Table AP 1.1**.

1.05.5 A copy of the contractor's current approved ESCS and ESCP is to be retained on site by the contractor's representative.

1.05.6 The relevant suitably qualified person is to review the ESCP for compliance with the approved ESC S (as relevant), ensuring compliance with stormwater management design objectives – construction phase for nominated design events within the *Whitsunday Planning Scheme 2017 – Construction management code.*

1.05.7 Any amendments required to ensure ESCS compliance are to be incorporated by the contractor prior to approval. The relevant suitably qualified person 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 relevant suitably qualified person and a copy of the revised approved ESC P issued to Council for approval prior to implementation.

1.05.10 On larger sites where works are to be progressively constructed a plan shall be provided for each stage of works in accordance with the ESC S

1.05.11 Erosion and Sediment Control Plan implementation is a Hold Point if involving development:

(a) Land disturbance more than 400m^2 over >15% slope; or

(b) All land disturbance more than 1000m^2

1.05.12 Hold Point is required to review implemented erosion and sediment control measures prior to commencing work. Hold point will review on-ground measures in accordance with the approved ESC S and ESCP. Works may not proceed until the meeting is held and any further requirements identified during the conduct of the meeting are satisfied.

1.05.13 The contractors ESC P shall consist of the following:

Erosion and Sediment Control Plan	**Completed (✓)**
Works Overview / Analysis	
Written description of the sequencing of works or construction program, in accordance with the ESCS.	
General soil description	
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. Details should respond to items listed within CP 1.05.14, including: - Minimising disturbance, sediment loss and erosion - Control of run-off and stormwater - Erosion control - Sediment control - Re-vegetation	
An inspection, maintenance and test plan for monitoring erosion and sediment control measures during the construction and the defects liability period.	
Demonstrated compliance with stormwater management design objectives – construction phase for nominated design events, within the *Whitsunday Planning Scheme 2017* – Construction management code, in accordance with the ESCS.	
The name of the person within the contractor's organisation who has the authority and responsibility for implementing, monitoring, updating or amending the plan, in accordance with **Table AP 1.1**	
Overview Map (s)	
Property boundaries	
Existing and final contours – including location of cut and fill banks	
Existing and final overland flow drainage paths	
Limits of clearing where applicable e.g. on large properties	
Location of vegetated buffer strips	
Stabilised entry/exit point (rumble pad)	
Location of soil and sand stockpiles	
Location of all proposed temporary drainage control measures	
Location of all proposed erosion control measures (alternatively, use notes	

to describe locations)	
Installation sequence and maintenance requirements	
Location of measure(s) to remain in place from the commencement of the defect's liability period.	

Note – ESC P should have regard to Whitsunday Regional Council Erosion and Sediment Daily Site Checklist (Fact Sheet 9) and Controlling stormwater pollution (Fact Sheet 10).

1.05.14 The contractors ESCP shall address the following issues:

1.05.14.1 Minimising Disturbance, sediment loss and erosion:

1.05.14.1.1 limiting the exposure time and size of disturbed areas to a minimum;

1.05.14.1.2 allow for the use of existing vegetation has buffer zones.

1.05.14.2 Control of runoff and stormwater quality:

1.05.14.2.1 sizing of structures, channels, catch strain and diversion drains for appropriate storm events in accordance stormwater management design objectives – construction phase, within the *Whitsunday Planning Scheme 2017 – Construction Management Code* for nominated design events;

1.05.14.2.2 Diverting clean water run-off around disturbed areas;

1.05.14.2.3 dividing the site into smaller more manageable drainage areas;

1.05.14.2.4 early installation of temporary drainage works;

1.05.14.2.5 early installation of permanent drainage system and protection works.

1.05.14.3 Erosion Control:

1.05.14.3.1 protecting service changes and hard engineering structures (e.g. driveways, curbs, etc) from erosion caused by run-off;

1.05.14.3.2 prompt revegetation of disturbed areas;

1.05.14.3.3 installing structures and drainage channels to flow velocity and encourage settlement of soil particles;

1.05.14.3.4 protection of disturbed areas from wind erosion (dust suppression).

1.05.14.4 Sediment Control:

1.05.14.4.1 locating stockpiles clear of drainage paths and protecting stockpiles from traffic, run-off and wind erosion;

1.05.14.4.2 minimising number of site access points;

1.05.14.4.3 stabilising site access points to prevent vehicles transporting materials off-site;

1.05.14.4.4 intercepting drainage from disturbed areas and installing sediment barriers to slow the velocity of flow and allow fine particles to settle;

1.05.14.4.5 diverting larger contaminated flows to sediment traps to allow soil particles to settle or to be treated prior to release into receiving waters; and

1.05.14.4.6 protecting partially constructed drainage structures from sediment infiltration.

1.05.14.5 Revegetation:

1.05.14.5.1 Progressive stabilisation and rehabilitation of completed works; and

1.05.14.5.2 providing protection to revegetation works on steep batters during establishment period.

1.05.14.6 Inspection, cleanout and maintenance:

1.05.14.6.1 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.

1.05.14.6.2 The following references/guidance it may assist in preparing the ESCP:

- Whitsunday Regional Council Erosion and Sediment Control Guidelines and online Fact Sheets;
- 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 or adjoining Council parkland 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 A request to Council to utilise adjoining public open space during construction (as required), including, pre-construction photos of adjoining public open space that may be utilised, to inform appropriate rehabilitation.
1.07.1.8 location of project sign (if required);
1.07.1.9 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 conservation 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.
- 1.15.1.3 adjoining public open space utilised in construction is rehabilitated to Council's satisfaction, in accordance with pre-construction photos submitted as per CP 1.07.

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 Take into consideration existing water and sewerage services;
- 1.02.1.5 Facilitate the provision of urban services; and
- 1.02.1.6 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 Existing sewers, manholes and pump stations;

1.03.2.13 water quality issues; and
1.03.2.14 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.

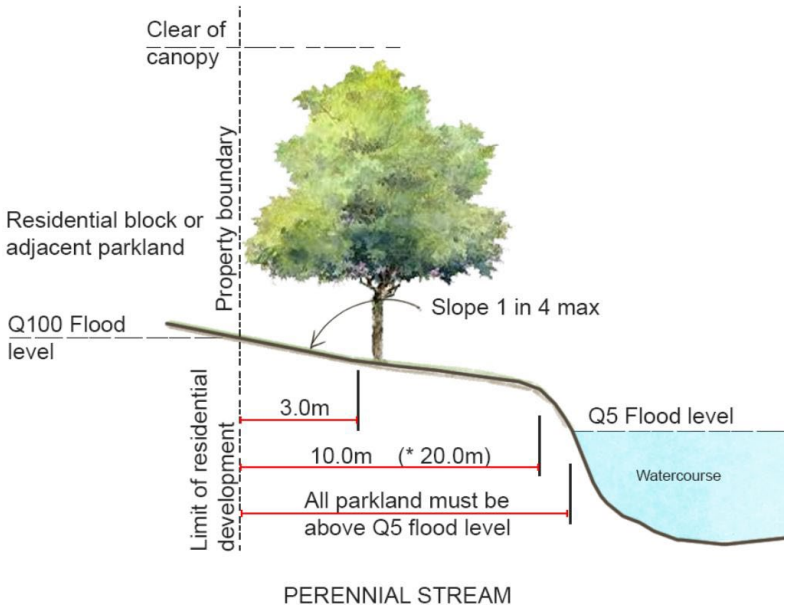


Figure DP1.04: Limits of development adjacent to natural stream banks

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 are 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 Connection and protection of existing water and sewer infrastructure;
1.06.3.8 Railway and cane tram way lines;
1.06.3.9 access requirements for service vehicles and emergency vehicles;
1.06.3.10 topography of the area;
1.06.3.11 adequate road frontage to parks and drainage reserves;
1.06.3.12 existing utility services constraints and proposed augmentation works;
1.06.3.13 crime prevention through environmental design;
1.06.3.14 impacts on adjoining properties;
1.06.3.15 existing stormwater drainage;
1.06.3.16 flooding and ponding;
1.06.3.17 preservation of natural watercourses;
1.06.3.18 significant existing vegetation;

1.06.3.19 bushfire protection measures;
1.06.3.20 impact of earthworks;
1.06.3.21 water quality improvement structures and features;
1.06.3.22 existing soil conditions; and
1.06.3.23 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 aims listed below and others mentioned in the IPWEA Street Design Manual:
- 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, such as water, sewer, stormwater and telecommunications infrastructure;
- 1.07.1.5 ecological connectivity
- 1.07.1.6 opportunity for street landscaping, tree planting, furniture; and
- 1.07.1.7 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, see **Table D1.1**.

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 a Local Access forms part of a pedestrian or cycle network, suitable connectivity with adjoining Local Accesses 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. Roads above the Urban Access 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.

1.11.3 Alignment should be at the front / rear or side of lots taking into consideration any possible future subdivision of the lots. Design should minimise the likelihood of needing to build over sewers and allow ease of replacement.

1.11.4 An easement is created over the sewer with appropriate width to allow maintenance and replacement.

1.11.5 Where it is not possible to relocate or realign an existing sewer main proposed to be built over, the sewer shall be encased in an enveloper / encasement / carrier pipe compliant with Transport and Main Roads Specifications MRTS141 Microtunnelling and Pipe Jacking July 2017 or later.

1.11.6 As a minimum the enveloper / encasement / carrier pipe shall be designed to carry sewerage at the design depth and be a minimum or one size larger than the existing pipeline. Council will contribute the used portion of life of the existing pipeline. The developer shall be responsible for the unused portion (remaining life) of the pipeline and full cost of the enveloper / encasement / carrier pipe based on Councils schedule of rates for mains replacement.

Note – DP 1.11.5 and DP 1.11.6 applies to Class 2 – 9 buildings. Building Class 1 or 10 must address QDC MP1.4 for building over or near relevant infrastructure.

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. Road design shall comply with Austroads Guide to Road Design Part 3.

1.01.2 The geometry of a road is to be designed to aims below, and others described in the IPWEA Street Design manual:

- 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, trees planting and furniture; 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 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 Parking;
- 1.02.1.7 AS/NZS 3845.1 Road Safety Barrier Systems;
- 1.02.1.8 AS/NZS 3845.2 Road Safety Devices
- 1.02.1.9 AS 4678 Earth retaining structures
- 1.02.1.10 AS4282 Obtrusive Effects of Outdoor Lighting.
- 1.02.1.11 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 Manual of Uniform Traffic Control Devices 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 Street Design Manual;
- 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 The designer shall ensure that the selected design speed and road layout will result in a speed environment that is likely to comply with that specified in Table 1 – Target Speeds for Streets of IPWEA Street Design Manual . 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; therefore, 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, Street Design Manual, 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 Urban laneways, Urban Local Access, Access, Urban Collector, and Industrial Access – 1%

1.07.1.2 Major Collector and Industrial Collector – 0.6%

1.07.2 The length of the crest vertical curve for stopping site distance should conform to Austroads;

1.07.3 Every effort should be made to provide vertical curves as long as possible, for improved appearance.

1.07.4 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.

1.07.5 In general, a minimum 10 m length vertical curve shall be provided with a side road joins the through road at three-way intersections.

1.07.6 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 Local Access and the algebraic change of grade is less than 6%.

1.07.7 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:

1.07.7.1 Combined horizontal and vertical stopping sight distance and minimum sight distance should be considered three dimensionally;

1.07.7.2 Sharp horizontal curves shall not be introduced at or near the crest of a vertical curve;

1.07.7.3 Horizontal curves should leave the vertical curve and be longer than the vertical curve; and

1.07.7.4 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 IPWEA Street Design Manual.

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.

DG 1.09 Urban Street and Road Hierarchy

Table D1.1 Urban Street and Road Hierarchy – Deemed to Comply Requirements

PARAMETER	URBAN LANEWAY	URBAN LOCAL ACCESS	URBAN ACCESS	URBAN COLLECTOR	URBAN MAJOR COLLECTOR	SUB ARTERIAL	ARTERIAL	URBAN INDUSTRIAL ACCESS	URBAN INDUSTRIAL COLLECTOR
Typical max. volume (vpd[1])	<100	<500	<1,000	<3,000	<6,000	<10,000	>10,000	-	-
Direct residential lot access for vehicles	Yes	Yes	Yes	Yes	Yes[2]	No	No	Yes	Yes
Reserve widths (m)[3,7,8,9]	8.0	16	20	20.0	25.0	The requirements of these categories shall be provided by the Council or relevant authority (DTMR). Traffic volumes shall be identified in a traffic management report.		20.0	22.0
Carriageway Width (min) [3,4,5]	6.0	6.0	6.0	7.5	10.0			12.0	14.0
Desired max. length (m)	140	250[10]	250[10]	n/a	n/a			250	250
Max. Grade (Desirable) %	(8) 10	(12) 16[6]	(12) 16[6]	(8) 10	(8) 10			(6) 10	(6) 8
Intersection spacing min. (m)	n/a	40	40	60-100	100			60-100	60-100
Design speed (Km/h)	<20	50	50	60	60			50	60
Verge width. Minimum each side (m)	n/a	4.0	4.5	5.0	5.0			4.0	4.0
Pedestrian paths	Shared	One side	One side[11]	Both sides	Both sides			Both sides	Both sides
Cycle paths, either - Cycle lanes on carriageway - Off carriageway shared paths - Separated cycle track	Shared No No	No[12] No[12] No[12]	No[12] Yes[13] Possibly[13]	Yes[13] Yes[13] Yes[13]	Yes[13] Yes[13] Yes[13]			No Possibly[13] Possibly[13]	No Possibly[13] Possibly[13]
Bus route	No	No	No	Possibly[4]	Yes			Possibly	Possibly
Street trees	No	Both sides	Both sides	Both sides	Both sides			Both sides	Both sides

Notes

A. The street category should be determined by the function it performs and not just the motor vehicle traffic volume.

B. The determination of the appropriate type of cycle path and its dimensions should be the outcome of an analysis of the types and volumes of cyclist activities and the motor vehicle speeds in the street.

C. In accordance with *Planning (Walkable Neighbourhoods) Amendment Regulation 2020 - Subordinate Legislation 2020 No. 162,* street trees should be provided at an average spacing of 15m to both sides of every street but not laneways.

D. There are existing laneways in the Whitsunday Regional Council road network, however, no new laneways are deemed necessary. The approval of a new laneway must be assessed by Council according to its definition (see definition below). These are usually applied in central business areas where frontage access to businesses is undesirable or unachievable. They are not to be provided in new residential development areas.

1. For concept planning purposes, a guide for traffic generation is 10 vpd/dwelling.

2. Direct vehicle access from residential lots is typically acceptable up to 6,000vpd. Above this traffic volume, direct access might be acceptable depending on the number of driveways, parking, and moving lane configuration. Usually, no direct access is appropriate where traffic volumes exceed 7,500vpd.

3. Carriageway (and reserve) widening shall be provided on bends in accordance with Austroads.

4. Widening of carriageway to 10m shall be required on all bus routes, and a minimum road reserve of 20m provided.

5. 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 side of the carriageway.

6. 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.

7. Road reserve widths may require widening to accommodate table drains, provision for services, on-street car parking provision and bus bays.

8. Minimum reserve must be provided, irrespective of minimum verge and carriageway widths specified.

9. Where the road is nominated as part of the bikeway network, allowance for bike lanes shall be added to this width (minimum bikeway widths in accordance with Austroads).

10. For Local Access and Access streets, this refers to block length to achieve good pedestrian access.

11. Unless required as part of the pedestrian movement network or in the near vicinity of community facilities, parks, or schools where footpaths both sides are appropriate. Path width in accordance with the latest *Austroads Guide to Road Design Part 6A – Paths for Walking and Cycling*.

12. Unless required as part of the cycling movement network or in the near vicinity of community facilities, parks, or schools where the circumstances indicate this is a preferred solution. Path width in accordance with the latest *Austroads Guide to Road Design Part 6A – Paths for Walking and Cycling*.

13. Dependent upon the desired lines, cycle hierarchy plan, road speed and estimated pedestrian and cyclist demand. Path width in accordance with the latest *Austroads Guide to Road Design Part 6A – Paths for Walking and Cycling*.

Major Collector

A Major Collector generally has restricted or limited direct motor vehicle access to individual properties.

Major Collector streets provide linkage between and within neighbourhoods to facilitate short trips for pedestrians, cyclists and motor vehicles in a calm and low-speed environment. Major Collectors also provide connection between the Collector streets and the external road network (arterial and sub-arterial) and are the preferred location for any public transport route through a neighbourhood.

Development frontage to collector streets is appropriate for residential (and non-residential) development and parking is typically accepted.

Major collector streets are typically provided where the function and/or traffic volume on that street is such that there is a need to achieve higher traffic efficiency and/or to provide improved safety of users. On major collector streets, the following may be necessary:

- restricted or limited vehicular access to property (e.g. consolidated driveways, centre median, turning lanes);
- indented bus stops;
- indented parking lanes;
- separated cycle facilities (i.e. separate from motor vehicle traffic and/or pedestrians); and
- wide verges suitable for landscape/streetscape improvements and pedestrian pathways on both sides of the street.

Collector

A Collector Street provides direct motor vehicle access to individual properties.

Collector streets provide linkage between and within neighbourhoods to facilitate short trips for pedestrians, cyclists, and motor vehicles in a calm and low-speed environment. Collectors also provide connection between the local neighbourhood access streets and the external road network. They may be used as a public transport route through a neighbourhood.

Development frontage to collector streets is appropriate for residential development. Vehicular access and parking are typically encouraged due to relatively low traffic volumes.

Collector streets should make specific provision for cycle movement and should include pedestrian pathways on both sides of the street.

Access

An access street provides direct access to individual properties. An access street also provides a connection to other access streets but is not so significant that it would function as a collector street.

It should facilitate movement by pedestrians and cyclists, without significant constraint by motor vehicle traffic needs. In general, public transport does not utilise an access street.

Local Access

A local access street provides direct access to individual properties. A local access street generally, is one that services only motor vehicle traffic for that street but allows the necessary connections for pedestrians and cyclists from other streets. It is typically a cul-de-sac or a short connecting street between two access streets.

Public transport should not utilise a local access street.

Laneway

A laneway provides a very low volume, very low-speed environment that provides vehicular access to the rear (or side) of individual properties, typically where vehicular access from the front of the lot is undesirable (for improved front street aesthetics or direct access to open space) or not achievable (due to road hierarchy, high traffic volumes or high demand for on-street parking on the frontage street). A laneway services only motor vehicle traffic for that

street (i.e. it does not serve other streets) but sometimes allows the necessary connections for pedestrians and cyclists from other streets. It typically excludes on-street parking unless in specifically designed parking areas.

DG 1.10 Carriageway Width

1.10.1 Minimum carriageway widths for all streets shall be as nominated in **Table D1.1**.

1.10.2 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 trucks, emergency vehicles and, on some roads, buses.

1.10.3 The safety of pedestrians and cyclists must also be assured by providing sufficient width and visibility.

1.10.4 The carriageway 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.

1.10.5 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.

1.10.6 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.

1.10.7 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.

1.10.8 Traffic islands shall be designed in accordance with the current DTMR or AUSTROADS design manuals.

1.10.9 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 1.11 Verges

1.11.1 Minimum verge width for all streets shall be as nominated in **Table D1.1.**

1.11.2 A suitable design of the verge will depend on utility services, access to allotments, pedestrian usage, tree preservation and storm water drainage.

1.11.3 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%.

1.11.4 The maximum slope permissible within a road verge is 1 in 4.

1.11.5 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.

1.11.6 Utility service locations shall be in accordance with the relevant authorities’ requirements.

1.11.7 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 1.12 Intersections

1.12.1 All new intersections of Access Places, Access Streets and Collector Streets, shall be three-way intersections designed and located in accordance with Austroads.

1.12.2 A roundabout shall be used in the design of four way intersections.

1.12.3 Intersections of 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.

1.12.4 Intersections with state-controlled roads shall be designed and constructed in accordance with the requirements of DTMR.

1.12.5 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.

1.12.6 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.

1.12.7 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.

1.12.8 All vehicle turning movements are accommodated using AUSTROADS design vehicle and turning templates, as follows:

- 1.12.8.1 For turning movements involving urban major collector streets or urban collector , the "design semitrailer" with turning path radius of 15 m. Industrial Access and Industrial Collector might require the use of the B-Double template.
- 1.12.8.2 For turning movements involving local access and access streets but not involving collector streets, the "design single unit track/bus" with turning path radius of 12.5 m.
- 1.12.8.3 For turning movements involving Urban Laneways and Urban Local Access, but not involving collector streets the garbage collection vehicle with turning path radius of 12.5 m.
- 1.12.8.4 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
- 1.12.8.5 Road furniture shall be located to allow for clear manoeuvring of the design semitrailer.

1.12.9 Intersection channelisation is to be provided and designed in accordance with the current DTMR or AUSTROADS design manuals.

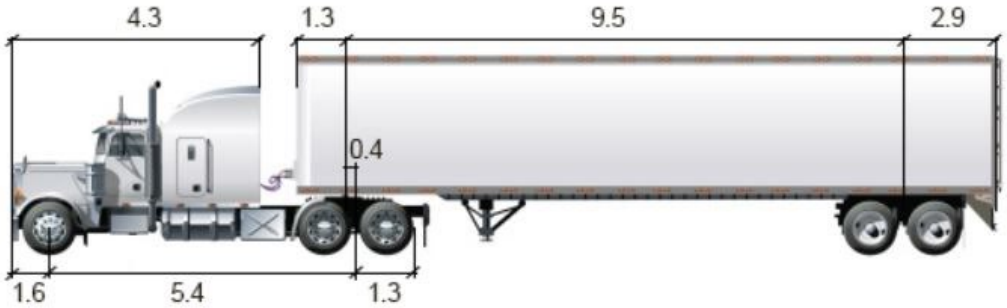
1.12.10 All channelisation shall be designed to accommodate a design vehicle providing a clearance of not less than 0.6 m between the wheel track and the kerbs at all points, unless specified otherwise by Council.

1.12.11 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.

1.12.12 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.

1.12.13 On Urban Major Collectors, Sub-Arterial and Arterial roads, median breaks will only be permitted at approved intersections.

1.12.14 Pavement markings associated with channelisation and signs shall be provided in accordance with the MUTCD.



Semi-trailer

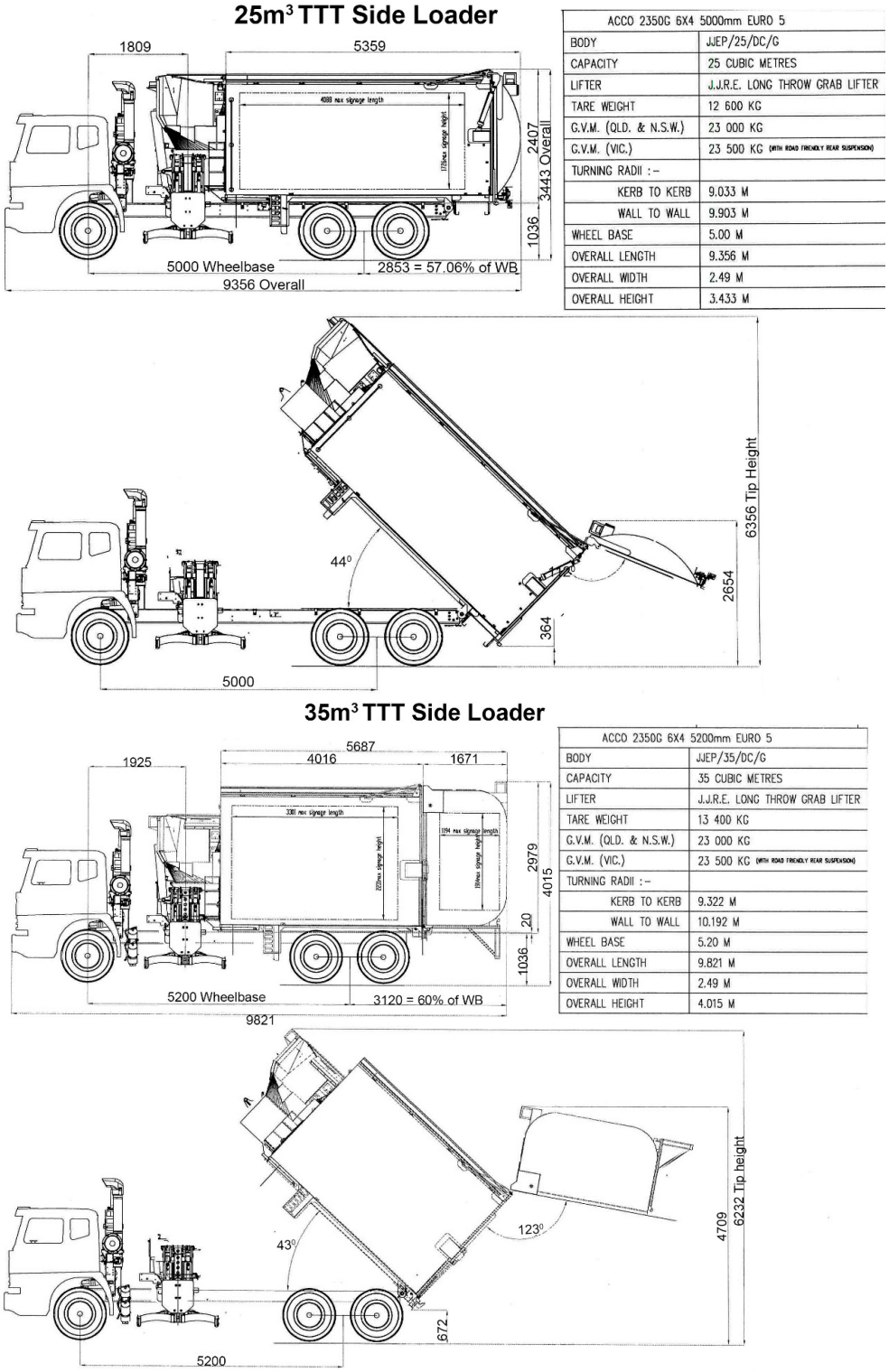
Tractor width	:	2.50	Trailer width	:	2.50
Tractor track	:	2.50	Trailer track	:	2.50
Turning radius (outside):		15.00			

Single unit truck/bus

Width	:	2.50
Track	:	2.50
Turning radius (outside):		13.00

Figure 1.3 Standard Vehicles

Whitsunday Regional Council Planning Scheme 2017 – Schedule 6 – (V3.8)



ACCO 2350G 6X4 5000mm EURO 5	
BODY	JJEP/25/DC/G
CAPACITY	25 CUBIC METRES
LIFTER	J.J.R.E. LONG THROW GRAB LIFTER
TARE WEIGHT	12 600 KG
G.V.M. (QLD. & N.S.W.)	23 000 KG
G.V.M. (VIC.)	23 500 KG (WITH ROAD FRIENDLY REAR SUSPENSION)
TURNING RADII :-	
KERB TO KERB	9.033 M
WALL TO WALL	9.903 M
WHEEL BASE	5.00 M
OVERALL LENGTH	9.356 M
OVERALL WIDTH	2.49 M
OVERALL HEIGHT	3.433 M

ACCO 2350G 6X4 5200mm EURO 5	
BODY	JJEP/35/DC/G
CAPACITY	35 CUBIC METRES
LIFTER	J.J.R.E. LONG THROW GRAB LIFTER
TARE WEIGHT	13 400 KG
G.V.M. (QLD. & N.S.W.)	23 000 KG
G.V.M. (VIC.)	23 500 KG (WITH ROAD FRIENDLY REAR SUSPENSION)
TURNING RADII :-	
KERB TO KERB	9.322 M
WALL TO WALL	10.192 M
WHEEL BASE	5.20 M
OVERALL LENGTH	9.821 M
OVERALL WIDTH	2.49 M
OVERALL HEIGHT	4.015 M

Figure 2.3 Standard Vehicles – JJ Richards Rubbish Trucks (2021)

DG 1.12 Roundabouts

1.12.1 Design of roundabouts shall 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 Urban Collector Streets and Urban 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 IPWEA Street Design manual, 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 IPWEA Street Design Manual. 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]
Urban major 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.

Note – Applicants must get a Road Work Permit from Council's Roads and Drainage Branch for a driveway crossover prior to undertaking any works in the road reserve.

DG 1.18 Parking Provisions

1.18.1 Parking provisions in accordance with the relevant sections of Austroads and/or Street Design Manual shall be accorded with on all roads, except that for Urban Major Collector Street.

1.18.2 Streets which cannot comply with the on-street parking provisions of Austroads and/or Street Design Manual, 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.

1.18.4 Off-street parking facilities are sealed and designed in accordance with AS 2890.1:2004. If outside of the Urban area, off street parking may be unsealed only if impacts on neighbouring properties from dust, noise and traffic from vehicular movement to and from the development are managed.

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. Path width in accordance with the latest Austroads Guide to Road Design Part 6A – Paths for Walking and Cycling ,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 D1.1**, the latest Austroads Guide to Road Design Part 6A – Paths for Walking and Cycling, and Street Design Manual.

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 Bikeways are provided in urban streets and roads in accordance with **Table D1.1**.

1.20.2 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.

1.20.3 Bikeways constructed using alternate material (e.g. Asphalt, Paving blocks) are to be approved by Council.

1.20.4 Bikeways located in parks shall be constructed above the flow of a storm of 5 year ARI, unless approved otherwise by Council.

1.20.5 Where bikeways connect to or crosses over an Urban Access Street or higher order road, a slow point shall be installed as approved by Council.

1.20.6 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 Street Design Manual.

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 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, recycled plastic product (replas) or steel (all steelwork is to be hot dipped galvanised) and shall be provided with handrails / fences for pedestrian safety.

1.24.2 Pedestrian footbridges must be approved by an RPEQ for structural stability.

1.24.3 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.

1.24.4 Designers shall consult with Council at concept stage to confirm location, widths, flood immunity and material 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 D1.3** details specific road demands for rural roads.

Table D1.3 Rural Road Hierarchy – Deemed to Comply Requirements

PARAMETER	RURAL LOCAL ACCESS	RURAL ACCESS	RURAL COLLECTOR	RURAL SUB ARTERIAL	RURAL ARTERIAL
Traffic volumes or Road Class (vpd)	<100	100-199	200-999	1,000-7,999	>8,000
Road Reserve (flat terrain < 5%)	20m	20m	20m	25m	25m
Road Reserve (undulating/Hilly > 5%)[2]	25m	25m	25m	30m	30m
Formation	8m	8m	10m	10m	12m
Pavement Width	6m	6m	6.5m	8m	10m
Seal Width	Optional	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 (Km/h)	100[5]	80	100	100	100
Design speed for individual elements (Minimum - Km/h)[4]	110	90	110	110	110

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 or 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
4. **In accordance with** *Austroads Guide to Road Design Part 3: Geometric Design*, **the design speed should not be less than the expected operating (85th percentile) speed for the road. The** *Department of Transport and Main Roads' Manual of Uniform Traffic Control Devices Part 4: Speed Controls (MUTCD Part 4*) **defines the approach used within Queensland to review and revise speed limits on existing roads within the Queensland road network.**
5. Default speed limit for unsealed roads.

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 as per RS-0056. Accesses off gravel roads do not have to be sealed, unless access has a grade of more than 10%, falling to the road. Access over 10% grade falling to the road must be sealed from the property boundary to the road edge or distance otherwise agreed to by Council.

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 and are designed to maximise life expectancy (i.e. replas plastic, Keystone or similar, timber generally not supported due to low life expectancy).

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 minimum depth of 75mm - 100mm.

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

1.1.1 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.

1.1.2 The Manual contains procedures for the design of the following forms of road pavement construction:
- 1.1.2.1 Flexible pavements; and
- 1.1.2.2 Rigid pavements (i.e. concrete pavements).

1.1.3 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

1.2.1 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 - 40 years;

3.5.2 Traffic loadings can be obtained from Austroads *Guide to Pavement Technology Part 2: Pavement Structural Design*

3.5.3 The pavement design shall include all traffic data and/or assumptions made in the calculation of the design traffic.

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. The design parameter for

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
Laneway/Local Access / 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 (AC14) 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 tack coat is to be applied over the pavement material prior to the asphalt being laid. Tack coat is only not necessary when asphalt is placed over a new, undriven layer of asphalt.

DG 3.15 Subsoil Drains

3.15.1 Subsoil or sub-pavement drains shall be provided on both sides of the formation, 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 wasterly 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 wasterer 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

General

DG 4.1 Scope

4.1.1 The Queensland Urban Drainage Manual (QUDM) shall be the basis for design of stormwater drainage, except where amended by this guideline.

4.1.2 For the design of stormwater drainage (quantity) this section sets out the design guidelines for urban and rural area.

4.1.3 For the design of stormwater drainage (quality) systems for urban and rural areas refer to the requirements set out in the Stormwater Quality Guideline. https://www.whitsundayrc.qld.gov.au/downloads/file/368/storm-water-quality-guideline-wrc-sw-qlty-guide-final

4.1.4 A suitably qualified and experienced Professional Engineer who is certified as a Registered Professional Engineer Queensland (RPEQ) and is competent to perform stormwater drainage design shall undertake or oversee all aspects of the design. The design shall comply with all relevant requirements of:

4.1.4.1 this development manual

4.1.4.2 all Reference documents listed in Section DG 4.3

4.1.4.3 any development approval conditions relevant to the design

4.1.4.4 any relevant request provided by Council in writing

DG 4.2 Objectives

4.2.1 The objectives are to ensure the proposed stormwater drainage system and earthworks is designed to:

- 4.2.1.1 adequately 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; and
- 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 provide convenience and safety for pedestrians and traffic in frequent stormwater flows by controlling those flows within prescribed velocity/depth limits; and
- 4.2.1.4 be in accordance with Council's flood and stormwater drainage studies and modelling formats.

DG 4.3 Reference Documents

The planning and design of the developments within Whitsunday Regional Council local government area must be undertaken in accordance with the current edition of the following key reference documents, unless specified in this Section.

4.3.1 Queensland Government -
- (i) State Planning Policy - state interest guideline Water quality,
- (ii) Urban Stormwater Quality – Planning Guidelines (2010),
- (iii) Environmental Protection (Water) Policy 2009

4.3.2 IPWEAQ - Queensland Urban Drainage Manual (QUDM)

4.3.3 Engineers Australia –
- (i) Australian Rainfall and Runoff (ARR) – 1987 and 2016,
- (ii) Australian Runoff Quality – A guide to water sensitive urban design.

4.3.4 Water by Design -
- (i) Music Modelling Guidelines (2010),
- (ii) Construction and Establishment Guidelines – Swales, Bioretention Systems and Wetlands.

4.3.5 WRC –
- (i) Flood and stormwater drainage studies –
- (ii) WRC ADAC Guideline
- (iii) Standard Drawings
- (iv) WRC Stormwater Quality Guideline

4.3.6 Australian Standards -

(i)	AS/NZS 1597	Precast Reinforced Concrete Box Culverts
(ii)	AS/NZS 4058	Precast Concrete Pipes
(iii)	AS/NZS 3725	Design for Installation of Buried Concrete Pipes
(iv)	AS/NZS 4139	Fibre Reinforced Concrete Pipes and Fittings
(v)	AS/NZS 1254	PVC-U Pipes and Fittings
(vi)	AS/NZS 2032	Installation of PVC pipe systems

(vii) AS/NZS 2566 Buried Flexible Pipelines, structural design
(viii) AS/NZS 2041 Buried Corrugated Metal Structures
(ix) AS/NZS 1554 Structural Steel Welding
(x) AS/NZS 4671 Steel Reinforcing Materials

4.3.7 Department of Energy and Water Supply - Queensland Urban Drainage Manual Institute of Engineers Australia.

4.3.8 Department of Transport and Main Roads (TMR) Specifications:
(xi) MRTS03 Drainage, Retaining Structures and Protective Treatments
(xii) MRTS04 General Earthworks
(xiii) MRTS06 Reinforced Soil Structures
(xiv) MRTS14 Road Furniture
(xv) MRTS15 Noise Fences
(xvi) MRTS16 Landscape and Revegetation Works
(xvii) MRTS24 Manufacture of Precast Concrete Culverts
(xviii) MRTS25 Steel Reinforced Precast Concrete Pipes
(xix) MRTS26 Manufacture of Fibre Reinforced Concrete Drainage Pipes
(xx) MRTS27 Geotextiles (Separation and Filtration)
(xxi) MRTS28 Contractor's Site Facilities and Camp
(xxii) MRTS45 Road Surface Delineation
(xxiii) MRTS46 Skid Resistant Friction Coating for Steel Road Plates
(xxiv) MRTS51 Environmental Management
(xxv) MRTS52 Erosion and Sediment Control
(xxvi) MRTS55 Use of Explosives in Roadworks
(xxvii) MRTS100 High Strength Geosynthetic Reinforcement in Road Embankments
(xxviii) MRTS140 Horizontal Directional Drilling (HDD)
(xxix) MRTS141 Micro-tunnelling and Pipe Jacking
(xxx) MRTS142 Thrust Boring and Auger Boring

4.3.9 Austroads –
(i) Waterway Design – A Guide to the Hydraulic Design of Bridges, Culverts and Floodways
(ii) Guide to Pavement Technology – at the time of writing this document, part relating to development was AGPT10-09 - Part 10: Subsurface Drainage

4.3.10 Australian Institute for Disaster Resilience – Managing the floodplain – a guide to best practice in flood risk management in Australia – Handbook 7 - Floodplain Management in Australia: Best Practice Principles and Guidelines

4.3.11 John Argue – Storm Drainage Design in Small Urban Catchments – A handbook for Australian Practice – Special Report 34 Australian Road Research Board

4.3.12 Lewis Rossman – Stormwater management model User's Manual Version 5 – United States Environmental Protection Agency

4.3.13 Brisbane City Council. 2000. Natural channel design guidelines. Document produced in co-operation with Grant Witheridge, Catchment and Creeks Pty Ltd

4.3.14 Chow, Ven Te. 1959. Open channel hydraulics

4.3.15 Concrete Pipe Association of Australia, Concrete Pipe Guide, charts for the selection of concrete pipe to suit varying conditions

4.3.16 Henderson F.M.. 1966. Open channel flow

DG 4.4 Flood Studies

4.4.1 Councils have or are in the process of producing, flood and stormwater drainage studies and hydrologic and hydraulic models for several catchments. Where a study and modelling do not exist, the designer shall be required to prepare this study and modelling as part of a development application. This is to be discussed at pre-lodgement meeting.

4.7.1 Councils studies can be found online: The developer/engineer shall refer to QUDM Section 3 when assessing damage and/or nuisance

4.7.2 The developer/engineer shall refer to QUDM Section 3 when assessing damage and/or nuisance criteria. Further, as per QUDM any assessment of the potential adverse impacts of stormwater changes on other properties should consider the current and future use of land and also the value and potential development use.

4.7.3 The engineer must submit to Council a Due Diligence Assessment in accordance with Section 3.5 of QUDM. Including:

4.7.3.1 Pre-development evaluation

4.7.3.2 Demonstrate proposed drainage system/ works

4.7.3.3 Determine the changes to volume, rate, frequency, duration, velocity, location and quality of stormwater run-off

4.7.4 The engineer is to notify Council in writing where the pre-development drainage system analysis identified deficiencies in the existing drainage system. Historical drainage design standards and changes to modelling may have resulted in parts of Councils drainage network not able to cater for the design storm flows. These issues will be considered with respect to Section 13.1 of QUDM.

DG 4.8 Easements

4.8.1 Any potential easements to mitigate actionable nuisance on surrounding properties are to be determined early in the development process and shall be bought to Council's attention in a pre-submission meeting to advise Council on the likelihood of damage and/or nuisance.

4.8.2 Where stormwater drainage line that pass through property other than a road reserve an easement shall be provided over the property 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. Further, if a drainage line passes adjacent to a property, an easement over that portion shall be required and dimensions as per above formula.

4.8.3 The width of easement for overland flow paths shall contain the 1% AEP storm flow from the upstream catchment or be three (3) metres wide, whichever is greater.

4.8.4 Easement required over inter-allotment drainage systems must be have extents as defined in QUDM.

4.8.5 Easement document to include the responsibility for all routine above ground maintenance within inter-allotment drainage easements to the grantor/ property owner. 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.

4.8.6 Easement extents shall be designed to allow for necessary vehicle/ machinery access for on-going Council maintenance and/or future repair and upgrade works to the drainage system.

DG 4.9 General

4.9.1 The RPEQ shall sign all relevant documents associated with the drainage design, certifying the design complies with this section.

4.9.2 Minor system flows (as defined by QUDM) are to be conveyed underground to a legal point of discharge unless otherwise approved by Council.

4.9.3 For new developments, the designer shall provide a stormwater drainage system designed in accordance with the "major/minor" system concept in accordance with QUDM and TMR standards. 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.

4.9.4 For redevelopment areas or where the proposed development transfers external catchment flows, 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 Exceedance Probability (AEP) of the receiving minor system is no greater than that which would be expected from the existing area. Further, the design does not concentrate flows in such a way as to cause nuisance or damage to downstream properties.

4.9.5 The stormwater design shall meet all requirements relating to stormwater quality management, erosion and sediment control and acid sulphate soils. Refer to detailed requirements in WRC Stormwater Quality Guideline.

4.9.6 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.

4.9.7 The design must be consistent with any relevant Council drainage study or catchment and waterway management plans.

4.9.8 The design must be based on the premise of peak load reduction by using methods of suitable detention or infiltration.

4.9.9 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 property owners to produce easements over downstream drainage paths from the development to the legal point of discharge as per QUDM. Written approval for consent to discharge 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.

4.9.10 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. This does not negate the need to obtain downstream drainage easements for discharge where there is none currently.

4.9.11 The legal point of discharge will be assessed against the test and principles of QUDM to determine if a legal point of discharge has been achieved. If no lawful point of discharge or no discharge agreement has been provided, then the design cannot be accepted or approved.

4.9.12 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.

4.9.13 The engineer 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.

4.9.14 The engineer 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.

4.9.15 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.

4.9.16 All Material and components of the Stormwater Drainage system shall be durable and fit for purpose, with a minimum lifespan 60 years.

4.9.17 The designer needs to make reference to the associated design manuals related to DG 1 Road Geometry, DG 5 Stormwater Quality Management and DG 11 Parks and Open Space.

4.9.18 If a lawful 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.

4.9.19 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.

4.9.20 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 4.10 Hydrology

A suitably qualified and experienced professional engineer (who must be a RPEQ), using the approach outlined in this section shall undertake or oversee all hydrologic designs.

4.10.1 Design Storms

Table DG4.10.1 provides the design storms for developments within the Whitsunday Regional Council local government area.

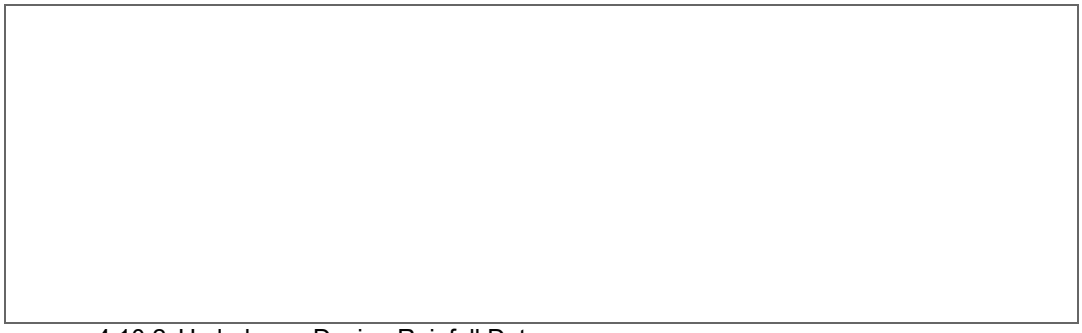
The probability terms are the terminology preferences as adopted in Australian Rainfall and Runoff (ARR) – reference Figure 1.2.1.

Table DG 4.10.1 Design Storms for Major and Minor Drainage Systems

Design Type		**Design Storm**
Major System Design		1% AEP (100 Year ARI) Plus Climate Change Factor
Minor System Design Development Category (QUDM)		**Design Storm**
Central Business & Commercial		10% AEP (10 Year ARI)
Industrial		18% AEP (5 Year ARI)
Urban Residential High Density (greater than 20 dwelling units/ha)		10% AEP (10 Year ARI)
Urban Residential Low Density (greater than 5 and up to 20 dwelling units/ha)		18% AEP (5 Year ARI)
Rural Residential (2 to 5 dwelling units/ha)		39% AEP (2 Year ARI)
Open Space (Parks etc)		63% AEP (1 Year ARI)
Roadway Criteria		**Design Storm**
Major Road	Kerb & Channel Flow	10% AEP (10 Year ARI) [1]
	Cross Drainage (Culverts)	2% AEP (50 Year ARI)[2]
Minor Road	Kerb & Channel Flow	Use relevant Development Category above
	Cross Drainage (Culverts)	10% AEP (10 Year ARI)[2]

:Notes-

1. The design storm for a Major Road overrides the Development category design storm.
2. The engineer must ensure the underground (pit and pipe) system shall collection and containment of 1% AEP flows of the design storm from the upstream catchment. Where a major drainage system involves surcharge into private property. A surcharge path shall be defined where the 1% AEP flows cannot be contained within the underground system. Easements are required to be provided over private property where underground systems and surcharge paths exist.
3. Culverts under roads should be designed to accept the full flow for the design storm.
4. the engineer 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. In addition, the downstream face of the causeway embankment may need protection where overtopping is likely to occurs and d*v checks must still be below maximum levels
5. Design storm may change if the roadway is deemed by Council to be a emergency evacuation route.
6. For cross-drainage requirements, refer to QUDM Section 7.3.7 & Table 7.3.1.



4.10.2 Hydrology - Design Rainfall Data

The rainfall intensities for design are to be obtained in accordance with ARR and BOM recommendations.

The Intensity Frequency Duration (IFD) data is to be generated for the specific site location at the BOM website. The link is http://www.bom.gov.au/water/designRainfalls/ifd/.

4.10.3 Hydrology - Catchment Area

4.10.3.1 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.

4.10.3.2 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.

4.10.3.3 Catchment plans shall include both major and minor event catchment extents.

4.10.3.4 Catchment land use shall be based on the current, proposed, and future available zoning information, where relevant.

4.10.4 Hydrology - Rational Method Calculations

A suitably qualified and experienced professional engineer (who must be a RPEQ), shall undertake and oversee all hydrologic calculations as per the approach outlined in this section.

For small and rural catchments up to 25km² and urban catchments up to 1km², Rational Method calculations shall be used to determine peak flows and must be carried out in accordance with QUDM

4.10.5 Coefficient of Runoff

The impervious values for various development types must be in accordance with QUDM Table 4.5.1.

4.10.6 Time of Concentration

4.10.6.1 The maximum time of concentration, to the first inlet pit in urban areas must be less 20minutues. If this is not met, sufficient evidence must be provided to justify a greater time.

4.10.6.2 For overland flow paths with differing flow characteristic, then the flow time of concentration of each segment must be calculated separately. Including flow paths across property and roadways.

4.10.6.3 Where calculating time of concentration for a specific area, the flow paths to pits shall be provided to service the fully development catchment. The designer must consider the likely fully developmental impacts of the catchment including any fence or building impacts on the flow path.

4.10.7 Hydrology - Models

4.10.7.1 The use of horological models shall be used in accordance with the requirements of ARR and QUDM. Where computer analysis programs are used, all relevant information (copies of the final data files, details of all calculations and stated relevant assumptions) must be provided on submission of the design to Council along with the final drawings.

4.10.7.2 Where a new flood model is required the 10 ensemble temporal patterns from ARR 2016 are to be analysed as per ARR 2016, Book 2, Chapter 5, Section 5. The median temporal pattern; the 6th highest flow rate out of 10 ensemble temporal patterns is to be used for the design.

DG 4.11 Hydraulics

A suitably qualified and experienced professional engineer (who must be a RPEQ), using the approach outlined in this section shall undertake or oversee all hydraulic designs.

DG 4.12 Hydraulic Grade Line

4.12.1 The design calculations shall validate the hydraulic grade line of the system as shown in the drawings.

4.12.2 The criteria for determining the downstream water surface level include:

4.12.2.1 known hydraulic grade line level from downstream calculations including pit losses at the starting pit in the design event;

4.12.2.2 where the downstream starting point is a pit and the hydraulic grade line is unknown, a level of 0.15m below the invert of the downstream pit inlet is to be adopted;

4.12.2.3 where the outlet is tidal or into other waterways the engineer shall refer to section 8.0 of QUDM;

4.12.2.4 where the outlet is an open channel or natural waterway and the design storm is the major event and the downstream flood levels

are not known the top of the outlet pipe shall be the downstream control; and

4.12.2.5 where the outlet is an open channel or natural watercourse, the design storm is the major event and downstream flood levels are known, the downstream control shall be the major event flood level.

4.12.3 The Designer shall take into consideration the following requirements during major flood events with regard to the road inundation depth:

4.12.3.1 maximum depth of inundation at the kerb & channel lip to be limited to 300mm, based on the local catchment; and

4.12.3.2 where the road reserve is adjacent to a trunk drain (as advised by Council) the road shall be graded such that the maximum water level from a 1% AEP including climate change event is to be less than 75mm at the kerb and channel lip.

4.12.3.3 the water surface in drainage pits shall be limited to 150mm below the kerb and channel invert for inlet pits and 150mm below the underside of the lid for junction pits.

4.12.4 In addition, detailed calculations shall be provided to substantiate compliance in relation to:

4.12.4.1 depth of flow criteria in relation to surcharging of major system flows;

4.12.4.2 flow velocities to ensure vehicle / pedestrian safety; and

4.12.4.3 road reserve inundation depths.

DG 4.13 Minor System Requirements

The acceptable channel flow widths shall be in accordance with section 5.09 pf QUDM unless otherwise agreed by Council. Minimum and maximum velocity of flow in stormwater pipelines shall be in accordance with section 5.16 of QUDM

Minimum conduit sizes shall be as follows:

(i) pipes – 375mm diameter (under roads/streets); and
(ii) box culverts – 600mm wide x 300mm high

DG 4.14 Pits

4.14.1 Inlet Pits shall be spaced so that the channel flow width is limited in accordance with QUDM sub-clause 5.09.1 and so that the inlet efficiency is not affected by adjacent inlet openings.

4.14.2 Preference is to be given to the location of drainage pits being centred opposite the side boundaries or centre of an allotment.

4.14.3 The engineer is to assume that Whitsunday Regional Council (WRC) Standard gully pit has the same inlet capacity as a Bro Pit, with no trough.

4.14.4 Kerb inlet sections to gully pits are to be a preferred maximum of 2 number.

4.14.5 Lip in Line lintel type pits are preferred. Back inlet pits are not preferred due to conflicts with services within road verge.

4.14.6 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.

4.14.7 Where alternate 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.

4.14.8 Information on pit capacities is available in the following sources:

- 4.14.8.1 Queensland Urban Drainage Manual (QUDM);
- 4.14.8.2 pit relationships given in Volume 1, Chapter 14 or ARR; and
- 4.14.8.3 pit manufacturer's charts.

4.14.9 Other pits shall be provided:

- 4.14.9.1 to enable access for maintenance;
- 4.14.9.2 at changes in direction, grade, level or class of pipe; and
- 4.14.9.3 at junctions.

4.14.10 The kerb inlet capacity design charts shall be used in accordance with the following:

- 4.14.10.1 Curves indicated on the charts that are shown in full are considered "Reliable" curves;
- 4.14.10.2 Curves indicated on the charts that are shown dashed up to an Approach Flow of 250 l/sec are considered "Satisfactory" for use;
- 4.14.10.3 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
- 4.14.10.4 No extrapolation beyond the limits of these charts shall be permitted.

4.14.11 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.

4.14.12 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.

4.14.13 Other factors to be considered in the design are as follows:

- 4.14.13.1 Pits to be free draining;
- 4.14.13.2 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;
- 4.14.13.3 Reductions in pipe sizes shall not be permitted; and
- 4.14.13.4 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.

4.14.14 The desirable maximum inlet pit depth should be limited to 1.5m to enable maintenance.

4.14.15 The desirable minimum and maximum stormwater manhole depth is to be limited to 1.2m and 3.0m respectively.

4.14.16 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 4.15 Hydraulic Losses

4.15.1 The pressure change coefficient 'Ke' shall be determined by the appropriate chart in QUDM.
4.15.2 Where designs change from larger upstream to small downstream conduits, the design shall be in accordance with QUDM Section 5.11.4.
4.15.3 Where relevant, refer to QUDM for allowable reduction in "Ke" due to benching.
4.15.4 Junctions without a structure should be avoided. Justification and prior approval is required by Council before the detailed design stage. Where un-avoidable, the pressure change coefficient "Ku", for the upstream pipe and "Kl" for lateral pipe, shall be determined from relevant charts in QUDM.

DG 4.16 Pipes/Box Culverts

Stormwater drainage pipes and boxes shall be generally of reinforced concrete (including FRC) construction and in accordance with the following:

4.16.1 Minimum pipe size 375mm diameter, minimum box culvert size 450mm x 300mm;
4.16.2 Minimum clear cover shall be 600mm in general or in accordance with manufacturers specification, otherwise approved by the Council;
4.16.3 The minimum vertical and horizontal clearances between a stormwater pipe and any other pipe or service conduit shall be 150mm;
4.16.4 In areas of high water table, the designer must consider buoyancy uplift in relation to pipe/culvert joints; and
4.16.5 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 4.17 Major System Requirements

4.17.1 Major storm flows in developments shall be in accordance with Section 5.09 of QUDM. Where allotments do not drain towards the road frontage, the depth of the major storm flows shall not extend above the top of the roadway kerb.
4.17.2 Roadway flow capacities shall be determined in accordance with Section 5.09.2 of QUDM.
4.17.3 Surcharging of the drainage system which provides a water depth in excess of the top of kerb will not be permitted or approved, except where the requirements of QUDM Table 5.07.1 are met.
4.17.4 The velocity x depth product of flow across a footpath/ cycleway and likely within the road reserve shall especially consider the safety of children and vehicles. The maximum allowable depth of water within the road reserve, at the lip of kerb and channel is not greater than 0.3 meters. The maximum velocity x depth product is not greater than 0.4m2/s. Where the safety

impacts are to vehicles only, the maximum velocity x depth shall not greater than 0.6m2/s.

4.17.5 In open channels and overland flow paths, the above velocity x depth product criteria will be required, except where the engineer shall address the requirements of safety in relation to children by providing other appropriate safety methods.

DG 4.18 Overland Flow

Overland flow paths or emergency relief paths shall be formed and located in accordance with the requirements of QUDM.

The following overland flow path requirements are:

4.18.1 Shall be provided at all sag points

4.18.2 Where the underground drainage system has a design capacity which caters for less that the 1% AEP storm flows, then the remaining surface flow up to the 1% AEP storm event is to be conveyed within a designated drainage reserve or easement. Further, where a concrete invert is required it shall commence from the back of the kerb and be a minimum or 1.2m wide and the concrete section across the footpath shall be graded away from the kerb at 1:50.The remaining of the drainage reserve/ easement shall be turfed with a maximum slope of 1:4.

4.18.3 Where the underground drainage has a design flow of 1% AEP, the system must consider any blockage affects in accordance with QUDM and provide extents of overland flow as a result of blockage and subsequent drainage reserve and/or easements over these flow paths.

4.18.4 Allotments adjacent to overland flow paths are to have the floor levels above the Q100 clearly shown on the relevant design drawings.

4.18.5 The engineer shall provide weir calculations at locations where overland flows cross any footpath, cycleways adjacent to private allotments.

4.18.6 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 1% AEP flow shall be contained completely within the pathway;

4.18.7 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;

4.18.8 Flows through parks and open space shall have non-erosive velocity or adequate protection against scouring to the satisfaction of Council, designed to minimise maintenance requirements, in accordance with DG 11 Parks and open space.;

4.18.9 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

4.18.10 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 4.19 Open Channels

4.19.1 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 Section 9 of QUDM and this planning scheme policy.

4.19.2 Maximum side slopes not greater than 1 in 6 unless approved by Council.

4.19.3 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).

4.19.4 Have depth x velocity not greater than 0.4m2/s in areas of access to general public, especially children and vehicles or 0.6m2/s only accessible to vehicles. Safety exposure to be determined by the engineer.

4.19.5 Subsurface drainage shall be provided in grass-lined channels to prevent waterlogging of the channel bed.

4.19.6 Profiles of all grass lined channels ensure that mowing may be undertaken by a tractor and slasher to the satisfaction of Council.

4.19.7 Open channels involving natural waterways or formed grass swales in parks and open space are designed to minimise maintenance requirements, in accordance with DG 11 Parks and open space.

4.19.8 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.

4.19.9 The depth velocity product and the gutter flow widths are to be included in the submitted drainage calculations.

DG 4.20 Inter-allotment Drainage

4.20.1 Inter-allotment drainage systems must be designed in accordance with QUDM Section 7.13. The minimum standard shall be Level 3 as defined in QUDM table 7.13.4, however the Engineer may direct a higher level for specific developments or parts thereof.

4.20.2 Inter-allotment drainage system must be provided to all allotments where:

- 4.20.2.1 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.

4.20.3 Inter-allotment drainage systems must be designed to cater for 1% AEP flows unless specifically approved otherwise by Council.

4.20.4 Inter-allotment pipes shall generally be:

- 4.20.4.1 R.C. Pipe (minimum class 2) rubber ring jointed;
- 4.20.4.2 F.R.C pipe rubber ring jointed; and

4.20.4.3 uPVC pipes to be rubber ring jointed. Standard manufactures fittings shall be used in all cases: site fitted saddles are not permitted.

4.20.5 Inter-allotment drainage system shall be discharged into an underground drainage system or approved open channel. Discharge of inter-allotment systems to kerbs and channel shall not be permitted.

4.20.6 The depth of the house connection shall be determined as follows (subject to the above minimum);

4.20.6.1 Determine the longest run of house drain to the connection point possible within the allotment;

4.20.6.2 Allow 0.3 metres cover to the house drain at the head of the line; and

4.20.6.3 Allow minimum grade of 1 in 100 for the house drain.

4.20.7 Inter-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.

4.20.8 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.		

4.20.9 Manholes shall be provided in the following locations:

4.20.9.1 One per lot;

4.20.9.2 Changes in grade;

4.20.9.3 Changes in direction;

4.20.9.4 Changes in pipe diameter; and

4.20.9.5 End of lines.

DG 4.21 Retaining Walls

4.21.1 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.

4.21.2 Appropriate scour protection is to be provided to the base of the wall.

4.21.3 Retaining walls within drainage lines must be block and concrete core filled, with weepholes, Design drawings to be provided to Council.

DG 4.22 Detention Basins

4.22.1 Detention basins in public land are not a preferred drainage solution and may not be used in any design without prior approval by Council.

4.22.2 Where approved detention basins shall be designed in accordance with Section 5 of QUDM and other criteria nominated by Development Approval.

DG 4.23 Headwalls

4.23.1 Pipe / Box culvert headwalls shall be in accordance with the Department of Transport and Main Roads (TMR) Standard Drawings 1303 – 1306 and 1318 Proprietary precast headwall may also be used as an alternative to cast insitu structures.

4.23.2 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.

4.23.3 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 4.24 Table Drains

4.24.1 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.

4.24.2 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 4.25 Outlets

4.25.1 The engineer should not assume that drainage channels, overland flow paths, drainage outlets, energy dissipators or stormwater detention basins will automatically be permitted in public space, either existing or newly created.

4.25.2 The engineer should not assume that drainage channels, overland flow paths, drainage outlets, energy dissipators or stormwater detention basins will automatically be permitted in public space, either existing or newly created.

4.25.3 The engineer is to consult with Council at the concept design stage prior to any detailed design which facilitated any stormwater discharge onto Council controlled land.

4.25.4 Outlets into natural watercourse, open channels and tidal areas shall be designed in accordance with the requirements of QUDM.

4.25.5 Protection works to outlet shall be designed to meet the following criteria:

4.25.5.1 Dissipate the outflow velocity to minimise scouring;

4.25.5.2 Provide protection from stream flows in receiving waters;

4.25.5.3 Provide protection from overland (Major Storm) flows into receiving waters; and

4.25.5.4 Provide protection from local scouring or undermining of the outlet structure.

4.25.6 Where a headwall is located within the tidal splash zone, it will be designed to comply with the exposure classification requirements of AS 3600.

4.25.7 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.

4.25.8 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.

4.25.9 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.

4.25.10 All outlets shall be located to facilitate inspection and maintenance access.

4.25.11 Tidal outlet levels must be in accordance with Council's storm tide modelling and QUDM. Further, All tidal outlets shall be fitted with floodgates to prevent the intrusion of salt water into the system.

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
- 5.4.4.3 Water Services Association of Australia
- 5.4.4.4 WSA 03 – 2011 – Water Supply Code of Australia
- 5.4.4.5 WSA 01 –2004- Polyethylene Pipeline Code Information and Guidance Note
- 5.4.4.6 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 RL40.

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 T**able 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
Note - 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 (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) = 6PH – reservoir operating volume / 6 x 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

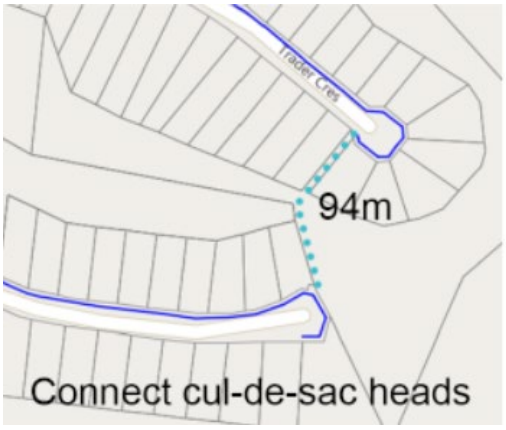
5.8.5.3 Proof of the registration of easements in favour of Council as specified above.

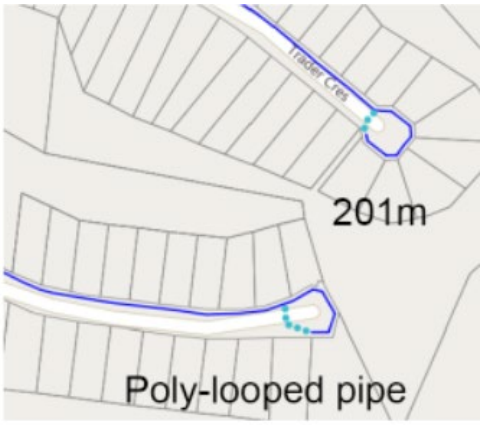
DG 5.10 Reticulation Network

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 To promote network security and function, any development that can avoid a dead-end loop or dead end by the construction of less than 200m of main, shall do so where possible. Where this is not possible, Cul-de-sacs shall have a minimum DN63 HDPE-looped main;

5.10.3 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 in accordance with WSA 03 – 2011 Table 7.2 Minimum Depths of Pipe Cover and shall have a pipe structural assessment to demonstrate suitability of the design.

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. All undeveloped urban zoned land shall be assumed to have the average density defined by Schedule 3 of the Whitsunday Planning Scheme 2017 and shall be modelled and designed where supply is most efficient as assessed by WRC Engineers to come through the proponent's development.
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 200m.
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 100mm 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 3500-2018 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 > 1500m²	3.7
Lot 1101m² to 1500m²	3.4
Lot 901m² to 1100m²	3.1
Lot 401m² to 900m²	2.8
Lot <400m²	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 90m² 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 (401m² to 900m²)** 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. Where possible, easements for pipelines shall not be installed diagonally through properties.

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 6.7** and WSA 04-2005.

Table 6.7 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 6.2 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	The friction factors used in pump selection depend on Top and Bottom Water Level so as to ensure the

	determined by the Conditions detailed below: - Where pressure sewers are allowed to interconnect with existing sewers (refer Table 6.8), 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)	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 6.8** and WSA 04- 2005.

Table 6.8 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 6.7**	
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 6.7**

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 6.8** 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 D9.1 Lighting Categories

Category	Application[1]	Luminaire Type	Lamp Type	Rate[2]
V3	Sub Arterial Road	Aeroscreen	150 – 400 watt HPS	2
V5	Urban Major Collector Road	Aeroscreen	150 – 400 watt HPS	2
P3	Urban Collector Road	Normal	80 Watt MV[4]	2
P4	Residential Street Urban Access Street Urban Local Access Urban Laneway	Normal[3]	50 Watt MV[4]	2
P4	Urban Industrial Collector Street Urban 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	Wattage as	2

		OR Normal	required HPS – Cat V lighting MV – Cat P Lighting	

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.

9.8.21 Where adjoining Beaches utilised by sea turtles, lighting avoids direct illumination of the beach, ocean and sky at night utilising fittings, shields or low bollard lighting.

Note – Applicants should adhere to the State Governments Sea Turtle Sensitive Area Code and the *Department of Environment and Energy: National Light Pollution Guidelines for Wildlife* when developing lighting adjoining beaches that may be utilised by Sea Turtles. Contact Council to determine what Beaches may be turtle habitat.

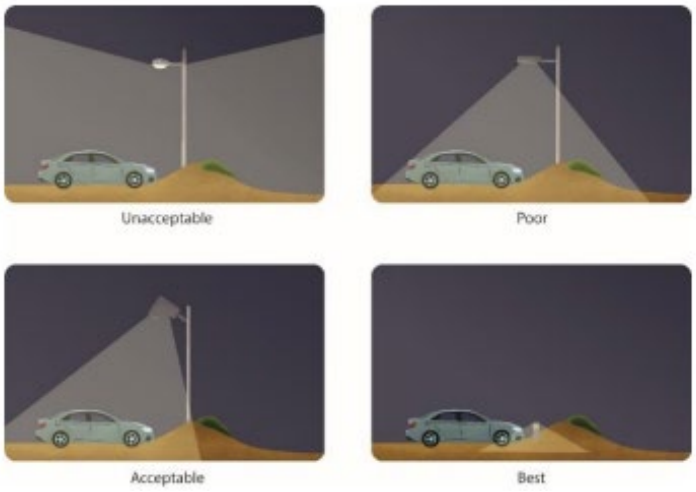


Figure 9.8.21: Turtle sensitive lighting (Department of Environment and Energy)

DG 9.9 Park Lighting

9.9.1 Lighting requirements in parks are provided in accordance with DG 11 Parks and open space or 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 1158.3 Pedestrian area (Category P) lighting.

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 in accordance with DG 11.5 Open space model design guides, DG 11.6 Public open space components, DG 10 Landscaping and Council's Parks Embellishments Guide.

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.
- 10.3.2.4 AS 3798 Guideline on Earthworks for Commercial and Residential Developments
- 10.3.2.5 AS 4419-2018 Soils for Landscaping and Garden Use
- 10.3.2.6 AS 4454-2012 Composts, soil conditioners and mulches
- 10.3.2.7 AS 4678 - Earth Retaining Structures
- 10.3.2.8 AS 3000-2018 – Electrical Irrigation Wiring
- 10.3.2.9 AS/NZS 3008.1.1:2017 – Cable selection for different voltage

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, roundabouts 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 is not preferred and subject to Council approval.

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 75mm - 100mm 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 Planting of trees, groundcovers or native grasses on road verges are selected with respect to their growing size and adequately setback 500mm by a paved edge to avoid maintenance of vegetation spilling onto the road.

10.6.5 Suitable vegetation selection and landscape design to maintain sight lines and minimise maintenance requirements in road verges or round-a-bouts are developed in accordance with best practice set out within *Department of Transport and Main Road - Road Landscape Manual, Edition 2, 2013* and guidance within DG 11.5.15 Model design guide.

10.6.6 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.

10.6.7 Densely planted low maintenance ground covers that suppress weed growth are promoted along garden edges and in isolated locations, unless more exotic ground covers are approved by Council for a high-profile area;

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. shrubs under power lines not more than 4m height at maturity, 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;

10.7.6.10 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; and

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 within DG11.5.14 Conservation, sloped and buffer area model design guide. 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:

10.8.2.1 Reduce the visual impact of adjacent development by screening rooflines;

10.8.2.2 Reduce the visual impact of proposed noise attenuation barriers, which may be constructed at some time in the future on the mound crest;

10.8.2.3 Reduce the visual impact of the mound's severe geometric landform by screening with foliage to ground level;

10.8.2.4 Introduce a "natural" vegetated landscape appearance by replacing open agricultural land with a facade of dense planting;

10.8.2.5 Reinforce the local character by indigenous tree and shrub species; and

10.8.2.6 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.

DG 11 – DESIGN GUIDELINES – Parks and Open Space

DG 11.1 Scope

This Guideline applies to developments that provide or are required to provide public open space that will be owned or controlled by Council.

11.1.1 The purpose of this Guideline is to:

11.1.1.1 Ensure sufficient supply of high quality and functional open space to meet the recreational and sporting needs of the community in line with Desired standards of service within DG 11.4 Desired standards of service and the Local Government Infrastructure Plan;

11.1.1.2 Define park hierarchy and function of each park; and

11.1.1.3 Define design principles for open space to ensure high quality amenity, function and minimal maintenance cost.

11.1.2 New open space must be developed in accordance with this Guidelines overarching design principles, relevant Open space model design guides, Public open space components, DG 10 Landscaping, Council's Parks Embellishments Guide and applicable assessment benchmarks specified within the *Whitsunday Planning Scheme 2017*.

DG 11.2 Types of Open Space

Open space is land provided as recreational or non-recreational open space. Types of open spaces, hierarchy in the network and their associated characteristics are defined below.

Table 11.2: Open space categories within the Whitsunday Region.

Recreation Park category	Hierarchy Classification**	Characteristics
Linear Park	Medium profile	Long and narrow park containing walking, cycling paths and basic infrastructure to connect residential neighbourhoods to trunk parks or employment nodes.
Local park	Medium profile	Small park containing limited recreational infrastructure to service the immediate residential neighbourhood.
District Park*	High profile – Trunk infrastructure	Medium – large park containing recreational infrastructure for 2 or more age groups servicing a part of a Towns catchment.
Regional Park*	High profile – Trunk infrastructure	Large park containing recreational infrastructure for all age groups servicing a whole Town catchment.
Cemetery	High profile	Well landscaped open space to provide solitude for visitors recognising past friends and family.
Nature Park	Low profile	Walking tracks & conservation parks within scenic natural environments including bushwalks, lookouts, Beaches or swimming holes. Note – Nature parks may require planning approval, defined as an Environment facility or Outdoor sport and recreation, pending the characteristics of the use.
Sportpark category	**Characteristics**	

Local sporting facilities	Facilities not associated with a traditional large sportspark, that may include aquatic facilities, lawn bowls, surf lifesaving or tennis courts.
District Sportspark*	Traditional medium-large sportspark, that may support facilities for at least 3 clubs.
Regional Sportspark*	Traditional large sportspark, that may support facilities for at least 5 clubs.
Non-recreational open space category	**Characteristics**
Conservation area	Naturally forested areas or areas undergoing afforestation.
Drainage corridor or water sensitive urban design	Areas dedicated to facilitating drainage and water sensitive urban design.
Road verge or entrance statement gardens	Areas adjoining the road or landscaping at estate entrances.
Buffer areas	Land dedicated to forming a landscaped buffer between uses that share amenity conflicts.

* Infrastructure defined as trunk infrastructure within the *Local Government Infrastructure Plan*.
** Hierarchy classification defined by the Whitsunday *Technical Levels of Service/Operations Plan – Parks & Gardens.*

DG 11.3 Design principles

The following open space design principles inform model design guides within DG 11.5 Open space model design guides and must be considered in all open space design.

Table 11.3: Overarching design principles that must be considered in all open space design.

Objective	Implementation
1. Access and connectivity	• Parks are adequately distributed throughout a Township, encourage access by walk/cycle and are designed to ensure universal accessibility for all ages and abilities; • Parks are located in an area that is easily accessible to the community by public transport, road networks, cycle ways, footpaths and linear parks; • Higher density residential developments are designed to facilitate strong connectivity to trunk parks or if outside of park catchments, are adequately serviced by a local park.
2. Multi-function	• Parks are designed to provide multiple environmental, social and economic functions, such as biodiverse ecosystems, drainage, stormwater treatment, wayfinding, passive and active recreation and organised events; • Drainage corridors, where possible also facilitate pedestrian connectivity between residential areas and parkland;
3. Amenity	• Parks are located in areas of high natural amenity and are designed to enhance vistas, activation of waterbodies and support the enjoyment of the natural environment; • Open space areas utilise high quality landscaping to provide shade of walkways, resting areas, provide stormwater treatment and habitat for local wildlife; • The siting and design of recreational infrastructure is sympathetic to the amenity of surrounding sensitive uses;
4. Co-location	• Where possible, Parks are co-located with community facilities, such as schools, community centres and libraries; • Trunk parks consider co-location or integration with retail and service hubs;
5. Safety	• The principles of Crime Prevention through Environmental Design (CPTED) are used in the design of open space to promote personal safety and discourage anti-social behaviour and vandalism of open space assets; • Siting and design promote park boundaries with direct road frontage or adjoining active retail or service hubs, to maximise visual surveillance and community access to open space; • Non-recreational open space is designed to ensure safety and avoid worsening of natural hazards;
6. Sense of place	• The location and design of open space retains and creates spaces to enjoy natural systems, landscape elements, significant trees or culturally significant features; • Parks utilise placemaking initiatives such as lighting, artworks or interpretive signage to cultivate interest in the community about history or natural systems, and capture the 'sense of place' of the neighbourhood;
7. Non-recreational open space	• Non-recreational open space should be planned to compliment recreational open space and may provide use benefits, such as providing connectivity, scenic amenity, habitat or buffering

	between different land uses;
8. Lifecycle cost	• Recreational infrastructure is designed to reduce the lifecycle cost through selection of embellishments, materials, treatment of play surfaces that meet community needs and promote maintenance efficiency; • Siting and design of recreational infrastructure has regard to natural hazards and climate change impacts; • The focus on lifecycle cost does not detract from the requirement that a park should be designed and constructed to be fit for purpose for the type of recreational park; and • Landscaping and plant selection are designed to enable easy maintenance with machinery and provide suitable groundcover that mitigates the rise of weeds.

DG11.4 Desired Standards of Service

Desired Standards of Service (DSS) for recreational and sportparks seek to ensure adequate open space is provided across the Region to meet the needs of the community.

11.4.1 Recreational Parks

11.4.1.1 Public recreation parks are provided in accordance with the below desired standards of service:

Table 11.4.1.1: Rate of land provision for public parks.

Park type	Rate of provision (Ha/1000 people)		
	Local	District (trunk)	Regional (trunk)
Recreation park	0.4	0.5	0.6

Table 11.4.1.2: Accessibility standards for public parks.

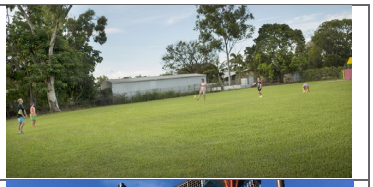
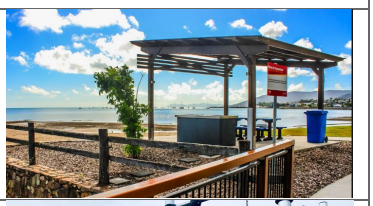
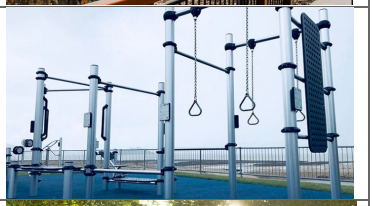
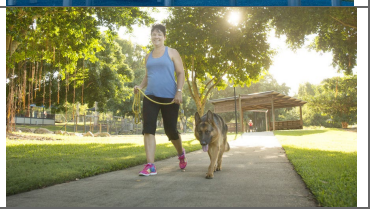
Recreational Park type	Accessibility standard to urban residential areas			
	Local	District (trunk)	Regional (trunk)	All parks
Desired standard	400m	1.6km	3km	As defined *
% residents within proximity	50%		75%	90% *
* Editor's note – 90% of residents are either within 400m of a Local park, 1.6km of a District park or 3km of a Regional recreation park.				

Table 11.4.1.2: Size and design of public parks.

Characteristic	Recreation park			
	Linear	Local	District (trunk)	Regional (trunk)
Minimum (desired) size (Ha)	N/A	.08	2	4
Shape of land	No portion narrower than 10m	No portion narrower than 20m	Fits at least one 20m x 20m grassed area within, above Q50.	
Embellishments for needs of each age group as defined by **Table 11.4.1.3**	N/A	Minimum 1 of 3 age groups	Minimum 2 of 3 age groups	All age groups
Minimum embellishments	Embellishments provided as per **DG 11.5 – Open space model design guides.**			
Minimum desired flood/Storm tide immunity (area)	N/A	70% > Q50	50% > Q50 20% > Q100	
Minimum desired grade	Max grade 1:8	Max grade 1:10 for 80% of park, 1:14 where possible	Max grade 1:10 for 80% of park, 1:14 where possible	Average grade 1:20, 1:50 for active play areas
Road frontage	N/A	At least 20m of direct road frontage, fronting multiple roads where possible	30%-50% of park perimeter to have direct road frontage, preferably on a collector road	

Table 11.4.1.3: Recreational Infrastructure for various age groups.

Demographic	Examples of desired recreational activities	
Children and parents	Natural playgrounds Rocky boulders Safe and accessible creeks	
	Playgrounds Swings Waterparks	
	Shaded paths and shaded seating in view of children play areas	

Adolescents & young adults (12 – 30)	Informal open space/sport fields	
	Climbing equipment Pyramid net Major playgrounds Large slides	
	Basketball rings Skateparks Pump track/mountain bike tracks Volleyball nets Goal posts Cricket nets	
Older adults (30+)	Designs that promote safety, security, contact with nature Opportunities for socializing, such as BBQ's and picnic facilities.	
	Fitness equipment	
	Shaded walking tracks Mountain bike tracks	

11.4.2 Sportspark

11.4.2.1 Public sportspark are provided in accordance with the below desired standards of service:

Table 11.4.2.1 Rate of land provision for public sportspark.

Infrastructure item	Rate of provision (Ha/1000 people)		
	District	Regional	All sportspark
Sportspark	0.6	1	1.7

Table 11.4.2.2: Accessibility standards for public sportspark.

Infrastructure item	Accessibility standard (km)[1]	
	District	Regional
Sportspark	10	25
% residents within proximity	90% of residents are either within 10km of a District sportspark of 25km of a Regional sportspark.	

Table 11.4.2.2 Size and design of public sportspark

Characteristic	Sportspark	
	District	Regional
Minimum desired size (Ha)	6	18
Diversity of clubs/facilities	3	5
Shape of land	Preferred square to rectangular aspect	
Minimum desired flood immunity (area)	Shelters, grandstands, fields and courts > Q50 All other built structures > Q100	
Minimum desired grade	Max grade of 1:80 for all playing surfaces.	
Road frontage	Minimum 25% or 100m of the park perimeter, to have direct road frontage with an urban collector, sub-arterial road or arterial road.	
Minimum embellishments	Embellishments provided as per **DG 11.5 – Open space model design guides.**	

DG11.5 Open Space model design guides

11.5.1 Open space should be designed in response to individual site conditions, surrounding areas, park hierarchy and function, *DG 11.3 Design principles, DG 11.4 Desired Standards of Service*, specific open space model design guidance set out herein and other relevant sections of the *Whitsunday Development Manual 2017*.

11.5.2 The following benchmarks apply to all open space. Development must align with these benchmarks and the respective model design guide in this section (as applicable).

11.5.2.1 Recreation park or sportspark is not suitable in areas:

i. containing contaminated land;
ii. within 100m of High voltage power lines, as mapped by the Infrastructure overlay;
iii. adjacent to noxious industries or potentially hazardous industrial activity;
iv. that has been stripped of topsoil and vegetation or used for construction staging that has not been remediated; or
v. constrained by easements that preclude the use of the land for recreational use.

11.5.3 All recreational park or sportspark must have electricity supply, water, sewer and, where possible, connection to Council's recycled water network. Where connection to reticulated networks is not possible, on-site solutions must be demonstrated to the satisfaction of Council.

11.5.4 Recreational infrastructure and sportspark ensure hazard resilience in accordance with the following:

11.5.4.1 Clubhouses, storage structures or picnic infrastructure including electrics, such as BBQs or charging points are located above a 1% AEP flood or storm tide event at 2100 and outside of the High or Very High Bushfire risk area;

11.5.4.2 Playground rubber matting, sand or bark pits beneath playgrounds is located above a 10% AEP flood or storm tide event and outside of the Medium, High or Very High Bushfire risk area;

11.5.4.3 Sport fields and Recreational park's active play areas are located above a 50% AEP flood or storm tide event at 2100; and

11.5.4.4 Recreational infrastructure, including shelters and seating is located above a 20% AEP flood event at 2100 and outside of the High or Very High Bushfire risk area;

11.5.5 The location of non-recreational open space within or adjoining recreation park or sportparks may occur where:

11.5.5.1 The design of the non-recreational open space compliments the landscaping and aesthetics of the park and does not pose any risk to users;

11.5.5.2 Providing biodiversity corridors to connect habitats through the site;

11.5.5.3 Does not create CPTED issues or create a split through the centre of the park; and

11.5.5.4 Drainage corridors or slopes greater than 1:4 are designed in accordance with *DG 11.5.13 Parks and open space drainage corridor* or *DG 11.5.14 - Conservation, sloped and buffer area model design guide*, to be safe and avoid the need for regular mowing.

DG 11.5.6 Linear Park model design guide

Minimum width	Provision rate
(a) 15m; or (b) 10m if adjoining drainage corridor, measured from top of the bank to adjoining boundary or road verge.	Provided opportunistically to connect residential areas with parkland

Siting and design performance benchmarks for Linear parks

The following benchmarks applying to Linear Parks are to be read in conjunction with *DG 10 – Design Guidelines - Landscaping, DG 11.3 Design principles, DG 11.4 - Desired standards of service and DG 11.6 Public open space components*. Where not complying with these benchmarks, approval may be sought from Council's Parks and Gardens team where solutions demonstrate low maintenance outcomes, safety and amenity that is desired for the area.

General

(a) Has a minimum width of 15m (can include adjoining road verge), or 10m from top of bank if located adjacent to a drainage corridor;
(b) Direct street frontage along a minimum of 30% of any linear boundary to promote casual visual surveillance and provide public access via a shared concrete path with kerbside ramp;
(c) Provides shared path connectivity between residential areas and key community nodes, such as commercial centres and recreational or sportspark;
(d) Lighting to delineate park entrances and along pathways, sited and orientated to not spill into adjoining residential premises;
(e) Promotes public and casual surveillance of the linear corridor by maximising number of allotments or road frontages facing the park;
(f) Linear parks and associated subdivisions are sited and designed to minimise the number of rear residential allotments that directly abut;

Vegetation and maintenance

(g) Existing vegetation is retained where possible and shade trees are planted at least every 15m along the length of the internal footpath, in accordance with *DG 11.10 Planting*;
(h) Minimises maintenance requirements and areas for mowing by creating re-vegetated conservation areas or gardens over spaces with limited recreation function and slopes over 1:4, in a manner that doesn't compromise casual surveillance; and
(i) Mowing widths of 1.6m are retained between barriers such as, trees, bollards, fencing, recreational infrastructure, garden beds and park boundaries for maintenance efficiency.
(j) Park access from adjoining road network, including removable locked bollards, 4m in width, for maintenance vehicles;

Note – Re-vegetated areas, garden beds or slopes over 1:4 within a linear park are designed in accordance *with DG 11.5.14 Conservation area, sloped and buffer area model design guide* or *DG 11.5.15 Garden beds and Entrance statements* model design guide, as relevant.

Embellishments

The following are the minimum requirements, to be provided in accordance with Council's Parks Embellishments Guide, Council or IPWEAQ standard drawings:

(a) Bollards preventing vehicular access into the park, except via removable locked bollards, 4m in width, provided for maintenance vehicles;
(b) Lighting in accordance with *DG 11.15 Lighting*;
(c) Dog waste bag dispensers at key park entrances, located at least 200m apart;
(d) Concrete shared footpath in accordance with *IPWEAQ - RS-065,* along the length of the park that are at least 3m wide, setback 5m from the top of creek banks or residential boundaries, avoid easily saturated areas and connect into adjoining street pathway networks;
(e) Wayfinding finger signage and lighting is utilised at pathway junctions and entrances to identify connecting streets and community nodes, such as commercial centres or parks; and
(f) Seat benches predominately shaded by vegetation are provided maximum 200m apart, located at access points or overlooking high amenity natural features, where possible.

Indicative Linear Park example

DG 11.5.7 Local Park model design guide

Minimum size	Service catchment	Provision rate
800m^2	400m	Local Parks are only provided where: (a) density exceeds 30 dwellings per ha, across a total of 100 dwelling units; and (b) 50% of dwelling units in a reconfiguring a lot are located in an area that is outside of the accessibility catchment of existing or future recreational parks defined within the Local Government Infrastructure Plan.

Siting and design performance benchmarks for a Local park

The following benchmarks applying to Local Parks are to be read in conjunction with the with *DG 10 – Design Guidelines - Landscaping, DG 11.3 Design principles, DG 11.4 - Desired standards of service and DG 11.6 Public open space components*. Where not complying with these benchmarks, approval may be sought from Council's Parks and Gardens team where solutions demonstrate low maintenance outcomes and amenity that is desired for the area.

General

(a) Minimum street frontage of 40m, adjoining two or more road frontages where possible;
(b) Minimum area of 800m^2;
(c) Minimum 250m² open grassed area, at least 15m wide, for informal recreation activities;
(d) Lighting to delineate park entrances, illuminate picnic infrastructure and along pathways, sited and orientated to not spill into adjoining residential premises; and
(e) Noisy activities, such as playgrounds are located as far as practically possible from adjoining residential lots;
(f) Shared footpaths through the park, connecting to special needs or adult's recreational infrastructure, such as shelters and picnic areas from adjoining street footpaths or linear parks;
(g) Picnic areas and shaded seating located within proximity to and with visibility of children play areas;

Vegetation and maintenance

(h) Existing vegetation is retained where possible and shade trees are planted at least every 15m along the length of internal footpaths, in accordance with *DG 11.11 Planting*;
(i) 40% coverage of shade across the park, provided by shade sails, canopy coverage at maturity or shelters, predominately around walking paths and recreational infrastructure.
(j) Minimises maintenance requirements and grassed areas for mowing by creating re-vegetated conservation areas or gardens over spaces with limited recreation function and slopes over 1:4 in a manner that does not compromise casual surveillance from street frontages or adjoining residential premises if no direct street frontage;
(k) Mulched garden beds located in proximity to picnic areas, sited to create noise buffers or in locations not utilised for recreational activity;
(l) Mowing widths of 1.6m are retained between barriers such as, trees, bollards, fencing, recreational infrastructure, garden beds, slopes greater than 1:4 and park boundaries for maintenance efficiency; and
(m) Park access from adjoining road network, including removable locked bollards, 4m in width, for maintenance vehicles.

Note – Re-vegetated areas, garden beds or slopes over 1:4 within a local park are designed in accordance *with DG 11.5.14 Conservation area, sloped and buffer area model design guide* or *DG 11.5.15 Garden beds and Entrance statements* model design guide, as relevant.

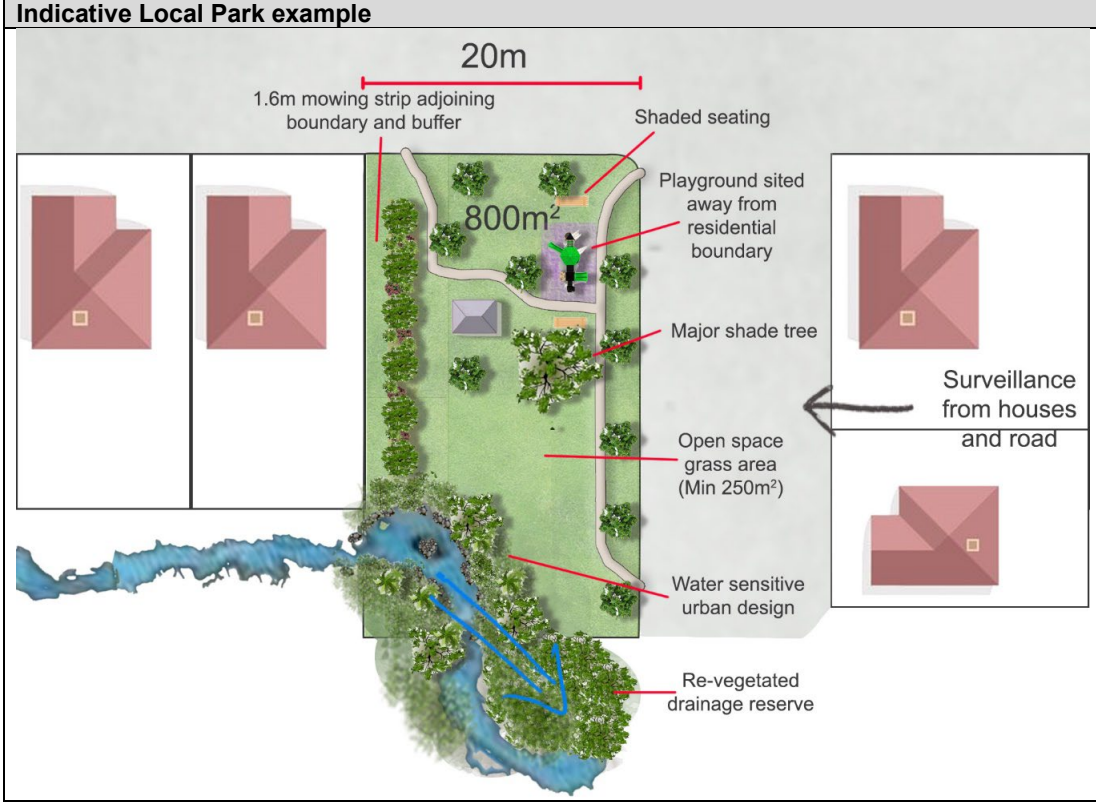
Embellishments

The following are the minimum requirements, to be provided in accordance with Council's Parks Embellishments Guide, Council or IPWEAQ standard drawings:

(a) Bollards preventing vehicular access into the park, except via removable locked bollards, 4m in width, provided for maintenance vehicles;

(b) Lighting in accordance with *DG 11.15 Lighting*;
(c) Concrete internal shared footpath in accordance with *IPWEAQ - RS-065,* that are at least 3m wide, setback 5m from the top of creek banks or residential boundaries and avoiding easily saturated areas;
(d) Open grassed space for active play with a minimum width of 15m
(e) Minimum embellishments:
- 2x park seating in a shady area overlooking playground or area of high natural amenity;
- 1x picnic setting and shelter;
- 1x drinking fountain, waste bin and bin enclosure nearby picnic setting;
- Recreation infrastructure servicing at least one age group that meets the anticipated needs of the surrounding community, landscape context and broader open space network. Discussion should be had with Council to determine suitable infrastructure. Example:
  - 1x Climbing equipment / goal posts (youth); or
  - 1x Minor playground / natural playground (children).

Indicative Local Park example



DG 11.5.8 District Park model design guide

Minimum size	Service catchment	Provision rate
2ha	1.6km	0.5 ha / 1,000 people

Siting and design performance benchmarks

The following benchmarks applying to District Parks are to be read in conjunction with the with *DG 10 – Design Guidelines - Landscaping, DG 11.3 Design principles, DG 11.4 - Desired standards of service and DG 11.6 Public open space components*. Where not complying with these benchmarks, approval may be sought from Council's Parks and Gardens team where solutions demonstrate low maintenance outcomes and amenity that is desired for the area.

General

(a) Minimum street frontage of 80m, adjoining two or more road frontages where possible;
(b) Minimum area of 2ha;
(c) Minimum 1,000m² open grassed area, at least 20m wide for informal recreation (includes dog park areas);
(d) Recreation infrastructure servicing at least 2 of 3 age groups;
(e) 20 sealed car parks are provided off-street or on-street if directly adjoining the park boundary, of which minimum 70% is located on the primary frontage and maximum 30% on any secondary frontage;
(f) Noisy activities, such as playgrounds are located as far as practically possible from adjoining residential lots;
(g) Shared footpaths through the park, connecting to special needs or adult's recreational infrastructure, such as shelters and picnic areas from adjoining street footpaths or linear parks;
(h) Lighting to delineate park entrances, illuminating picnic infrastructure and along pathways, sited and orientated to not spill into adjoining residential premises;
(i) Picnic areas and shaded seating is located within proximity of and has visibility of children play areas;

Vegetation and maintenance

(j) Existing vegetation is retained where possible and shade trees are planted at least every 15m along the length of internal footpaths, in accordance with *DG 11.10 Planting*;
(k) 40% coverage of shade across the park, provided by shade sails, canopy coverage at maturity or shelters, predominately around walking paths and recreational infrastructure;
(l) Minimises maintenance requirements and grassed areas for mowing by creating re-vegetated conservation areas or gardens over spaces with limited recreation function and slopes over 1:4 in a manner that does not compromise casual surveillance from street frontages or adjoining residential premises if no direct street frontage;
(m) Irrigated and mulched garden beds located in proximity to picnic areas, sited to create noise buffers or in locations not utilised for recreational activity; and
(n) Mowing widths of 1.6m are retained between barriers such as, trees, bollards, fencing, recreational infrastructure, garden beds, slopes greater than 1:4 and park boundaries for maintenance efficiency; and
(o) Park access from adjoining road network, including removable locked bollards, 4m in width, for maintenance vehicles.

Note – Re-vegetated areas, garden beds or slopes over 1:4 within a district park are designed in accordance *with DG 11.5.14 Conservation area, sloped and buffer area model design guide* or *DG 11.5.15 Garden beds and Entrance statements* model design guide, as relevant.

Embellishments

The following are the minimum requirements, to be provided in accordance with Council's Parks Embellishments Guide, Council or IPWEAQ standard drawings:

(a) Signage at primary park entrances delineating a map of amenities in the park and any pathway linkages to nearby community facilities or commercial nodes;
(b) Bollards preventing vehicular access into the park, except via removable locked bollards, 4m in width, provided for maintenance vehicles;

(c) Lighting in accordance with *DG 11.15 Lighting*.
(d) Concrete internal shared footpath in accordance with *IPWEAQ - RS-065,* that are at least 3m wide, setback 5m from the top of creek banks or residential boundaries and avoiding easily saturated areas;
(e) Open grassed space for active play approximately 50m x 20m, including goal post sited to avoid impact on adjoining residents; and
(f) Minimum embellishments:
- 1x major playground or key recreational infrastructure;
- 2x minor playground or climbing equipment;
- Park furniture seating within shaded sections overlooking recreational equipment;
- Minimum 2x BBQ/s and 4x shelters with picnic seating;
- Public amenities in proximity to picnic areas;
- Minimum 4x exercise equipment along walking paths;
- Dog waste bag dispenser at key park entrances;
- Dog park area, where park size exceeds 3ha; and
- Drinking fountains, waste bins and bin enclosures located evenly distributed within vicinity of picnic seating, shelters and alongside pathways throughout the park.

Indicative District park example

DG11.5.9 Regional Park model design guide

Minimum size	Service catchment	Provision rate
4ha	3km	0.6ha / 1,000 people

Siting and design performance benchmarks

The following benchmarks applying to Regional Parks are to be read in conjunction with *DG 10 – Design Guidelines - Landscaping, DG 11.3 Design principles, DG 11.4 - Desired standards of service and DG 11.6 Public open space components*. Where not complying with these benchmarks, approval may be sought from Council's Parks and Gardens team where solutions demonstrate low maintenance outcomes and amenity that is desired for the area.

General

(a) Minimum street frontage of 80m, adjoining two or more road frontages where possible;
(b) Minimum area of 2ha;
(c) Minimum 1,000m² open grassed area, at least 20m wide for informal recreation (includes dog park areas);
(d) Recreation infrastructure servicing all age groups;
(e) 30 sealed car parks are provided off-street or on-street if directly adjoining the park boundary, of which minimum 70% is located on the primary frontage and maximum 30% on any secondary frontage;
(f) Noisy activities, such as playgrounds are located as far as practically possible from adjoining residential lots;
(g) Shared footpaths through the park, connecting to special needs or adult's recreational infrastructure, such as shelters and picnic areas from adjoining street footpaths or linear parks;
(h) Lighting to delineate park entrances, illuminating picnic infrastructure and along pathways, sited and orientated to not spill into adjoining residential premises;
(i) Picnic areas and shaded seating is located within proximity of and has visibility of children play areas;

Vegetation and maintenance

(j) Existing vegetation is retained where possible and shade trees are planted at least every 15m along the length of the internal footpath, in accordance with *DG 11.10 Planting*;
(k) 40% coverage of shade across the park, provided by shade sails, canopy coverage at maturity or shelters, predominately around walking paths and recreational infrastructure;
(l) Minimises maintenance requirements and grassed areas for mowing by creating re-vegetated conservation areas or gardens over spaces with limited recreation function and slopes over 1:4 in a manner that does not compromise casual surveillance from street frontages or adjoining residential premises if no direct street frontage;
(m) Irrigated and mulched garden beds located in proximity to picnic areas, sited to create noise buffers or in locations not utilised for recreational activity; and
(n) Mowing widths of 1.6m are retained between barriers such as, trees, bollards, fencing, recreational infrastructure, garden beds slope greater than 1:4 and park boundaries for maintenance efficiency.
(o) Park access from adjoining road network, including removable locked bollards, 4m in width, for maintenance vehicles;

Note – Re-vegetated areas, garden beds or slopes over 1:4 within a regional park are designed in accordance *with DG 11.5.14 Conservation area, sloped and buffer area model design guide* or *DG 11.5.15 Garden beds and Entrance statements* model design guide, as relevant.

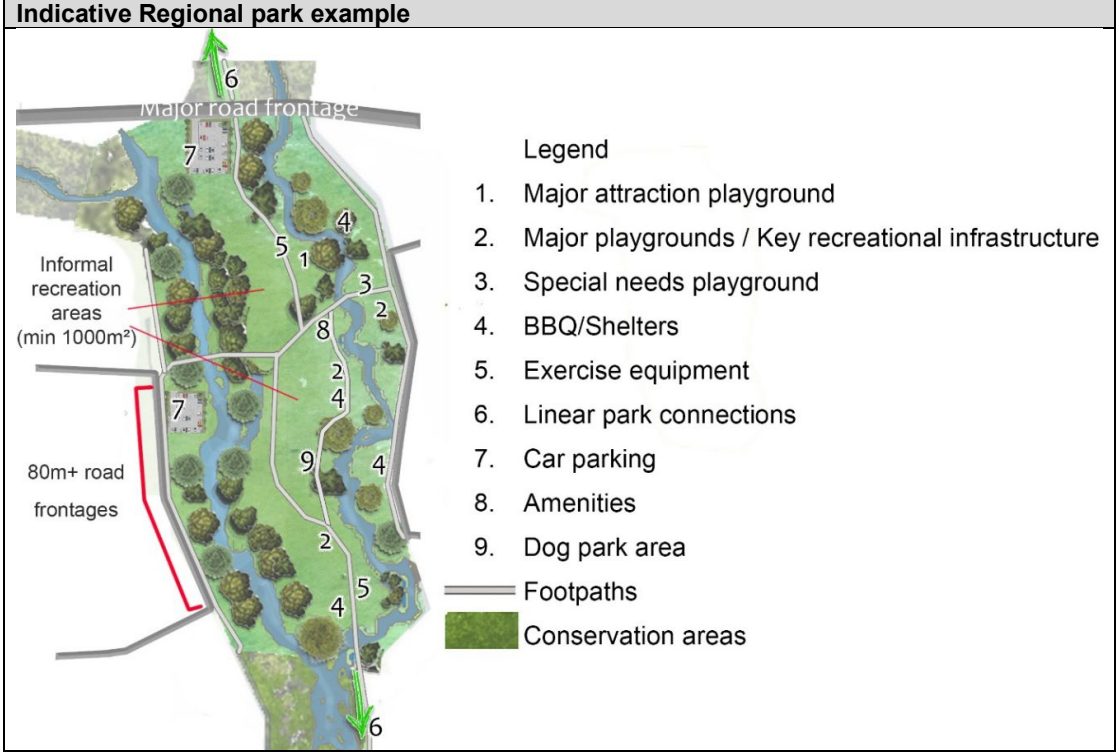
Embellishments

The following are the minimum requirements, to be provided in accordance with Council's Parks Embellishments Guide, Council or IPWEAQ standard drawings:

(a) Signage at primary park entrances delineating a map of amenities in the park and any pathway linkages to nearby community facilities or commercial nodes;
(b) Bollards preventing vehicular access into the park, except via a minimum 4m wide locked gate provided for maintenance vehicles; and

(c) Lighting in accordance with *DG 11.15 Lighting*.
(d) An events space, including earthworks or utilisation of the natural contours of the land to create an atrium and focal point functioning as a stage. The stage may be multi-purpose, also functioning as open grassed active play area or basketball court as example;
(e) Open grassed space for active play approximately 50m x 20m, including goal posts; and
(f) Minimum embellishments:
- 1x key recreational infrastructure - Major attraction playground;
- Minimum 2x major playground, climbing equipment or other key recreational infrastructure;
- Park furniture seating within shaded sections overlooking recreational equipment and within dog park area;
- 1x special needs playground;
- Minimum 3x BBQ/s and 6x shelters with picnic seating;
- Public amenities in proximity to picnic areas;
- Minimum 6x exercise equipment along walking paths;
- Dog waste bag dispenser at key park entrances;
- Dog park area; and
- Drinking fountains, waste bins and bin enclosures located within vicinity of picnic seating, shelters and evenly distributed alongside pathways throughout the park.

Indicative Regional park example



DG 11.5.10 Cemetery model design guide

Siting and design performance benchmarks
Future land for cemeteries will be identified by Council. If Cemetery is to be provided by developer, close collaboration must be had with Council to select the site, design and construct. No specific siting and design benchmarks are defined, Cemetery development will be undertaken on a case-by-case basis.
Embellishments
The following are the minimum requirements for a Cemetery: (a) Bollards preventing vehicular access into the park, except via removable locked bollards, 4m in width, provided for maintenance vehicles; (b) Mowing widths of 1.6m are retained between barriers such as, trees, bollards, fencing, recreational infrastructure, garden beds, slopes greater than 1:4 and park boundaries for maintenance efficiency; (c) Finger signage at key internal pathway junctions and map of the area showing key features and amenities at Cemetery entrance; (d) Lighting to delineate pedestrian entrances and safety lighting adjoining internal pathways; (e) Shade trees at entrances and throughout the site to achieve 30% shade coverage at maturity; (f) Embellishments provided in accordance with Council's Parks Embellishments Guide, including a minimum of: ○ Bollards preventing vehicular access into the park, except via removable locked bollards, 4m in width, provided for maintenance vehicles; ○ Benches and seating distributed at entrances and through internal pathways; ○ Car parking commensurate to the anticipated size and traffic demands of the cemetery; and ○ Public amenities.

DG11.5.11 Nature Park model design guide

Note – Nature parks may require planning approval, defined as an Environment facility or Outdoor sport and recreation, pending the nature of the use and infrastructure.

Siting and design performance benchmarks

Nature Parks to be managed by Council are generally not supported unless integrated with a trunk park or providing a functional recreational benefit that links to areas of high natural amenity. Discussion with Council should be undertaken to determine if a premise should be designed as a Conservation area or a Nature Park including recreational components.

The following benchmarks applying to Nature Parks are to be read in conjunction with *DG 10 – Design Guidelines - Landscaping, DG 11.3 Design principles, DG 11.4 - Desired standards of service and DG 11.6 Public open space components*. Where not complying with these benchmarks, approval may be sought from Council's Parks and Gardens Branch where solutions demonstrate low maintenance outcomes.

General

(a) Nature Parks are designed in accordance with *DG 11.5.14 Conservation, sloped and buffer area model design guide*, but include the provision of a pathway providing a pedestrian connection through the site or to a desirable natural destination, such as a water source, waterfall or viewpoint;
(b) cleared grass areas are avoided, unless located at access points adjoining the road network, not exceeding 200m^2 for persons to congregate;
(c) Sufficient on or off-street car parking to cater for anticipated demand for the nature park, demonstrated by a suitably qualified professional*;*
(d) Design and construction that is sensitive to natural hazard risks, natural features and ecosystems;
(e) Design, landscaping and operational measures that minimises ongoing maintenance requirements and avoids the risk of weed growth or invasive seed spread into a natural ecosystem; and

Note – An Operational maintenance plan detailing necessary works required to maintain the nature park over the projects life cycle may be requested by Council prior to issuing an approval.

(f) Recreational infrastructure is not located under fruit or seed trees that may impact upon maintenance.

Embellishments

The following are the minimum requirements to be provided in accordance with Council's Parks Embellishments Guide:

(a) Bollards preventing vehicular access into the park, except via removable locked bollards, 4m in width, provided for maintenance vehicles;
(b) Signage at park entrance providing a map of the area, trails, key natural features, and interpretive signage about key features/wildlife (as required);
(c) Bushwalks are composed appropriately graded dirt paths designed and constructed by a suitably qualified professional;
(d) Embellishments are provided in accordance with Council's Parks Embellishments Guide, including a minimum of:
    - Picnic or seating area shaded by vegetation at entrance;
    - bench or log seating at start, rest points and overlooking key vistas;

DG11.5.12 District & Regional Sportspark model design guide

Sportpark type	Minimum size	Service catchment	Provision rate
District	6ha	5km	0.6ha / 1,000 people
Regional	18ha	25km	1.0ha / 1,000 people

Siting and design performance benchmarks

The following benchmarks applying to District or Regional Sportspark are to be read in conjunction with the *DG 10 – Design Guidelines - Landscaping, DG 11.3 Design principles, DG 11.4 - Desired standards of service and DG 11.6 Public open space components*. Where not complying with these benchmarks, approval may be sought from Council's Parks and Gardens team where solutions demonstrate low maintenance outcomes and amenity that is desired for the area.

General

(a) Has at least a 100m street frontage, being an urban collector, sub-arterial or arterial road;
(b) Utilises earthworks to maximise drainage of sporting fields by creating stormwater gullies and grading of fields;
(c) Where possible, located adjoining two or more road frontages, with trees along each road frontage;
(d) Sporting facilities are designed to relevant field/court regulation standards, including orientation, dimensions, installations/facilities, safety buffers and lighting;
(e) Design of sportspark considers the impact of traffic, noise and light impacts of sporting activity on sensitive land uses and provide vegetation and open space buffers to minimise impacts;
(f) All fields or courts provide shade trees and adequately distributed shaded benches for spectators, with primary field/courts facilities featuring grandstand style seating as defined within Council's Parks Embellishments Guide;
(g) Provides suitable support facilities, including storage, amenities for spectators and adequate change rooms, commensurate to the number of sport clubs;
(h) Shade trees are provided around the circumference of fields to provide shading to spectators;
(i) Car parking is provided in accordance with the *Whitsunday Planning Scheme 2017*. Parking is sited with equal access to each sporting facility, or is adequately distributed in vicinity to each sporting facility; and
(j) Encourages the co-location of community facilities or utilities infrastructure.

Embellishments

The following are the minimum requirements, to be provided in accordance with Council's Parks Embellishments Guide, Council or IPWEAQ standard drawings:

(a) Park name signage, field/court signage and internal wayfinding finger signage;
(b) Bollards preventing vehicular access from internal and external road network, except via removable locked bollards, 4m in width, for maintenance vehicles; and
(c) Embellishments are provided, including a minimum of:
    - entrance statement garden bed and Park name signage at primary frontage;
    - shaded benches and seating around all fields or courts;
    - minimum 50 grandstand seats around primary field or court;
    - 1x Minor playground, located in a position that is viewable from main grandstand;
    - Lighting of entrances, car parking and key internal pathways, in accordance with *DG 11.15 Lighting*;
    - Lighting in accordance with relevant Australian Standards for sports fields and courts;
    - Sufficient amenities to service scale of sportpark;
    - Concrete internal pathways connecting car parking, facilities and amenities;
    - Drinking fountains, bins and bin enclosures adequately distributed around sport facilities and amenities; and
    - Fencing around the circumference of the sportspark.

Indicative Regional & District sportspark example

Shaded mounds for enhanced viewing
Clubhouse, grandstand & change rooms
Shade/storage
Enhanced field drainage into gully
Centrally located car park
Shade/Storage
Shaded Seating
Entrance statement

DG11.5.13 Parks and Open Space drainage corridor model design guide

Siting and design performance benchmarks

The following benchmarks applying to drainage corridors that are natural waterways or formed grass drains within parks and open space. Benchmarks provide guidance on low maintenance design for developments that incorporate drainage corridors. Design benchmarks should be read in conjunction with *QUDM, DG 4 – Design Guidelines – Stormwater Drainage, IPWEAQ drawings and the Whitsunday Stormwater Quality Guideline*. Where not complying with these benchmarks, approval may be sought from Council's Parks and Gardens or Roads and Drainage Branch where solutions demonstrate low maintenance outcomes and amenity that is desired for the area.

Note: *QUDM, DG 4 – Design Guidelines – Stormwater Drainage, IPWEAQ drawings* and the *Whitsunday Stormwater Quality Guideline* prevail to the extent of any inconsistency.

General

Where pathways or cycleways are included alongside drainage corridors, the following benchmarks apply:

- bollards preventing vehicular access and removable locked bollards, 4m in width for access to the street by maintenance vehicles;
- Lighting to delineate park entrances and along pathways, sited and orientated to not spill into adjoining residential premises, as per *DG 11.15 Lighting*; and
- footpaths avoid overland flow paths ground and are setback 5m from the top of creek banks or residential boundaries; or
- footpaths are raised above overland flow paths.

Watercourse or open drain within parks and open space:

- The following are re-vegetated in accordance with this model design guide to become densely planted ecosystems with low maintenance requirements:
  - Watercourse defined under the *Vegetation Management Act 1999,*
  - Overland flow paths or formed grass drains exceeding 10m in width[1] or with grade greater than 1:4
- Works within a watercourse occur between April and October, unless approved by Council;
- Endemic native plantings and layout defined by a *suitably qualified professional* include predominately fast-growing pioneer species, with some edge and climax species, in accordance with:
  - density and design set out within *indicative drainage corridor design* below, or
  - *Whitsunday Stormwater Quality Guideline* where function is for stormwater quality;
- For watercourse, re-vegetation occurs to a minimum width defined by *Whitsunday Planning Scheme 2017 Table 8.2.4.3.1 - Minimum riparian buffers and setbacks for biodiversity, waterways and wetlands* for the respective stream order. Re-vegetation occurs to the adjoining boundary if within this riparian buffer.
- Outside of re-vegetated riparian buffer, a 6m wide grass buffer area adjoins freehold boundaries, unless slope exceeds 1:4, then re-vegetation occurs to the boundary line, and
  - only pioneer and edge species that grow to a maximum of 5m in height are planted within this 6m buffer;
  - Maintenance track access is provided to the grass buffer adjoining freehold boundaries is provided and connected to the road network via a minimum 4m wide locked bollards;
- For grass drain, exceeding 10m in width, re-vegetation occurs to the adjoining boundary. Where exceeding 30m in width, a 6m wide grass buffer area adjoins freehold boundaries unless slope exceeds 1:4, then re-vegetation occurs to the boundary line, and
  - only pioneer and edge species that grow to a maximum of 5m in height are planted

[1] *Drainage corridor width* - measured between top of each bank

within this 6m buffer;
    - Maintenance track access is provided to the grass buffer adjoining freehold boundaries is provided and connected to the road network via a minimum 4m wide locked bollards;
- Bollards preventing vehicle access into the drainage corridor;
- Bank stabilisation, such as geofabric or rock defences, are utilised as necessary to ensure native vegetation can establish, developed in accordance with best practice set out within *Catchments and Creeks – Use of Rock in Waterway Engineering Version 4 2020*;
- Alternate treatments to naturally vegetated flow paths, such as formed concrete/rock drains may be permitted in urban areas where limited width, safety, maintenance or erosion issues are demonstrated by an RPEQ;
- A low flow pipe is considered where pooling may occur to mitigate pests and scouring, as per Standard drawing DS-079 and *DG 4 – Design Guideline – Stormwater Drainage*;

Rock lined watercourses within parks and open space:
- Natural or re-vegetated waterways requiring rocks to strengthen banks, reduce scouring or manage velocities, are designed in a manner that reduce weed growth as shown within *indicative drainage corridor design* below and best practice set out within *Catchments and Creeks – Use of Rock in Waterway Engineering Version 4 2020*;
- Where possible, rock lined banks are covered with soil, geofabric and endemic native vegetation, in accordance with planting density and design set out within *indicative drainage corridor design* below;
- Where necessary, concrete pipes (min. 900mm) placed within the rock wall are utilised to allow trees to establish and provide canopy coverage, as shown by *indicative drainage corridor design* below;
- Rock lined watercourses unable to accommodate vegetation on account of high slope, high scouring or high velocities are grouted with concrete to avoid weed growth between rocks. It is acknowledged grouting may not be possible in all circumstances on account of managing velocities in accordance with QUDM.

Grass drain within parks or open space:
- Drainage areas that are not *watercourses*, less than 10m in width[1] and of a grade less than 1:4, is grassed, unless required for stormwater quality treatments to achieve MUSIC modelling requirements, designed in accordance with the *Whitsunday Stormwater Quality Guideline;*

Editor's note – *Watercourse* is defined by the *Vegetation Management Act 1999.*

- Grassed drainage areas between residential premises are a minimum of 4m width and include 4m wide locked bollards for service vehicle and bollards to prevent vehicular movement through the corridor that may damage drainage contouring;
- Includes a low flow pipe as per Standard drawing DS-079 and *DG 4 – Design guidelines – Stormwater drainage* to allow more frequent mowing during wet season.

Embellishments

Where identified by *Siting and design performance benchmarks,* the following are the minimum requirements, to be provided in accordance with Council's Parks Embellishments Guide, Council or IPWEAQ standard drawings:

(a) Bollards preventing vehicular access into a parks and open space drainage corridor, except via removable locked bollards, 4m in width, adjoining the street for maintenance vehicles;
(b) native plantings endemic to the local habitat as defined by a suitably qualified person, generally in accordance with planting density of 1 per $1m^2$ and species type within *Indicative drainage corridor design;*
(c) Planting densities and species may vary where an RPEQ identifies need to prioritise stormwater flows or bushfire assessment recommends an alternate outcome;
(d) Irrigation is provided in accordance with *DG 11.19 Irrigation* or designed by a suitably qualified professional to achieve at least a 90% survival rate to maturity;
(e) Minimum mulch depth 200mm or erosion matting as necessary to suppress weed growth and manage erosion impacts from flooding. Note mulch may not be suitable in some drainage

corridors where flood velocities may wash it away; and

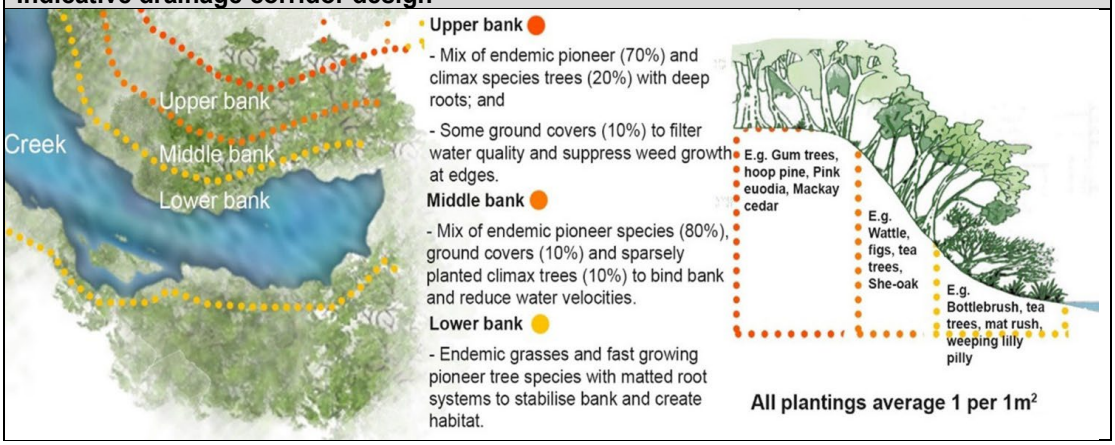
Editor's note – *Suitably qualified person* planning re-vegetation must have a degree in Environmental management, science or demonstrated experience in waterway management.

Handover and Bonding

Handover and bonding of drainage corridors involving re-vegetation or watercourse stabilisation within parks and open space shall occur in accordance with the following:

(a) Developer shall install and manage the drainage corridor in accordance with this model design guide;
(b) The developer shall lodge with Council a maintenance security bond for 5% of the total value of re-vegetation or watercourse stabilisation in accordance with CP 1.06 Construction security bond;
(c) The developer and Council shall attend an on-maintenance inspection. Should the asset be in accordance with this model design guide and approved plans, it shall be placed on maintenance for a period of 24 months. Should the asset not be in acceptable condition the defects shall be rectified and another on-maintenance inspection arranged;
(d) The developer shall maintain the asset for 24 months after establishment, ensuring irrigation, erosion management and weeding, that allows vegetation canopy coverage to establish appropriately. Council inspections may be undertaken at 6 monthly intervals to assess vegetation growth and management;
(e) The developer and Council shall attend an off-maintenance inspection. Should the asset be in accordance with this model design guide and approved plans, it shall be accepted off maintenance and the remainder of the maintenance security deposit returned. Should the asset not be in acceptable condition the defects will be rectified. If the defects were minor in nature, the asset shall be accepted off maintenance and the security deposit returned. If the defects were major in nature, the 12-month maintenance period shall be served in full again.

Indicative drainage corridor design



Vegetation in rock banks
Re-vegetated drainage corridor
Bank stabilisation and re-vegetation of creek
Rock wall grouting
Pipe to support canopy coverage in rock lined banks

DG11.5.14 Conservation, Sloped and Buffer area model design guide

Siting and design performance benchmarks

The following benchmarks applying to re-vegetation projects involving conservation areas, sloped areas exceeding 1:4 and buffers areas in parks and open space. Benchmarks are to be read in conjunction with *DG 10 – Design Guidelines - Landscaping, DG 11.3 Design principles, DG 11.4 - Desired standards of service and DG 11.6 Public open space components*. Where not complying with these benchmarks, approval may be sought from Council's Parks and Gardens Branch where solutions demonstrate low maintenance outcomes and amenity that is desired for the area.

(a) Conservation areas, slopes exceeding 1:4 and buffer areas in parks and open space minimise maintenance requirements through re-vegetation that creates a densely planted ecosystem, in accordance with planting density and layout within *Indicative Conservation, Buffer or Sloped area design;*
(b) Re-vegetation includes a diversity of species that are endemic to the local area as defined by a suitably qualified person;
(c) Re-vegetation is not supported if it will create CPTED issues or worsen natural hazard impacts;
(d) Where possible, re-vegetation is established early in the development process to allow time to become established;
(e) Where adjoining medium, high or very high bushfire hazard area, access easement, fire maintenance trails and firebreaks are created to ensure compliance with *QFES Bushfire resilient communities'* document, accessible by the local road network;
(f) Where conservation area adjoining freehold boundaries, a 6m wide grassed area with a grade not more than 1:4 (unless required fire break is larger), is provided and accessible by the local road network;
    - Where 6m grass buffer area adjoining freehold boundaries has a slope greater than 1:4, re-vegetation is completed to the boundary line.
    - Only pioneer and edge species that grow to a maximum of 5m in height are planted within this 6m buffer. The exception is for necessary fire maintenance trails or fire buffer areas required through sloped land;
(g) Accesses include removable locked bollards, 4m in width, for access to the street by maintenance vehicles to fire trails or unvegetated buffers; and
(h) Where area to be re-vegetated is 10m or less in width, it should only consist of edge and pioneer species plantings.

Embellishments

Where identified by *Siting and design performance benchmarks,* the following are the minimum requirements, to be provided in accordance with Council's Parks Embellishments Guide, Council or IPWEAQ standard drawings:

(a) Bollards preventing vehicular access into a parks and open space drainage corridor, except via removable locked bollards, 4m in width, adjoining the street for maintenance vehicles;
(b) Native plantings that are endemic to the local habitat determined by a suitably qualified professional, providing a diversity of at least 10 species per re-vegetation area;
(c) Plant rows 2m apart, with plantings spaced to achieve minimum 1 per 2.5m^2 or a planting density of 4,000 seedlings/ha;
(d) Where area to be re-vegetated is 5m or less in width, re-vegetation should include a densely planted mix of pioneer and edge species composed of resilient native grasses or ground covers, at a density of 1 per 1m^2 or 10,000 seedlings/ha;
(e) 200mm of mulch, re-mulched and weeds removed within 1 month prior to handing over the asset to Council;
(f) Planting densities and species may vary where an RPEQ identifies need to prioritise stormwater flows or bushfire assessment recommends an alternate outcome;
(g) Irrigation is provided in accordance with *DG 11.19 Irrigation* or designed by a suitably qualified professional to achieve at least a 90% survival rate to maturity.

Handover and Bonding

Handover and bonding of conservation, sloped or buffer areas involving re-vegetation within parks and open space shall occur in accordance with the following:

(f) Developer shall install and manage the re-vegetation in accordance with this model design guide;

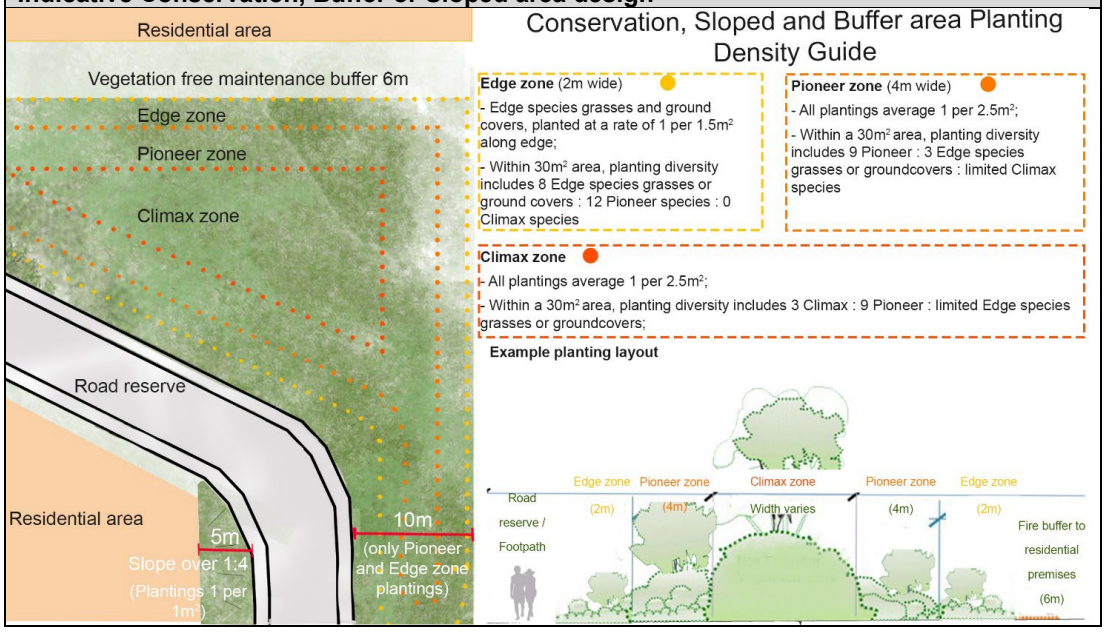
(g) The developer shall lodge with Council a maintenance security bond for 5% of the total value of re-vegetation in accordance with CP 1.06 Construction security bond;

(h) The developer and Council shall attend an on-maintenance inspection. Should the asset be in accordance with this model design guide and approved plans, it shall be placed on maintenance for a period of 24 months. Should the asset not be in acceptable condition the defects shall be rectified and another on-maintenance inspection arranged;

(i) The developer shall maintain the asset for 24 months after establishment, ensuring irrigation and weeding, that allows vegetation canopy coverage to establish appropriately. Council inspections may be undertaken at 6 monthly intervals to assess vegetation growth and management;

(j) The developer and Council shall attend an off-maintenance inspection. Should the asset be in accordance with this model design guide and approved plans, it shall be accepted off maintenance and the remainder of the maintenance security deposit returned. Should the asset not be in acceptable condition the defects will be rectified. If the defects were minor in nature, the asset shall be accepted off maintenance and the security deposit returned. If the defects were major in nature, the 12-month maintenance period shall be served in full again.

Indicative Conservation, Buffer or Sloped area design



DG11.5.15 Garden beds and Entrance statement model design guide

Siting and design performance benchmarks

The following benchmarks are to be read in conjunction with *DG 10 – Design Guidelines – Landscaping and DG 11.6 Public open space components*. Where not complying with these benchmarks, approval may be sought from Council's Parks and Gardens or Roads and Drainage Branch where solutions demonstrate low maintenance outcomes and amenity that is desired for the area.

Garden beds in parks, road verges or round-a-bouts

(a) All plantings are provided in accordance with *Whitsunday Planning Scheme 2017* Schedule 6.4.5 – Planting species list, with minimum 75% endemic to the local habitat;
(b) Garden beds provide an amenity function that is commensurate to the area, designed to promote:
  - CPTED safety as per DG 11.7;
  - road / pedestrian safety; and
  - maintenance efficiency through irrigation and plantings of dense native ground covers/grasses along edges and fast-growing trees with canopy coverage that suppress weeds;

(c) Planting selection and resilience is relevant to location, with isolated areas such as road verges or round-a-bouts utilising lowest maintenance ground covers/grasses;
(d) Planting of trees, groundcovers or native grasses in road reserves are selected with respect to their growing size and adequately setback from the road by a paved 500mm edge to avoid maintenance of vegetation spilling onto the road. Suitable vegetation selection and landscape design to maintain sight lines and minimise maintenance requirements in road verges or round-a-bouts are developed in accordance with best practice set out within *Department of Transport and Main Road - Road Landscape Manual, Edition 2, 2013*.

Entrance statements:

Proposed entrance statements are subject to approval by Council. Location, structures, materials or placemaking themes to align with Town themes and ongoing maintenance expectations, are set out below:

(a) Located at:
  - primary entrances for Regional recreation park or Regional sportspark;
  - intersections of arterial, sub-arterial or urban collector roads leading into a new residential estate, outside of road reserve;

(b) Are compact in design, with structures or signage not exceeding 3m in height and 6m in length;
(c) Utilise materials and design that are resilient to cyclones and have a low maintenance cost;
(d) Utilise signage that includes placemaking themes or colours that reflect the 'sense of place' and in accordance with Councils style guide;
(e) Clearly show the name of the destination and avoids landscaping that obscure the name of the destination after growth;
(f) Are designed and constructed of materials and colours that contribute to the amenity of the streetscape, don't create a distraction for drivers and don't obscure pedestrian movement;
(g) Include signature or exotic native trees that assist wayfinding; and
(h) Encourage multi-functional use, facilitating stormwater treatment or co-location with recreational open space.

Note - Entrance statements not meeting the benchmarks herein or not approved by Council must be located within a private lot and managed by private organisation or person in accordance with a maintenance statement provided to Council.

Embellishments

The following are the minimum requirements for garden beds and entrance statements:
(a) Native plantings that are endemic to the local habitat, water resilient, cyclone resilient and

effective in supressing weeds;
(b) 200mm of mulch re-mulched and weeds removed within 1 month prior to handing over the asset to Council;
(c) All garden beds, predominately include resilient native grasses and groundcovers along garden boundary at a minimum planting rate of 2 per metre;
(d) Where garden beds are greater than 4m in width, the use of densely planted pioneer and climax species trees are utilised alongside ground covers, to provide shade and suppress weed growth at maturity;
(e) Where possible, new garden beds and open space requiring irrigation is connected to Council's recycled water network; and
(f) Irrigation is provided in accordance with *DG 11.19 Irrigation.*

Indicative garden bed, road verge and entrance statement garden examples

Garden beds	
Use of shade trees surrounded by native low maintenance, densely planted groundcovers. Allows good visual surveillance and reduces the maintenance cost of grass mowing. It is also effective in channelling pedestrians away from unsafe road crossings.	
Hardy and durable ground cover is very effective as a weed suppressant and provides an attractive neat edge, whilst reducing need for mowing.	
Road medians or roundabouts	
Planting of trees, groundcovers or native grasses on road verges are selected with respect to their growing size and adequately setback 500mm by a paved edge to avoid maintenance of vegetation spilling onto the road as shown right. Where inadequate space for vegetation or unsafe to maintain, a paved surface is preferable. Vegetation must not impede sight lines and is planted densely into a weed mat, overlaid with a mulched bed to avoid weed growth. Multi-purpose uses, such as WSUD and rainwater harvesting via tree pit designs are encouraged, designed in accordance with the WRC Stormwater Guideline. Roadside vegetation should be designed in accordance with best practice set out by *Department of Transport and Main Road -*	

Road Landscape Manual, Edition 2, 2013.	
Entrance statement	
Landscaping that represents the tropical character of the Town, inclusive of signature or unique trees, dense groundcovers to suppress weed growth. Landscape design should ensure the sign cannot be covered by overgrown vegetation.	

Public open space components

DG 11.6 General

11.6.1 At the time of development, the developer shall landscape all public open spaces to the satisfaction of Council, in accordance with DG 10 – Landscaping, DG 11 Parks and open space and Council's Levels of Service/Operations Plan.

11.6.2 Where a development is proposing to undertake any work within existing or proposed park a landscaping plan shall be prepared for consideration by Council.

11.6.3 Developers should have regard to , embellishments siting and design required in each park defined by DG 11.5 Open space model design guides and Council's Parks Embellishments Guide;

11.6.4 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.

11.6.5 CCA treated timber is not to be used for the construction of Council assets.

11.6.6 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.

DG11.7 Crime Prevention through Environmental Design

11.7.1 It is important when designing parks that the principles of crime prevention through environmental design are considered, in particular:

11.7.1.1 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;

11.7.1.2 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;

11.7.1.3 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

11.7.1.4 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 11.8 Treatment to Park Boundaries

11.8.1 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 fences, 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.

11.8.2 Definition of the park side boundaries should be indicated by installing replas bollards at approximately 1.6 metre centres, down each side. These should be offset from the surveyed boundary by 250 mm in order to allow future erection of private fencing without having to remove Council's boundary markers or assets. Definition of the park boundary is intended to deter encroachment onto park by adjacent private properties and to define the park limits.

11.8.3 Fencing, log barriers and bollards shall be designed and sited in accordance with Council's Standard Drawing and DG 11.5 Open space model design guides and Council's Parks Embellishments Guide, unless otherwise approved by Council.

DG 11.9 Internal Circulation

11.9.1 The park layout should be designed to ensure that internal circulation or movement within the park is:

- 11.9.1.1 Safe;
- 11.9.1.2 Unencumbered;
- 11.9.1.3 Highly visible internally and externally; and
- 11.9.1.4 Linked to external cycle and pedestrian networks.

11.9.2 Design features including access points, street frontages, carparks, pedestrian/bike paths, park equipment and lighting should located and designed in accordance with the DG 11.5 Open space model design guides and Council's Parks Embellishments Guide.

11.9.3 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 11.10 Planting

11.10.1 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:

- 11.10.1.1 Shade trees evenly planted throughout the site to maximise protection from the sun;
- 11.10.1.2 Shade trees planted along internal pathways within parks at a minimum rate of 1 per 15m;
- 11.10.1.3 Island or corridor planting to concentrate trees for easy maintenance and encourage bird life for pleasure viewing;

11.10.1.4 Grouped planting will also provide shade adjacent to open space to allow unencumbered active play areas; and

11.10.1.5 Lines of tree planting to define edges of informal active play areas.

11.10.2 Tree plantings are sensitive to underground infrastructure, and if necessary, include root barriers;

11.10.3 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.

11.10.4 Development involving re-vegetation to create 'conservation areas', are planted in accordance with design criteria within the DG 11.5 Open space model design guides to minimise maintenance and weed growth.

11.10.5 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.

11.10.6 Plant selection is in accordance with Whitsunday Planning Scheme 2017 - Schedule 6.4.5 Planting Species List and planting layout aligns with DG 11.5 Open space model design guides for each respective open space type. Designers are encouraged to consult with Council in the preparation of the landscaping design.

11.10.7 Street trees should not be a plant listed in:

11.10.7.1 Land Protection (Pest and Stock Route Management) Regulation;

11.10.7.2 Local governments Pest Management Plan; and

11.10.7.3 Publication, Agricultural and Environmental Weeds (Wet Tropics Management Authority).

DG 11.11 Grassing

11.11.1 All parks shall be covered with topsoil to a minimum depth of 75mm - 100mm and shall be lightly compacted and grassed in accordance with Councils' minimum standards and specifications.

11.11.2 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 even running contours.

11.11.3 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 11.12 Mounding

11.12.1 Mounding may be used within the park design to provide topographical interest, to emphasise views, to help screen adjacent properties or low amenity storage areas, 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. Where exceeding a gradient of 25%, mound should

be densely planted in accordance with DG 11.5.14 Model design guide to minimise maintenance. Planting of trees and shrubs over the mound will further emphasise height and shape.

11.12.2 Care should be given to ensuring that the mound or associated landscaping does not restrict visibility into and out of the park thus threatening the safety of users or provide unwanted visibility into private properties.

DG 11.13 Furniture

11.13.1 Park furniture provided in accordance with DG 11.5 Open space model design guides and Council's Parks Embellishments Guide 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:

11.13.1.1 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;

11.13.1.2 Well drained ground and hard surfacing below any structure. Surface material could be pavers, coloured or exposed aggregate concrete etc;

11.13.1.3 Shade structures should maximise protection from the sun during the hours of 11 am - 3 pm e.g. skillion shelters or shade sails with Montec 370 material; and

11.13.1.4 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.

11.13.2 Designs of furniture should reflect a strong aesthetic and vandal resistant appearance.

11.13.3 Where possible, natural features may be used e.g. mounding for seating, trees or natural rock for bollards to simulate park furniture; and

11.13.4 Park furniture themes are set out within the Council's Parks Embellishments Guide. Designers are encouraged to consult with Council in the preparation of the landscaping design.

DG 11.14 Signage and Interpretation

11.14.1 A park name and sign design is to be provided, designed in accordance with Communication Style Guidelines. 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.

11.14.2 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.

11.14.3 Signage types and themes are designed and sited in accordance with the DG 11.5 Open space model design guides and Council's Parks Embellishments Guide. Note each Town may be subject to a different

signage theme, particularly in high profile Regional or District parks, therefore, designers should collaborate with Council in these instances.

DG 11.15 Lighting

11.15.1 Lighting requirements within parks are in accordance with DG 11.5 Open space model design guides and Council's Parks Embellishments Guide.

11.15.2 As a guide, the following lighting is required:

- 11.15.2.1 Solar pole light to illuminate park entrances
- 11.15.2.2 Bollard lighting to delineate pathways at 20m centres or pathway divergences
- 11.15.2.3 adequate lighting of picnic infrastructure with pole or in-built shelter lighting
- 11.15.2.4 uplighting of significant trees within Linear, District or Regional parks, to promote amenity and safety of areas beyond pathways

Note – Lighting requirements may vary depending upon the shape, park classification alignment of the park, and the presence of existing vegetation, considering CPTED safety principles.

11.15.3 Generally, parks should be well lit providing a safe nocturnal environment for local users, illuminating park entrances, picnic infrastructure and along key pathways in a manner that avoids spill into adjoining residential premises.

11.15.4 Underground power should be provided to each light. Light fittings should be vandal resistant and provided in accordance with Council's Parks Embellishments Guide.

11.15.5 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 1158.3 Pedestrian area (Category P) lighting.

11.15.6 Where adjoining Beaches utilised by sea turtles, lighting avoids direct illumination of the beach, ocean and sky at night utilising fittings, shields or low bollard lighting.

Note – Applicants should adhere to the State Governments Sea Turtle Sensitive Area Code and the *Department of Environment and Energy: National Light Pollution Guidelines for Wildlife* when developing lighting adjoining beaches that may be utilised by Sea Turtles. Contact Council to determine what Beaches may be turtle habitat.

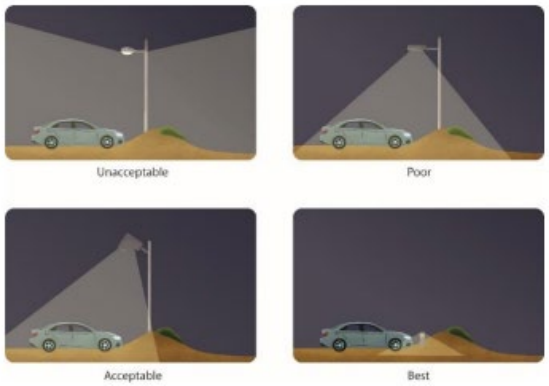


Figure 9.8.21: Turtle sensitive lighting (Department of Environment and Energy)

DG 11.15 Provision of Water

11.15.7 Facilities for drinking, such as drinking tap / bubbler, shall be designed and sited in each park area in accordance with DG 11.5 Open space model design guides and Council's Parks Embellishments Guide.

11.15.1 Drinking fountains 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.

11.15.2 In order to irrigate the park, 1 water meter connection is to be provided, sized appropriately for the size of the park.

11.15.3 As an alternative, irrigation may be provided, on condition that the proposed system complies with the Council Standard Specification for Irrigation.

DG 11.16 Water Features

11.16.1 Water features should not be included in infrastructure to be handed to Council.

DG 11.17 Playgrounds

11.17.1 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.

11.17.2 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:

11.17.2.1 Type of play equipment proposed should be selected in consultation with Council and in accordance with DG 11.5 Open space model design guides and Council's Parks Embellishments Guide;

11.17.2.2 The age range of the users should influence the type of equipment provided, as per with DG 11.5 Open space model design guides and Council's Parks Embellishments Guide; and

11.17.2.3 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.

11.17.3 To conform to safety requirements, impact absorbing surfacing should be installed to the play area, e.g. certified sand softfall or rubber softfall .

11.17.4 Shade cover over playgrounds is to be provided, in order to encourage day long use. Preferably this should be a permanent soft sailshade structure approved by Council in accordance with Council's Parks Embellishments Guide, however shade trees planted at maximum 6 metre centres around the safety area are acceptable.

11.17.5 The provision of seating overlooking the playground will be required.

11.17.6 Bench seating should be replas recycled plastic, as per the Council's Parks Embellishments Guide.

DG 11.18 Maintenance

11.18.1 The design of a park should carefully consider long-term maintenance requirements and adhere to design performance criteria DG 11.5 Open space model design guides and Council's Parks Embellishments Guide.

11.18.2 Mulched garden beds are preferred, rather than numerous small trees and shrubs planted individually throughout the grassed areas.

11.18.3 Where single shade trees occur they should be mulched to 100 mm depth in a minimum 1.2 metre diameter circle, thus avoiding damage to trunks by mowers or whipper snippers.

11.18.4 Access to the parks, drainage reserves and public open spaces for maintenance vehicles should be via a lockable gate or removable bollards.

11.18.5 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.

DG11.19 Irrigation

11.19.1 All irrigation systems connected to Council's water supply shall be designed and installed to satisfaction of Council by a suitably qualified professional. The installation of water meters, backflow prevention device and isolation valves are mandatory in all irrigation system. Refer AS 3500.

Note – Suitably qualified person to design and install irrigation must be licenced for irrigation by the QBCC. Design may also be completed by an experienced landscape architect.

11.19.2 The installation of an irrigation system to all landscaped traffic islands, re-vegetation conservation areas and roundabouts is mandatory.

11.19.3 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.

11.19.4 The design of all watering systems must ensure an efficient and economical application of water, achieving at least a 90% survival rate of new plantings. Such systems are to be designed to use low water application, and shall run only during Council's nominated times:

11.19.4.1 Irrigation controller box is set to provide water to seedlings for 1hr a day during the dry season (May – December),

and 1hr every 2 days during the wet season (January – March).

11.19.5 The irrigation system shall use the following components and shall be installed in accordance with Council Specifications:

11.19.5.1 A backflow prevention unit, installed to the requirements of AS 3500;

11.19.5.2 25mm or 32mm or 40mm diameter blue line poly pipework (as required) or PN12 pipe to garden bed areas, laid in a ring around the periphery of each garden bed;

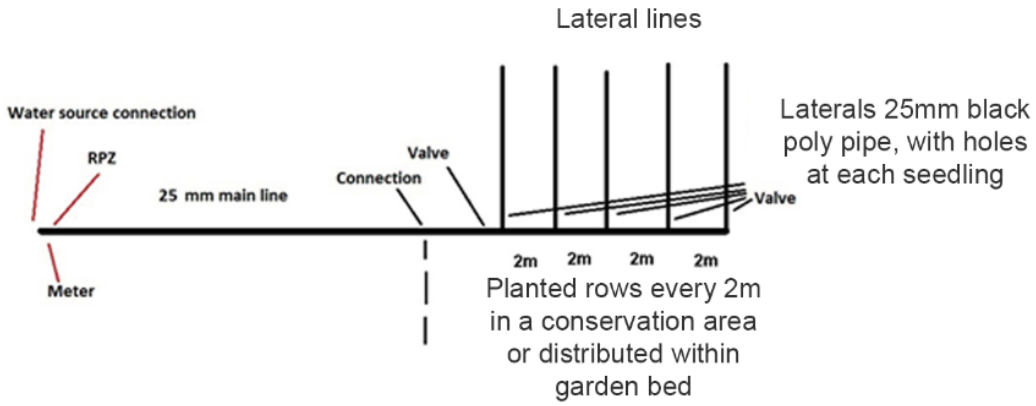
11.19.5.3 For turf, pop up sprinklers located to provide sufficient coverage of grassed areas whilst minimising spray of recreational infrastructure;

11.19.5.4 For garden beds, pop-up sprinklers to periphery of garden, spraying inwards; or

11.19.5.5 For re-vegetated conservation areas designed in accordance with DG 11.5.14 model design code, lateral lines are 2m apart with a small hole placed at/near seedling in polypipe line, as per Figure 11.19.5 below. Sprinklers are generally not supported in densley planted conservation areas, as irrigation spread is blocked by dense vegetation and water efficiency is lower;

11.19.5.6 Automatically operated controller in PVC box laid flush with finished ground level.

Figure 11.19.5: Example re-vegetated conservation area irrigation system.



11.19.6 All irrigation pipework installed under roadways shall be laid in minimum 100mm dia. uPVC Class 9 conduit.

11.19.7 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.

11.19.8 The installation of an irrigation system on Council property, other than buffer mounds, traffic islands/verges, re-vegetation areas and roundabouts, will not be permitted unless:

11.19.8.1 The system is separate from the development and all pipework is located adjacent to the kerb and channel; and

11.19.8.2 Or the verge is irrigated from sprinklers that fall within the development property boundaries.

11.19.9 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.

11.19.10 If a separate irrigation system within the verge is desired, the developer will be required to pay all installation costs, which include:

11.19.10.1 Tapping into main;

11.19.10.2 Installation of 25mm diameter (typical) backflow prevention device;

11.19.10.3 Installation of pipework and pop-up sprinklers; and

11.19.10.4 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
- 1.2.1.2 AS 4419-2018 Soils for Landscaping and Garden Use
- 1.2.1.3 AS 4454-2012 Composts, soil conditioners and mulches
- 1.2.1.4 AS 4678 - Earth Retaining Structures

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, in accordance with AS 4419-2018 Soils for Landscaping and Garden Use, 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 Laneway/Local Access/ 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 Laneway/Local Access 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 Segmental paving is not a preferred pavement or footpath in public open space or road reserves. Installation of segmental paving to become a Council asset is subject to Council approval. Where approved by Council, the following standards must be complied with.

3.1.3 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 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:

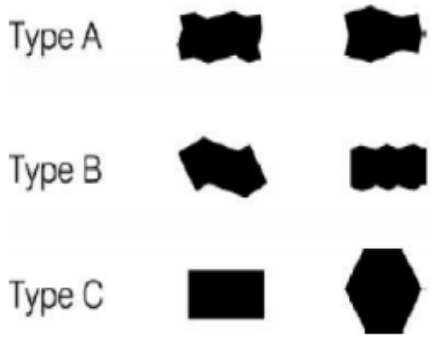
3.3.2.1 Shape Type A: Dentated chamfered units which key into each other on four sides, are capable of being laid in herringbone bond, and by their plan geometry, when interlocked, resist the spread of joints parallel to both the longitudinal and transverse axes of the units.

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	3	2	No Limit	Any	DPA1 or	7
Light Traffic	5	3	No Limit	Any	DPB1	7
Medium					DPA1 or DPB1	

Traffic[1]						
Public Footpaths **Low Volume** **High Volume and Pedestrian Malls[1]**	5 5	3 3	No Limit No Limit	Any Any	DPB2 DPB2	5 3.5
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 Pavers are compacted in place, prior to applying joint filling sand.

3.6.2 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

3.6.3 The sand shall be dry when spread. It shall be covered when stored on site to protect it from rain penetration.

3.6.4 The sand shall be free of deleterious soluble salts or other contaminants, which may cause, or contribute to, efflorescence.

3.6.5 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.

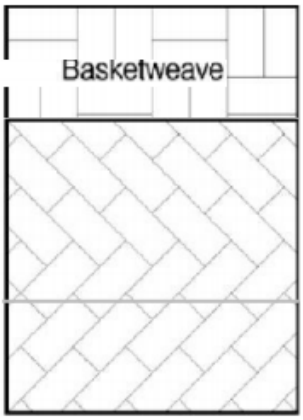
3.18.2 The dimensional tolerances as shown in **Table S3.4**

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 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) PVC-M Only
- 5.3.1.2 Polyethylene (PE); or
- 5.3.1.3 Ductile Iron.

SG 5.4 Modified PVC (PVC-M)

5.4.1 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.

5.4.2 PVC pipes 100mm diameter and greater to be Class 16 rubber ring jointed (Ductile iron O.D compatible).

5.4.3 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 100mm inside diameter to be Class 20

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 in accordance with WSA 03 – 2011 Table 7.2 Minimum Depths of Pipe Cover and AS 2032 & AS2566, and:

5.16.1.1 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.

5.16.1.2 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 whichever 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 1600 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).

5.29.2 Concentrated chlorinated water flowing into the environment after flushing and pressure testing must be adequately de-chlorinated to acceptable levels between 0.2-0.5 mg/L and ensure the water is not de-oxygenated.

SG 5.30 Tolerances

5.30.1 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 SEQ Water Code Queensland urban Utilities sub-variant.

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

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:
- 8.3.1.1 30% Cynodon Dactylon (green couch) – hulled
- 8.3.1.2 30% Cynodon Dactylon (green couch) - unhulled
- 8.3.1.3 30% Axonpus Affinis (carpet grass)
- 8.3.1.4 10% Tetila Rye (in dry season) or Japanese Millet (in wet season)

8.3.2 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 waster 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 in **Table 8.02**:

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 S8.04**.

Table S8.04 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 in **Table S8.05**:

Table S8.05 Irrigation of grass

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. In areas being re-vegetated, mulching shall be to a depth of 200mm.

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

Form 2 – Security Lodgement Form

Form 3 – Inspection Certificate for Witness/Hold Point

Form 4 – Works Acceptance Inspection Checklist

Form 5 – Registered Engineer's Certification of "As Constructed" Works

Form 6 – Registered Surveyor's Certification of "As Constructed" Works

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		1/50m²	95% SRDD	1
			AS 1289.5.4.1 or				
			AS 1289.5.7.1				
		MDD	Q110A or		1/RDD		n/a
			AS 1289.5.1.1 or				
			AS 1289.5.7.1				

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 ≤ 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	1/material type		n/a
			AS 1289.5.1.1 or			
			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	Under trafficable area 1/300mm lift/200m^2 Elsewhere 1/900mm lift/400m^2		1 (between structures)
			AS 1289.5.4.1 or			
			AS 1289.5.7.1			
		MDD	Q110A or	1/material type 1/RDD		n/a
			AS 1289.5.1.1 or			
			AS 1289.5.7.1			
Backfill (In-Place Structures other than RCP, RCBC or similar)	Material Quality	Grading	Q103A or	1/material type	100% < 50mm	n/a
			AS 1289.3.6.1			
		Plasticity index	Q105 or		2 ≤ IP ≤ 12	
			AS 1289.3.3.1			
	Compaction	RDD	Q111A/B/C or	2/500mm lift	Table S4.1, Operational Works Specification S4 "Stormwater Drainage", WRC Development Manual	2
			AS 1289.5.4.1 or			
			AS 1289.5.7.1			
		MDD	Q110A or	1/material type		n/a
			AS 1289.5.1.1 or			
			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, 90 100 150, 200, 250, 300 100, 150, 200, 250, 300	MDPE PVC, PVC-M & PVC-O Ductile Iron	Series 1 PE100 – SDR11 MIN PN 12 Series 2 MIN PN12 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 RL40

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.
2. Areas with a customer connection above RL40m will need to be modelled as being serviceable under full entitlement modelling (fully built out all zoned land case) and not impact the existing elevated customer's service. In the Jubilee Pocket area development is unlikely to be approved from the reticulated network above RL40m and in the Cannonvale and Airlie Districts development is unlikely to be approved above RL45m. However, supplies serviced by reservoirs will be considered.

RESERVOIRS

3. 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.
4. The land on which the reservoir is constructed and sufficient surrounding land, 4 meters minimum from the toe of any batter or retaining structure, shall be dedicated to Council at no cost to Council.
5. A 240v power supply shall be provided to the reservoir site.
6. Control system integrated into Council's current network control system shall be provided monitoring water quantity and water quality parameters.
7. 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.
8. 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.
9. The gradient of the access road is not to exceed 20%.
10. Storm water layout with details of overflow / scour / underdrainage flow path is to be identified and secured.
11. Security fence including all necessary gates and access systems are to be provided.

PUMP STATION BUILDING

12. 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.
13. The land on which the pump station is constructed and sufficient surrounding land, 3 meters minimum (from the edge of any retaining structure), shall be dedicated to Council at no cost to Council.
14. The finished floor level of the pump station should be self draining and no less than 200mm above the surrounding finished ground level.
15. 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.

16. 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.
17. Pump control room is to be fitted with sufficient ventilation to allow air flow within the room.
18. A suitable sealed access and hard standing area shall be provides and constructed as per Council's Development Manual.
19. Security fence details are to be provided.
20. Building to be sized to house the following but not limited to:
    a. Duty / Stand-by pump arrangement.
    b. Electromagnetic type flow metering. (ie. Siemens or E&H).
    c. Control cabinet and switching equipment as per council's standard specifications.
    d. Telemetry connected and commissioned to be fully compatible with Councils current 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

21. For calculating the duty head of the pump please note that the BWL of the Cannonvale reservoir is at RL 72.
22. Duty / Stand-by pump arrangement is to be provided. They must be able to run in parallel if required.
23. Pumps must be fitted with mechanical seals.
24. Reflux valves shall be on the discharge side of the pump.
25. Valving is to be provided so each pump can be isolated and removed if necessary should the case arise.
26. Vacuum and pressure gauges are to be fitted.
27. Pumps and system should be protected against water hammer.
28. All pumping equipment is to be new.

POWER TO THE SITE

29. 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

30. 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.
31. A dedicated rising main, appropriated sized, of K9 DICL shall link the pump station to the reservoir.
32. All gravity mains, appropriately sized, may be uPVC Class 16.
33. Water mains are to be installed on the topside of the road, in natural ground, where possible.

34. Horizontal separation of the rising main and the gravity main shall be maintained at 300mm.
35. Any under-boring of main roads shall utilise 6mm steel for the sleeve as a minimum or as their approval.
36. 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

37. Disinfection facilities (Gaseous Chlorine) 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 areas for the Chlorine tanks 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

38. 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.
39. A Clear SCADA 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

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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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Attachment 13.3.4.2 WRC Development Manual

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
I	Inspection
H	Mandatory Hold Point
W	Witness Point
S	Surveillance

No	Amendment	Date	Reviewed

Validation

I certify that the works have been constructed in accordance with WRC Standards and the Inspection and Test Plan

……

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**

Attachment 13.3.4.2 WRC Development Manual

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:													

13.3.5 - 20220338 - Development Application for Material Change of Use (Short-Term Accommodation) - 49 Gloucester Avenue, Hydeaway Bay - R & A Maher C/- Wynne Planning & Development

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: James McEvoy-Bowe – Planner

AUTHORISING OFFICER: Neil McGaffin - Director Development Services

PRESENTED FOR: Decision

ATTACHMENTS

1. Conditions of Approval [**13.3.5.1** - 2 pages]
2. Planning Assessment Report [**13.3.5.2** - 3 pages]
3. Locality Plan [**13.3.5.3** - 1 page]
4. Zoning Plan [**13.3.5.4** - 1 page]
5. Proposal Plans [**13.3.5.5** - 8 pages]

PURPOSE

Development Applications requiring decisions which are outside the Council officer delegated authority require Council consideration.

OFFICER'S RECOMMENDATION

That Council approve the application for Development Application for Material Change of Use - Short-term Accommodation, made by A W Maher & R D Maher C/- Wynne Planning & Development, on L: 93 RP: 744453 T: N1329/33 and located at 49 Gloucester Avenue Hydeaway Bay, subject to the conditions outlined in Attachment 1.

BACKGROUND

There is no previous Council decision relating to this matter.

APPLICATION SUMMARY

The proposal is for Short-term Accommodation of an existing dwelling house located at 49 Gloucester Avenue Hydeaway Bay.

The premises is zoned Low Density Residential triggering an impact assessable development application. The applicant has provided all necessary information required by the Short-term Accommodation Guideline.

The development application attracted one submission during the Public Notification period. All necessary information has been provided for assessment which has demonstrated compliance with the relevant planning provisions and responded to the issues raised in submissions. It is recommended the development application is given approval subject to reasonable and relevant conditions.

STATUTORY/COMPLIANCE MATTERS

Planning Act 2016

STRATEGIC IMPACTS

Process all statutory applications within statutory timeframes.

FINANCIAL IMPLICATIONS

N/A

CONSULTATION

Civil Engineer (Network Planning)
Assets Technical Officer – Roads & Drainage

RISK ASSESSMENT

Council's decision may be appealed in the Planning & Environment Court of Queensland.

TIMINGS/DEADLINES

Council's decision is due by **8 August 2022.**

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

Section 58 of the Human Rights Act 2019 specifies required conduct for public entities when acting or making a decision. Sections 15-37 of the Human Rights Act 2019 identifies the human rights a public entity must consider in making a decision. The human rights relevant to this decision are as follows:

- Section 19 – Freedom of movement.
- Section 21 – Freedom of expression.
- Section 24 – Right to own property and not be arbitrarily deprived of property.
- Section 27 – Cultural rights – generally – all persons with a particular cultural, religious, racial or linguistic background have the right to enjoy their culture, to declare and practice their religion and use their language.
- Section 28 – Cultural rights – Aboriginal peoples and Torres Strait Islander peoples.

This decision does not limit the above identified human rights.

1.0 ADMINISTRATION

1.1 The approved development must be completed and maintained generally in accordance with the approved drawings and documents:

Plan/Document Name	Prepared By	Plan Number	Dated
Site Plan	Applicant	N/A	N/A
Floor Plans	Applicant	N/A	N/A
Code of Conduct	Applicant	N/A	N/A
Property Management Plan	Applicant	N/A	N/A
Fire and Emergency Plan	Applicant	N/A	N/A

1.2 Where a discrepancy or conflict exists between the written conditions of this approval and the approved plans, the requirements of the written condition(s) will prevail.

1.3 All conditions of this approval must be complied with in full to Council's satisfaction prior to the commencement of the use.

1.4 The applicant shall demonstrate and provide evidence that compliance with all conditions of this development approval and any other subsequent development approvals as a result of this development approval have been complied with at the time of commencement of the use.

2.0 BUILDING

2.1 The applicant is to upgrade fire safety measures to the equivalent requirement of a long-term rental property.

3.0 ACCESS AND PARKING

3.1 A minimum of three (3) car parking spaces must be provided on site prior to commencement of the use.

3.2 On-site parking spaces must be located entirely on the site, be safe and practical to use, and enable cars to enter and exit the site without endangering pedestrians or vehicles.

4.0 OPERATING PROCEDURES

4.1 Prior to commencement of the use, the applicant must advise Council of the name and contact details of the appointed local property manager who will manage the operations of the development.

4.2 The nominated property manager must sign and provide to Council, a Statutory Declaration affirming that at all times during the operation of the Short-term accommodation, the property manager will undertake the following actions:

a) Display a sign including the name of the property manager and their all-hours contact phone number. The sign is to be no larger than 0.3 square meter in sign face area, professionally made and weather-proof. For a unit, this sign can be displayed on the door of the unit. For a dwelling house, the sign must be displayed where it can be clearly read by the public.
b) Prior to the commencement of the use, inform in writing, the occupants of every neighbouringdwelling that the property has been approved for short-term accommodation and provide contact details including a 24-hour contact number.

c) Establish and maintain an accommodation register, recording names and contact details of all guests and duration of stay. The register must also include details of any complaints received and a copy of the signed acceptance of the Code of Conduct document. This register is to be provided to Council on request.
d) Prepare a Code of Conduct which must be provided to and agreed-to in writing by all adult guests prior to occupation. The Code of Conduct must include as a minimum:
    i. The maximum permitted number of overnight guests on any one day.
    ii. A set of 'good neighbour' rules, to prevent anti-social behaviour and excessive noise after 9pm, in accordance with Schedule 1 of Environmental Protection (Noise) Policy 2019.
    iii. Information for guests, including the 24-hour contact details of the nominated property manager, on-site carparking and waste bin arrangements.
    iv. Rules requiring eviction or forfeiture of money in the event of a significant breach of the Code of Conduct.
e) To meet and greet every guest prior to occupation (in person or electronically) to explain the Code of Conduct and other applicable rules.
f) To have two (2) 24-hour contact number that must be answered, not with a recorded message.
g) To attend to any complaint about anti-social guest behaviour reported to the contact number, within 20 minutes. Agent response may include attendance by a private security firm.
h) To immediately evict any guests whose behaviour repeatedly breaches the Code of Conduct.

4.3 A maximum of six (6) overnight guests (two guests per bedroom) will be permitted to stay in short-term accommodation at any one time.

5.0 ADVISORY NOTES

5.1 This Development Permit does not provide any explicit or implied confirmation that the premises meets the requirements of relevant fire safety legislation, building classification, body corporate rules or insurance policies. The applicant and/or operator of the Short-term Accommodation business is to conduct their own investigations and make the necessary applications and undertake required building modifications to meet their obligations under all relevant legislation

5.2 The applicant will lose any Owner/Occupier rating concession attached to a dwelling house or unit approved.

5.3 The applicant is to ensure that the Pool Safety Certificate for the premises is current and in compliance with legislation.

ANALYSIS

Council has received the following Development Application, which has been assessed against the provisions of the relevant legislation as reported below.

1. Application Summary

Proposal:	Development Application for Material Change of Use for Short-term Accommodation
Landowner	R D Maher & A W Maher
Property Address:	49 Gloucester Avenue Hydeaway Bay
Property Description:	L: 93 RP: 744453 T: N1329/33
Area of Site:	800
Planning Scheme Zone:	Low density residential
Level of assessment	Impact Assessable
Overlays:	Acid Sulfate Soils Flood Hazard Landslide Hazard
Existing Use:	Dwelling House
Existing Approvals:	Nil
Public Notification:	02/06/2022 / 27/06/2022
Submissions received:	One (1)
State referrals:	Nil
Infrastructure charges:	Nil

2. Site Details

2.1. Location (refer to plan in attachment)

2.2. Zoning – Low-Density Residential

2.3. Site description – topography, vegetation, drainage

Relatively flat site with slightly inclined driveway.

2.4. Access

Access is gained from a fully constructed concrete crossover to Gloucester Avenue.

2.5. Surrounding uses

Residential on all three sides.

3. Proposal Details

The proposal is for Short-term Accommodation (STA) of a 3-bedroom single storey dwelling house. The site has compliant on-site water and sewer services, and access is gained via a concrete crossover to Gloucester Avenue. The site has provision for four car parking spaces and has room for additional spaces in tandem on the driveway.

The applicant has provided documentation demonstrating compliance with the Short-term Accommodation Guideline, being a Code of Conduct, Property Management Plan, Statutory Declaration and Fire and Evacuation Plan for the proposed use.

One submission was received from a resident over 200m away.

4. Planning Assessment

The application has been assessed against the relevant provisions of the *Planning Act, 2016* and the *Whitsunday Regional Council Planning Scheme, 2017.* The proposal is generally in accordance with the Planning Scheme and is recommended for approval in accordance with the drawings and documents submitted, subject to reasonable and relevant conditions (Attachment 1).

4.1. State Assessment and Referral Agency (SARA)

The application did not require referral to any State Agencies.

4.2. State Planning Policy – July 2017

The Whitsunday Regional Council Planning Scheme, 2017 has been assessed by the State government to reflect state interests included in the State Planning Policy 2017.

4.3. Mackay Isaac and Whitsunday Regional Plan – February 2012

The proposal is generally consistent with the provisions of the plan.

4.4. Whitsunday Regional Council Planning Scheme, 2017

4.4.1. Strategic Framework

The proposal complies with the relevant items of the Strategic Framework.

4.4.2. Overlay Codes

Overlays are not relevant to this development application and were dealt with at the construction of the dwelling.

4.4.3. Low Density Zone Code

The proposal is an Impact Assessable use in the Low-Density Residential Zone. The proposal generally complies with the relevant Overall Outcomes of the Low Density Residential Zone Code and the Short-term Accommodation Guideline and can be conditioned appropriately to be compatible with the prevailing residential character and amenity of the locality.

A review of the property file concludes that the effluent disposal system has been sized for three bedrooms. There is no record of any alterations to the dwelling and the proposal plans also identify three bedrooms, meaning the effluent system is suitably sized for the proposed development.

4.4.4. Development Codes

- Site plan and floor plans provided.
- Property Management Plan provided.
- Code of Conduct provided.
- Fire and emergency plan provided.
- Statutory declaration has been provided.
- Effluent disposal system is compliant.
- Carport capable of having 3 cars underneath in tandem plus additional boat shed at rear. Additional spaces available on driveway for additional vehicles.

5. Public Submissions

The development application was placed on public notification between 02/06/2022 and 27/06/2022 in accordance with the relevant provisions of the Planning Act 2016. The Notice of Compliance was received on 29 July 2022. One submission was received during this period of Public Notification.

Submissions have been received and summarised in the below table:

Issue	**Comment/Condition Number**
1. Too many STA's in the Hydeaway bay	Not a relevant planning consideration. Each application is assessed on its merits and the material supplied. The material supplied demonstrates the development can be undertaken without causing an amenity impact on the submitter.
2. Submitter lives between two existing STA's and is suffering amenity issues	No record exists of any complaints received regarding STA's from the submitter. Council officer's encourage the submitter to notify Council if there are STA properties not complying with development conditions.
3. STA properties in area without management signage	Council has not been notified of any STA's in Hydeaway Bay operating without the management signage. Council officers will conduct a review of the lawfully operating properties in Hydeaway Bay to ensure the management signage is located at the front of the property.

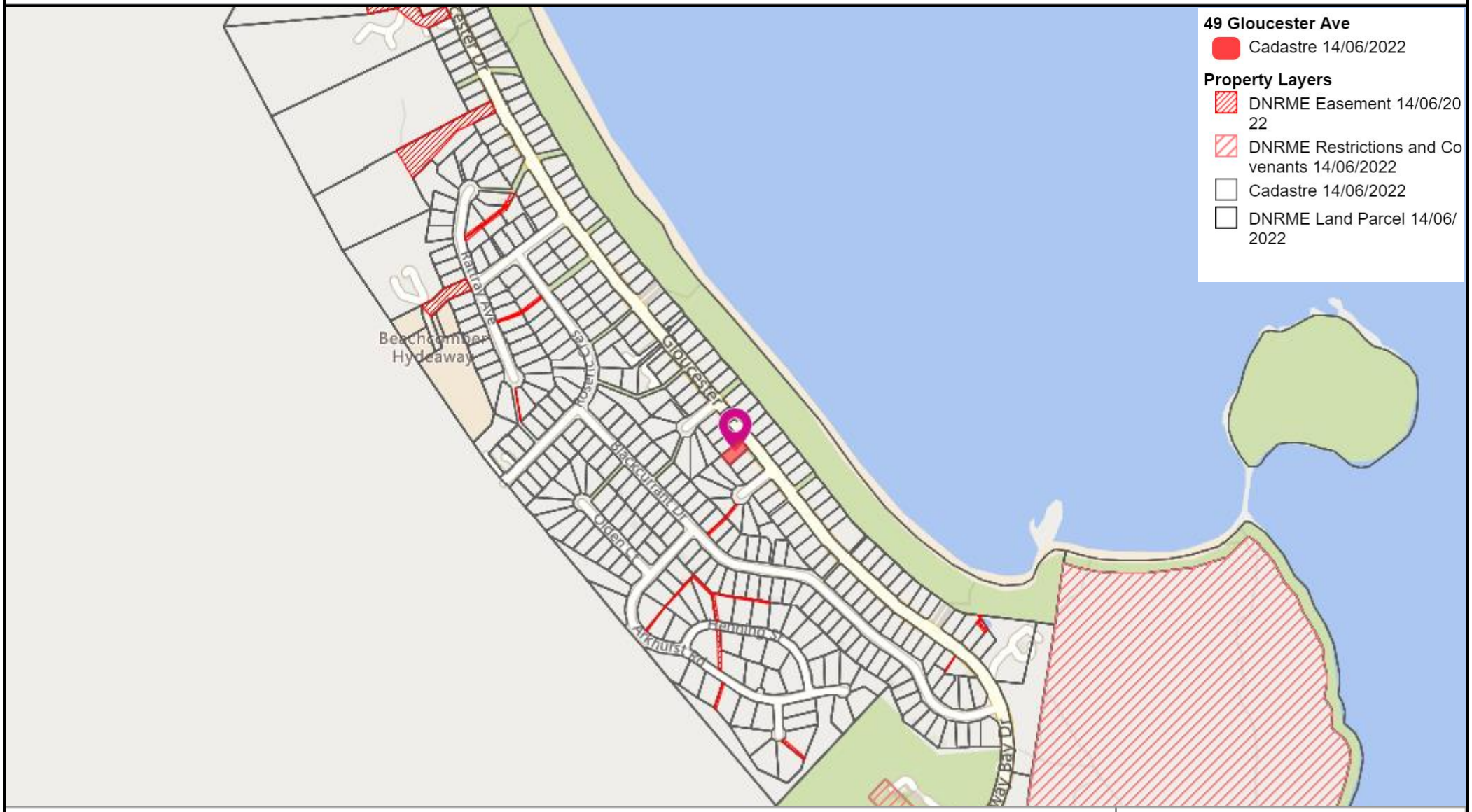
6. Infrastructure Charges

The development does not attract an infrastructure charge.

Attachment 13.3.5.3 Locality Plan

202200338 - 49 Gloucester Ave

22-Jun-2022



Disclaimer

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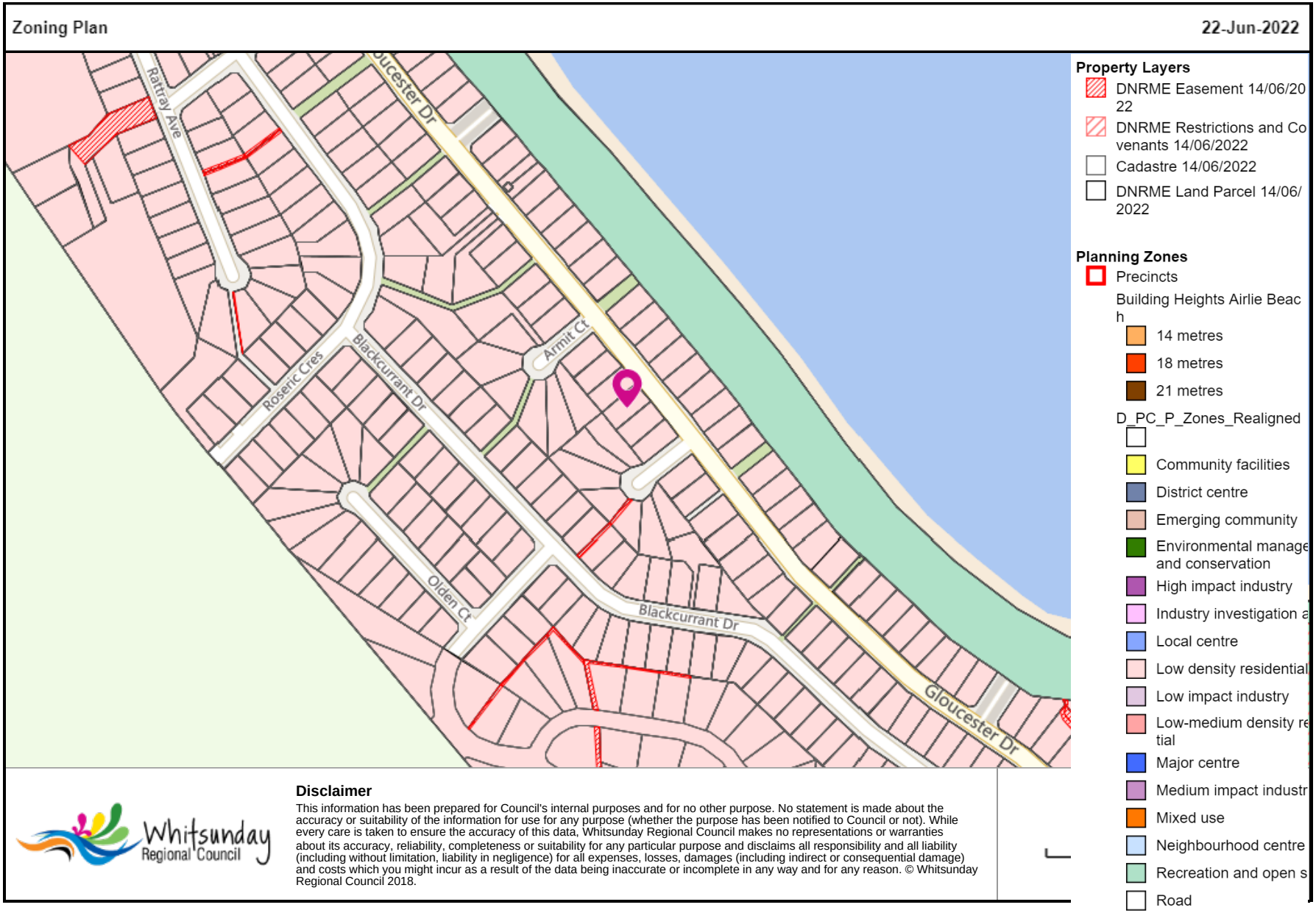
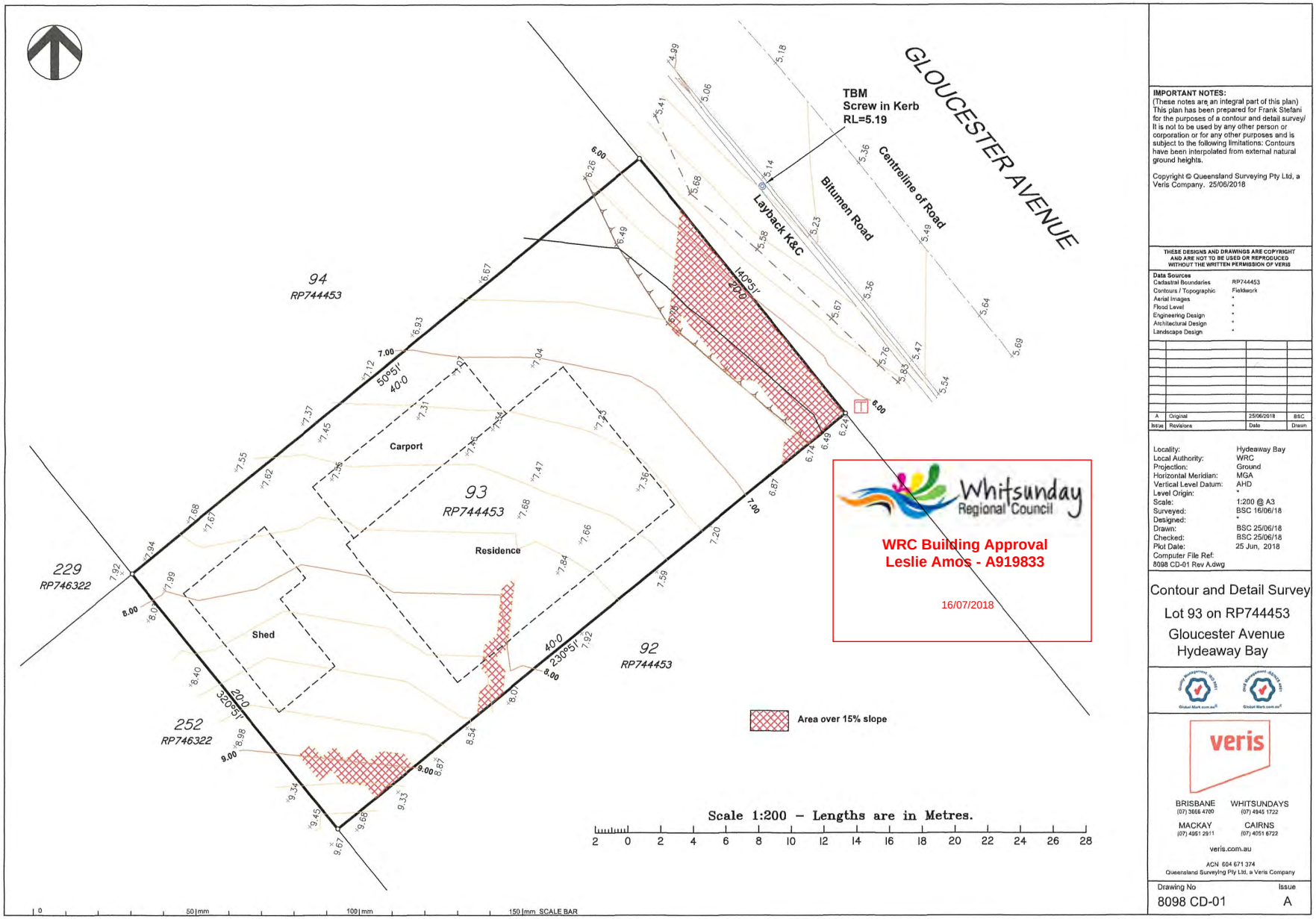
Attachment 13.3.5.4 Zoning Plan



Attachment 13.3.5.5 Proposal Plans



Whitsunday Regional Council

WRC Building Approval
Leslie Amos - A919833

16/07/2018

IMPORTANT NOTES:
(These notes are an integral part of this plan)
This plan has been prepared for Frank Stefani for the purposes of a contour and detail survey. It is not to be used by any other person or corporation or for any other purposes and is subject to the following limitations: Contours have been interpolated from external natural ground heights.

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THESE DESIGNS AND DRAWINGS ARE COPYRIGHT AND ARE NOT TO BE USED OR REPRODUCED WITHOUT THE WRITTEN PERMISSION OF VERIS

Data Sources	
Cadastral Boundaries	RP744453
Contours / Topographic	Fieldwork
Aerial Images	"
Flood Level	"
Engineering Design	"
Architectural Design	"
Landscape Design	"

Issue	Revisions	Date	Drawn
A	Original	25/06/2018	BSC

Locality:	Hydeaway Bay
Local Authority:	WRC
Projection:	Ground
Horizontal Meridian:	MGA
Vertical Level Datum:	AHD
Level Origin:	"
Scale:	1:200 @ A3
Surveyed:	BSC 16/06/18
Designed:	"
Drawn:	BSC 25/06/18
Checked:	BSC 25/06/18
Plot Date:	25 Jun, 2018
Computer File Ref:	8098 CD-01 Rev A.dwg

Contour and Detail Survey

Lot 93 on RP744453
Gloucester Avenue
Hydeaway Bay

veris

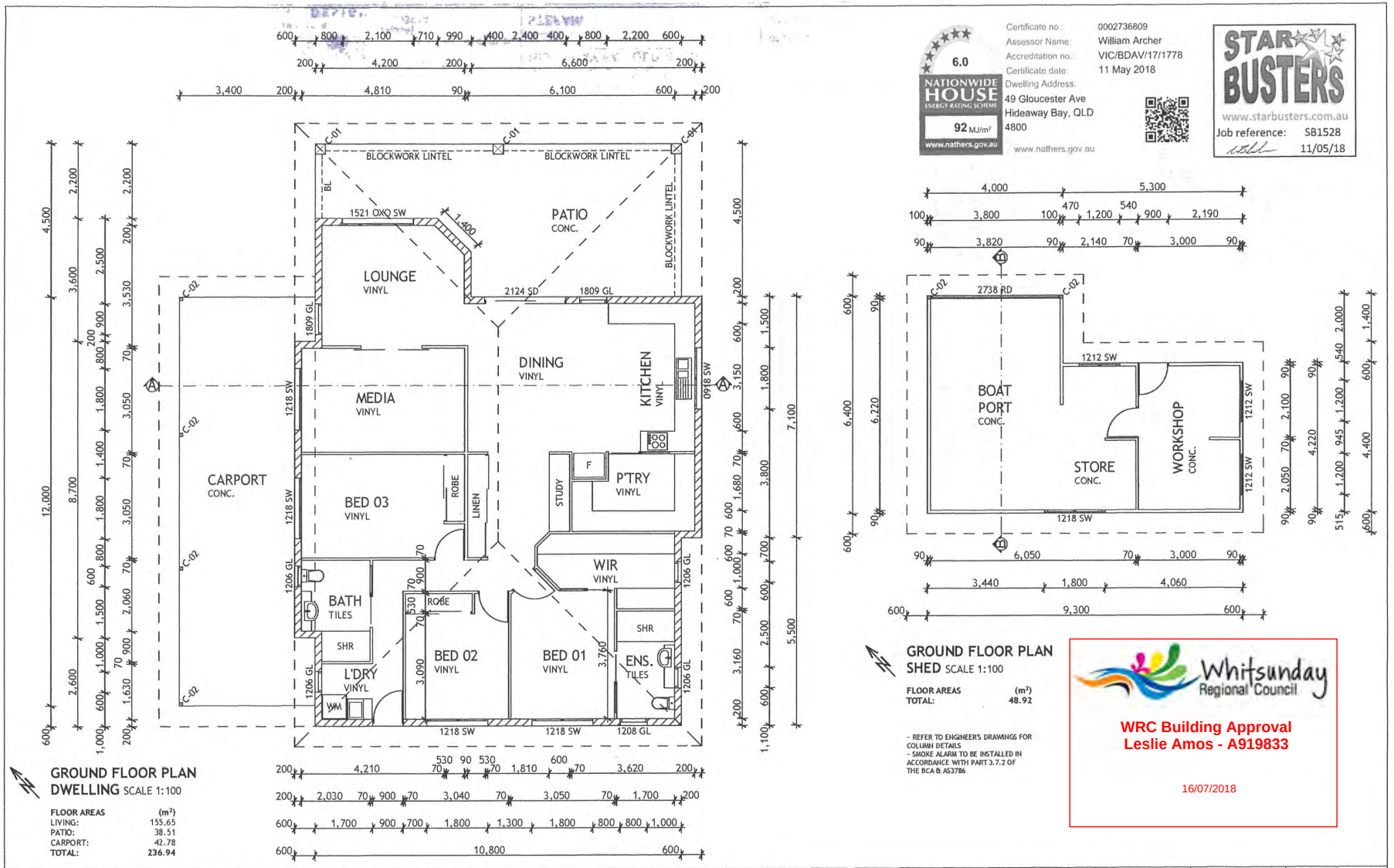
BRISBANE (07) 3666 4700
WHITSUNDAYS (07) 4945 1722
MACKAY (07) 4951 2911
CAIRNS (07) 4051 8722

veris.com.au

ACN 604 671 374
Queensland Surveying Pty Ltd, a Veris Company

Drawing No	Issue
8098 CD-01	A

Attachment 13.3.5.5 Proposal Plans



GENERAL
DO NOT SCALE DRAWINGS.
ALL DIMENSIONS ARE IN MILLIMETERS.
DIMENSIONS ARE NOMINAL SIZES ONLY.
VERIFY ALL LEVELS & DIMENSIONS ON SITE PRIOR TO COMMENCING CONSTRUCTION.
ALL WORK TO COMPLY WITH THE BCA, BUILDING ACT & BYLAWS.

DRAWN BY]
SANDRA HANSCHE
KELLY'S PLUMBING & BUILDING DESIGN
MOB] 0428 733 467
EMAIL] sandhans@yahoo.com.au
QBSA] 1093914

SITE]
LOT 93 ON RP744453
49 GLOUCESTER AVE
HIDEAWAY BAY QLD 4800

CLIENT]
STEFANI

PROJECT]
PROPOSED DWELLING + SHED

DRAWING TITLE]
GROUND FLOOR PLAN

ISSUE]	DESCRIPTION]	DATE]
1	PRELIM	10/05/2018

SCALE ON A3] AS SHOWN
ISSUE] A
JOB NUMBER] 2018-11
DRAWING NUMBER] 02-07

HOLIDAY HOME - PROPERTY MANAGEMENT PLAN

PROPERTY ADDRESS: **49 Gloucester Avenue, Hydeaway Bay QLD**

PROPERTY MANAGER DETAILS:

Mrs Ally Maher

49 Gloucester Avenue, Hydeaway Bay

Telephone Number: 0435 125 432

Email: ronmaher@iprimus.com.au

The nominated Property Manager will:

- Have day-to-day management of the holiday home;
- Specifically respond to complaints pertaining to guest behaviour made before 1am within a reasonable timeframe;
- In relation to any other complaints, respond within a reasonable timeframe but within 24 hours.

DETAILS OF RESERVATIONS ARRANGEMENTS:

Internet (please specify) Email and B&B Applications: ronmaher@iprimus.com.au

Property Manager: Ally Maher

DUTIES OF PROPERTY MANAGER

- Supply, readily visible in the kitchen or living area of the home, the Code of Conduct, the Property Management Plan and the Fire and Emergency Plan;
- Liaise with tenants for the occupancy and vacation of the premises;
- Ensure the correct maximum number of people are staying overnight in accordance with planning approval conditions;
- Ensure guests are aware of the Code of Conduct;
- Ensure guests are aware of the Fire and Emergency Plan;
- Ensure the premises are clean and maintained to a high standard;
- Ensure bed linen is clean and replaced upon tenant vacation; and
- Ensure rubbish and recycling bins are emptied;
- Maintain a record keeping procedure for details of each booking (guests contact names etc), copy of signed acceptance of the terms and conditions (Code of Conduct); and details of any complaints received, time, date and nature of the complaint and actions taken. These documents are to be available for Council inspection as required.

HOLIDAY HOME - CODE OF CONDUCT

PROPERTY ADDRESS: 49 Gloucester Avenue, Hydeaway Bay QLD

The following Code of Conduct governs tenant behavior and use of the property. The tenant agrees to follow the guidelines below, for themselves and any visitors they allow at the property:

TENANTS: A responsible adult (over 18 years of age) shall be on site at all times when children are present. Children are to be supervised at all times and not left alone in the house or pool without adult supervision. No unauthorised people are permitted to stay overnight.

NOISE AND NUISANCE: The tenants agree not to cause or permit nuisance at the property. This includes No parties in excess of 8 people. This includes excessive noise, disruptive or anti-social behaviour. Noise should generally cease after 9pm Sunday through Thursday and 10pm Friday and Saturday.

VEHICLE PARKING: The tenants agree to use the parking spaces provided and not to park on lawn or garden areas on the property, or on the street verge or street itself outside the property. The guests agree not to park any additional vehicles on the property in excess of the parking spaces provided. The tenants agree that no more then 4 vehicles are to be parked on the premises at one time.

COUNCIL REGULATIONS: The tenants agree to all Council regulations, including noise and fire limitations. The tenants agree that no vehicles are authorized to drive or launch boats from the beach access at the property.

PREMISE CONDITION AND CLEANLINESS: The tenants agree to leave the premise in a clean and tidy condition upon vacating, with all fittings and chattels in their original condition and position at the beginning of stay. Tenants are to advise the Property Manager of any damage or disrepair within 24 hours of this occurring. Any damage repairs or excessive cleaning that is attributable to the tenants stay will be paid for by the tenants.

FIRES: The tenants agree not to allow any candles, open fires or similar burn unsupervised within the premise. No open fires are permitted outside at any time. Barbeque facilities may be provided and used in a safe manner.

RUBBISH DISPOSAL: The guests agree to contain all their rubbish in the bins provided. As we do not have a bin service in the area the tenants are responsible for taking there rubbish to the local dump using the small bins provided for small vehicles or wheelie bins these are to be safely secured during transport to the dump located on the right hand side on the road to Dingo Beach.

KEYS: At the end of the agreed tenancy, tenants agree to lock the premise, close all windows and return the keys to the Property Manager or the Key Lock Box depending on the arrangement. Any lost or damaged keys will be replaced at the tenant's expense.

HOLIDAY HOME - FIRE AND EMERGENCY PLAN

PROPERTY ADDRESS: 49 Gloucester Avenue, Hydeaway Bay QLD

EMERGENCY CONTACT DETAILS

FOR ALL EMERGENCIES DIAL 000

Property Manager: 0435 125 432

Whitsunday Police: 4948 8888

Whitsunday Regional Council: 4945 0200

Proserpine Hospital: 4813 9400

DIASTER MANAGEMENT INFORMATION

DISASTER MANAGEMENT

The Whitsunday Disaster Coordination Centre number is **1300 972 006.**

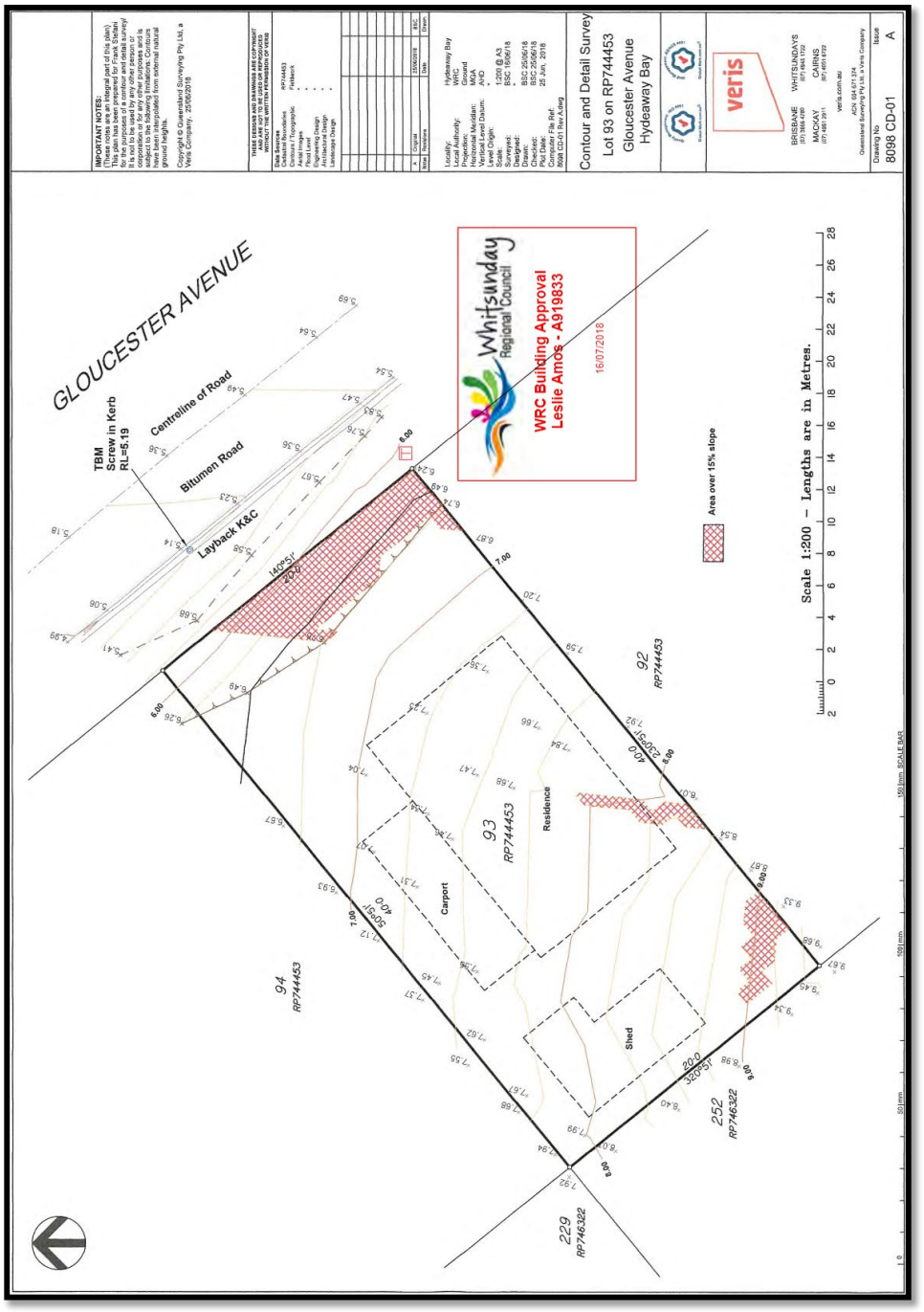
This number is only operational when the Centre has been officially opened by the Whitsunday Disaster Management Group. Whitsunday Regional Council will advise the public when this has occurred.

For the most up to date information in a disaster event 'Like' the Whitsunday Disaster and Emergency Information Facebook page

Other important disaster information can be found by navigating the left hand menu on Council's webpage at https://www.whitsunday.qld.gov.au/140/Disaster-Management

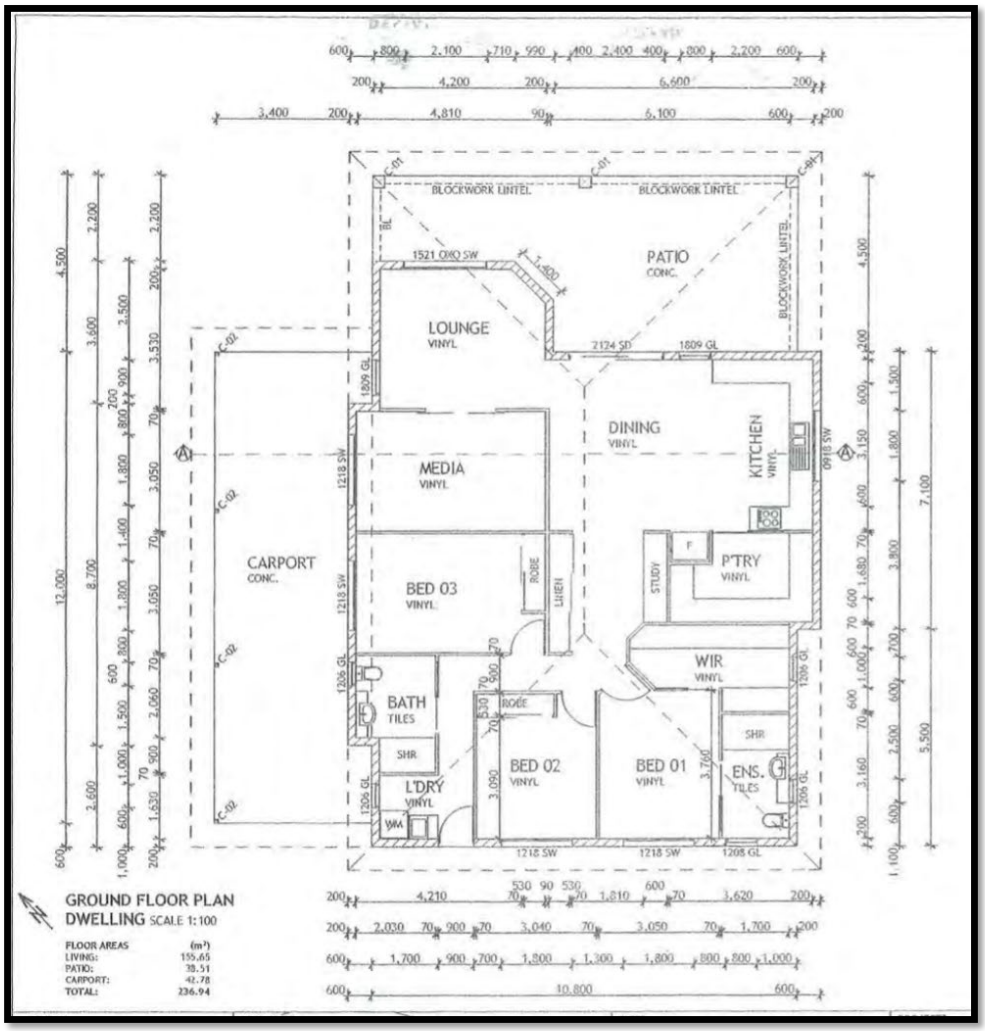
HOLIDAY HOME – SITE PLAN

PROPERTY ADDRESS: 49 Gloucester Avenue, Hydeaway Bay QLD



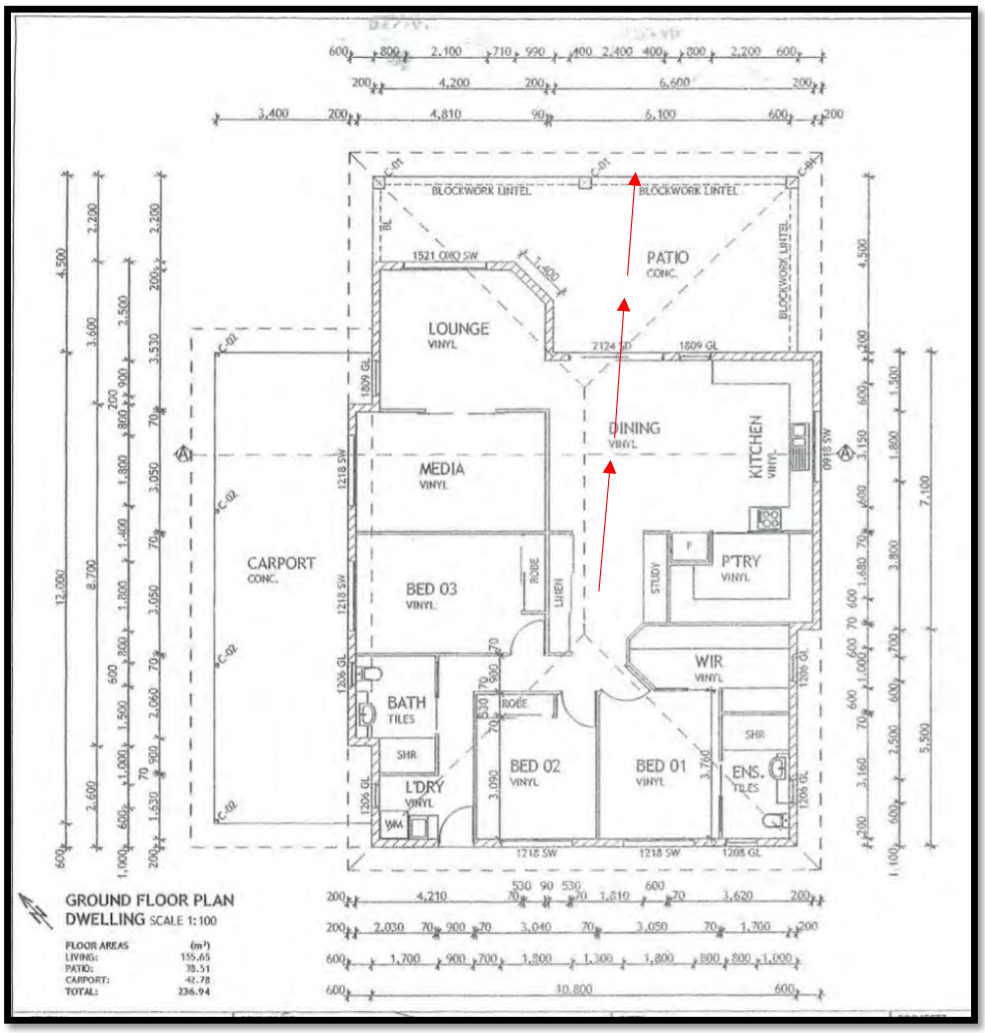
HOLIDAY HOME – FLOOR PLAN

PROPERTY ADDRESS: 49 Gloucester Avenue, Hydeaway Bay QLD



HOLIDAY HOME - FIRE EVACUTION ROUTE

PROPERTY ADDRESS: 49 Gloucester Avenue, Hydeaway Bay QLD



In the event of an emergency, please assemble in the street and

take any directions from Emergency Services

13.3.6 - 20220304 - Development Application for Material Change of Use (Short-Term Accommodation) - 42 Catherine Crescent, Jubilee Pocket - 63 RP747777

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Artiqua Harrison - Planner

AUTHORISING OFFICER: Neil McGaffin - Director Development Services

PRESENTED FOR: Decision

ATTACHMENTS

1. Draft Conditions of Approval [**13.3.6.1** - 2 pages]
2. Assessment Report [**13.3.6.2** - 4 pages]
3. Locality Plan [**13.3.6.3** - 1 page]
4. Zoning Map Catherine [**13.3.6.4** - 1 page]
5. Aerial Image [**13.3.6.5** - 1 page]
6. Street View [**13.3.6.6** - 1 page]
7. Proposal Plans [**13.3.6.7** - 11 pages]

PURPOSE

Development Applications requiring decisions which are outside the Council officer delegated authority require Council consideration.

OFFICER'S RECOMMENDATION

That Council approve the application for Material Change of Use (Short-term Accommodation), made by M Stokell & N Behar, on L: 63 RP: 747777 and located at 42 Catherine Crescent Jubilee Pocket, subject to the conditions outlined in Attachment 1.

BACKGROUND

There is no previous Council decision relating to this matter.

APPLICATION SUMMARY

The proposal is for Short-term Accommodation of an existing three (3) bedroom dwelling house located at 42 Catherine Crescent, Jubilee Pocket (63 RP747777).

The premises is zoned Low Density Residential, triggering an impact assessable development application. The applicant has provided all necessary information required by the Short-term Accommodation Guideline.

The development application attracted one (1) submission during the Public Notification period. All necessary information has been provided for assessment, which has demonstrated compliance with the relevant planning provisions. It is recommended the development application is given approval subject to reasonable and relevant conditions.

STATUTORY/COMPLIANCE MATTERS

Planning Act 2016
Whitsunday Regional Council Planning Scheme 2017

STRATEGIC IMPACTS

Process all statutory applications within statutory timeframes.

FINANCIAL IMPLICATIONS

N/A

CONSULTATION

Technical Officer Engineering Assessment

RISK ASSESSMENT

The decision may be appealed in the Planning & Environment Court of Queensland.

TIMINGS/DEADLINES

A decision is required by 15 August 2022.

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

Section 58 of the Human Rights Act 2019 specifies required conduct for public entities when acting or making a decision. Sections 15-37 of the Human Rights Act 2019 identifies the human rights a public entity must consider in making a decision. The human rights relevant to this decision are as follows:

- Section 19 – Freedom of movement.
- Section 21 – Freedom of expression.
- Section 24 – Right to own property and not be arbitrarily deprived of property.
- Section 27 – Cultural rights – generally – all persons with a particular cultural, religious, racial or linguistic background have the right to enjoy their culture, to declare and practice their religion and use their language.
- Section 28 – Cultural rights – Aboriginal peoples and Torres Strait Islander peoples.

This decision does not limit the above identified human rights.

1.0 ADMINISTRATION

1.1 The approved development must be completed and maintained generally in accordance with the approved drawings and documents:

Plan/Document Name	Prepared By	Plan Number	Dated
Site Plan	Applicant	N/A	N/A
Floor Plan & Elevation 1	Bill Cox Modular Homes	N/A	N/A
Floor Plan & Elevation 2	Bill Cox Modular Homes	N/A	N/A
Property Management Plan	Applicant	N/A	N/A
Code of Conduct	Applicant	N/A	N/A
Fire and Emergency Plan	Applicant	N/A	N/A

1.2 Where a discrepancy or conflict exists between the written conditions of this approval and the approved plans, the requirements of the written condition(s) will prevail.

1.3 All conditions of this approval must be complied with in full to Council's satisfaction prior to the commencement of the use.

1.4 The applicant shall demonstrate and provide evidence that compliance with all conditions of this development approval and any other subsequent development approvals as a result of this development approval have been complied with at the time of the commencement of the use.

2.0 BUILDING

2.1 The applicant is to upgrade fire and safety measures to the equivalent of a long-term rental property.

3.0 ACCESS AND PARKING

3.1 A minimum of three (3) car parking spaces must be provided on site prior to commencement of the use.

3.2 On-site parking spaces must be located entirely on the site, be safe and practical to use, and enable cars to enter and exit the site without endangering pedestrians or vehicles.

4.0 OPERATING PROCEDURES

4.1 Prior to commencement of the use, the applicant must advise Council of the name and contact details of the appointed local property manager who will manage the operations of the development.

4.2 The nominated property manager must sign and provide to Council, a Statutory Declaration affirming that at all times during the operation of the Short-term accommodation, the property manager will undertake the following actions:

a) Display a sign including the name of the property manager and their all-hours contact phone number. The sign is to be no larger than 0.3 square meter in sign face area, professionally made and weather-proof. For a unit, this sign can be displayed on the door of the unit. For a dwelling house, the sign must be displayed where it can be clearly read by the public.

b) Prior to the commencement of the use, inform in writing, the occupants of every neighbouring dwelling that the property has been approved for short-term accommodation and provide contact details including a 24-hour contact number.
c) Establish and maintain an accommodation register, recording names and contact details of all guests and duration of stay. The register must also include details of any complaints received and a copy of the signed acceptance of the Code of Conduct document. This register is to be provided to Council on request.
d) Prepare a Code of Conduct which must be provided to and agreed-to in writing by all adult guests prior to occupation. The Code of Conduct must include as a minimum:
    i. The maximum permitted number of overnight guests on any one day.
    ii. A set of 'good neighbour' rules, to prevent anti-social behaviour and excessive noise after 9pm, in accordance with Schedule 1 of Environmental Protection (Noise) Policy 2019.
    iii. Information for guests, including the 24-hour contact details of the nominated property manager, on-site carparking and waste bin arrangements.
    iv. Rules requiring eviction or forfeiture of money in the event of a significant breach of the Code of Conduct.
e) To meet and greet every guest prior to occupation (in person or electronically) to explain the Code of Conduct and other applicable rules.
f) To have two (2) 24-hour contact number that must be answered, not with a recorded message.
g) To attend to any complaint about anti-social guest behaviour reported to the contact number, within 20 minutes. Agent response may include attendance by a private security firm.
h) To immediately evict any guests whose behaviour repeatedly breaches the Code of Conduct.

4.3 A maximum of six (6) overnight guests (two guests per bedroom) will be permitted to stay in the dwelling at any one time.

5.0 ADVISORY NOTES

5.1 This Development Permit does not provide any explicit or implied confirmation that the premises meets the requirements of relevant fire safety legislation, building classification, body corporate rules or insurance policies. The applicant and/or operator of the Short-term Accommodation business is to conduct their own investigations and make the necessary applications and undertake required building modifications to meet their obligations under all relevant legislation

5.2 The applicant will lose any Owner/Occupier rating concession attached to a dwelling house or unit approved.

5.3 The applicant is to ensure that the Pool Safety Certificate for the premises is current and in compliance with legislation.

20220304 – DEVELOPMENT APPLICATION FOR MATERIAL CHANGE OF USE FOR SHORT-TERM ACCOMMODATION, 42 CATHERINE CRESCENT JUBILEE POCKET – M STOKELL & N BEHAR C/- WYNNE PLANNING AND DEVELOPMENT PTY LTD

ANALYSIS

Council has received the following Development Application, which has been assessed against the provisions of the relevant legislation as reported below.

1. Application Summary

Proposal:	Material Change of Use for Short-term Accommodation
Landowner	M Stokell & N Behar
Property Address:	42 Catherine Crescent Jubilee Pocket
Property Description:	L: 63 RP: 747777 T: N1388/38
Area of Site:	790
Planning Scheme Zone:	Low density residential
Level of assessment	Impact Assessable
Overlays:	Acid Sulfate Soils Overlay Bushfire Hazard Overlay
Existing Use:	Dwelling House
Existing Approvals:	Nil.
Public Notification:	2 June 2022 – 27 June 2022
Submissions received:	One (1)
State referrals:	Nil.
Infrastructure charges:	Nil.

2. Site Details

2.1. Location

42 Catherine Crescent, Jubilee Pocket / 63RP747777.

2.2. Zoning

Low Density Residential.

2.3. Site description – topography, vegetation, drainage

Flat and rectangular allotment, with an existing three (3) bedroom dwelling house, pool, and carport.

2.4. Access

Access is gained via a fully constructed driveway from Catherine Crescent.

2.5. Surrounding uses

North: Developed low density residential land (dwelling houses)
East: Developed low density residential land (dwelling houses)
South: Parkland (Council owned)

West: Developed low density residential land (dwelling houses)

3. Proposal Details

The proposal is for Short-term Accommodation of an existing three-bedroom dwelling house.

The site is connected to Council reticulated services.

The applicant has provided documentation demonstrating compliance with the Short-term Accommodation Guideline, being a Statutory Declaration, Code of Conduct, Property Management Plan and Fire and Evacuation Plan for the proposed use.

4. Planning Assessment

The application has been assessed against the relevant provisions of the *Planning Act, 2016* and the *Whitsunday Regional Council Planning Scheme, 2017.*
The proposal is generally in accordance with the Planning Scheme and is recommended for approval in accordance with the drawings and documents submitted, subject to reasonable and relevant conditions (Attachment 1).

4.1. State Assessment and Referral Agency (SARA)

The Application was referred to the following Agencies:
The Application did not require referral to any State Agencies.

4.2. State Planning Policy – July 2017

The State Planning Policy (SPP) includes interim development assessment requirements to ensure that State interests are appropriately considered by local government when assessing development applications where the local government Planning Scheme has not yet appropriately integrated all of the State's interests in the SPP. As the most recent SPP (July 2017) has not been reflected in the Whitsunday Regional Council Planning Scheme, Part B of the SPP confirms that it applies to the assessment of the development application.

4.3. Mackay Isaac and Whitsunday Regional Plan – February 2012

The Mackay, Isaac and Whitsunday Regional Plan was established to provide the vision and direction for the region to 2031. The plan provides certainty about where the region is heading in the future and provides the framework to respond to the challenges and opportunities which may arise. The proposal is generally consistent with the provisions of the plan.

4.4. Whitsunday Regional Council Planning Scheme, 2017

4.4.1. Strategic Framework

The proposal complies with the relevant provisions of the Strategic Framework.

4.4.2. Strategic Intent

The proposal complies with the relevant provisions of the Strategic Intent.

4.4.3. Overlay Codes

Overlay codes have already been assessed at subdivision and building works stage.

4.4.1. Low Density Residential Zone Code

The proposal is an Impact Assessable use in the Low Density Residential Zone. The proposal generally complies with the relevant Overall Outcomes of the Low Density Residential Zone Code and can be conditioned appropriately to be compatible with the prevailing residential character and amenity of the locality.

4.4.2. Development Codes

4.4.2.1. Short-term Accommodation Guideline

- Site plan provided.
- Property Management Plan provided.
- Code of Conduct provided.
- Fire and emergency plan provided.
- Statutory declaration has been provided.
- The site provides three carparking spaces as required by the Short-term Accommodation Guideline. The property has a double carport and sufficient room to park additional cars in tandem on the driveway (refer to aerial image).

5. Public Submissions

The development application was placed on public notification between 02/06/2022 and 27/06/2022 in accordance with the relevant provisions of the Planning Act 2016. The Notice of Compliance was received on 28 June 2022. One (1) submission was received during this period of Public Notification.

Submissions have been received and summarised in the below table:

Issue	**Comment/Condition Number**
1. Potential impacts on amenity from unsafe and irresponsible behaviour of guests and potential for parties.	The applicant has provided a signed Statutory Declaration declaring that the property will not be used or operated as a 'Party House'. If approved, the applicant will be conditioned to have a Code of Conduct for the operational use of the development that includes the prevention of excessive noise after 9pm, in accordance with Schedule 1 or Environmental Protection (noise) Policy 2019. Compliance actions will be taken against the premises if found to have breached any conditions of the development permit.
2. Noise emitting from pets and guests.	If approved, the applicant will be conditioned to have a Code of Conduct for the operational use of the development that includes the prevention of excessive noise after 9pm,

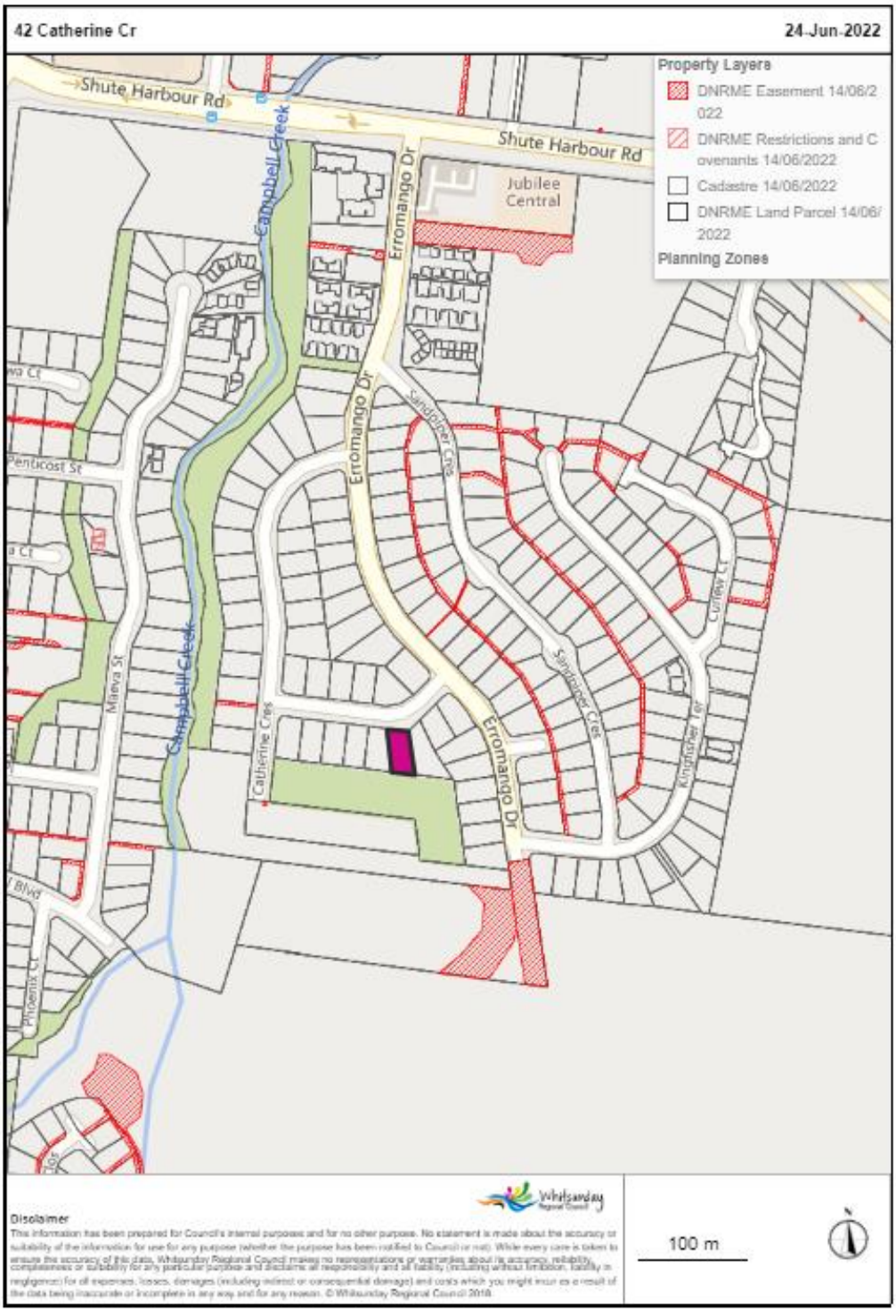
	in accordance with Schedule 1 or Environmental Protection (noise) Policy 2019. Compliance actions will be taken against the premises if found to have breached any conditions of the development permit. It is noted that the property management plan provided with the application states that pets must not be left unattended. If noise complaints are received and the pet cannot be quietened, guests will be required to remove the animal from the property.
3. Excess rubbish	The property management plan will ensure that guests are advised of rubbish collection arrangements and responsibilities during their stay.
4. Parking of campervans, caravans and trailers on the street creating potential traffic nuisance.	The dwelling has 2 carport spaces and additional spaces in the driveway. This is sufficient for the number of persons permitted within the dwelling. The property management plan will ensure that guests are advised where to park in advance and during the stay.

6. Infrastructure Charges

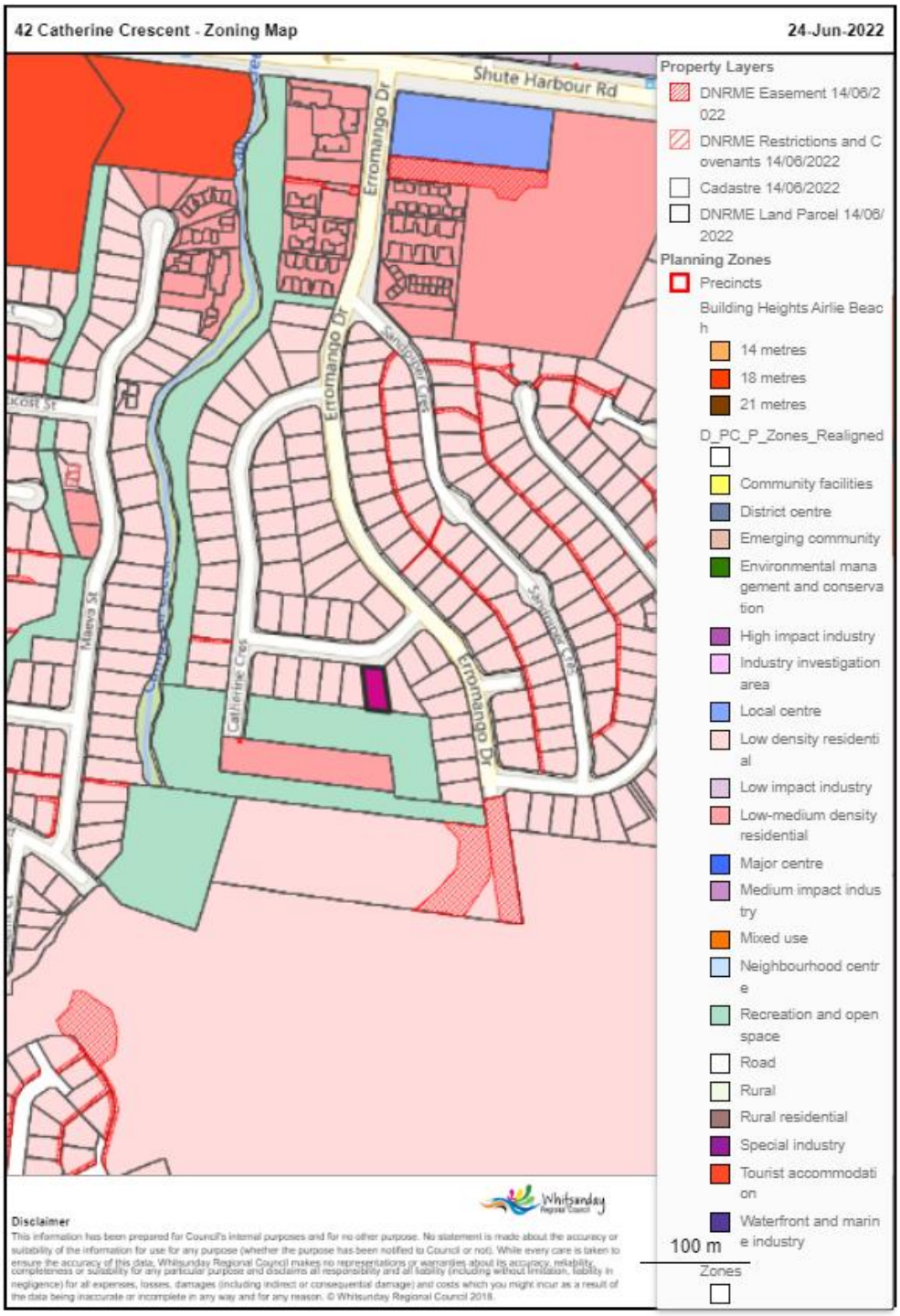
6.1. Adopted Infrastructure Charges Resolution

The development does not attract an infrastructure charge.

Attachment 13.3.6.3 Locality Plan



Attachment 13.3.6.4 Zoning Map Catherine



Aerial Image

42 Catherine Crescent, Jubilee Pocket

20°17'10"S 148°43'55"E 20°17'10"S 148°43'57"E

20°17'12"S 148°43'55"E 20°17'12"S 148°43'57"E

A product of Queensland Globe

Legend located on next page

N

0 10 metres

Scale: 1:363

Printed at: A4

Print date: 24/6/2022

Projection: Web Mercator EPSG 102100 (3857)

For more information, visit https://qldglobe.information.qld.gov.au/help-info/Contact-us.html

Queensland Government
Department of Resources

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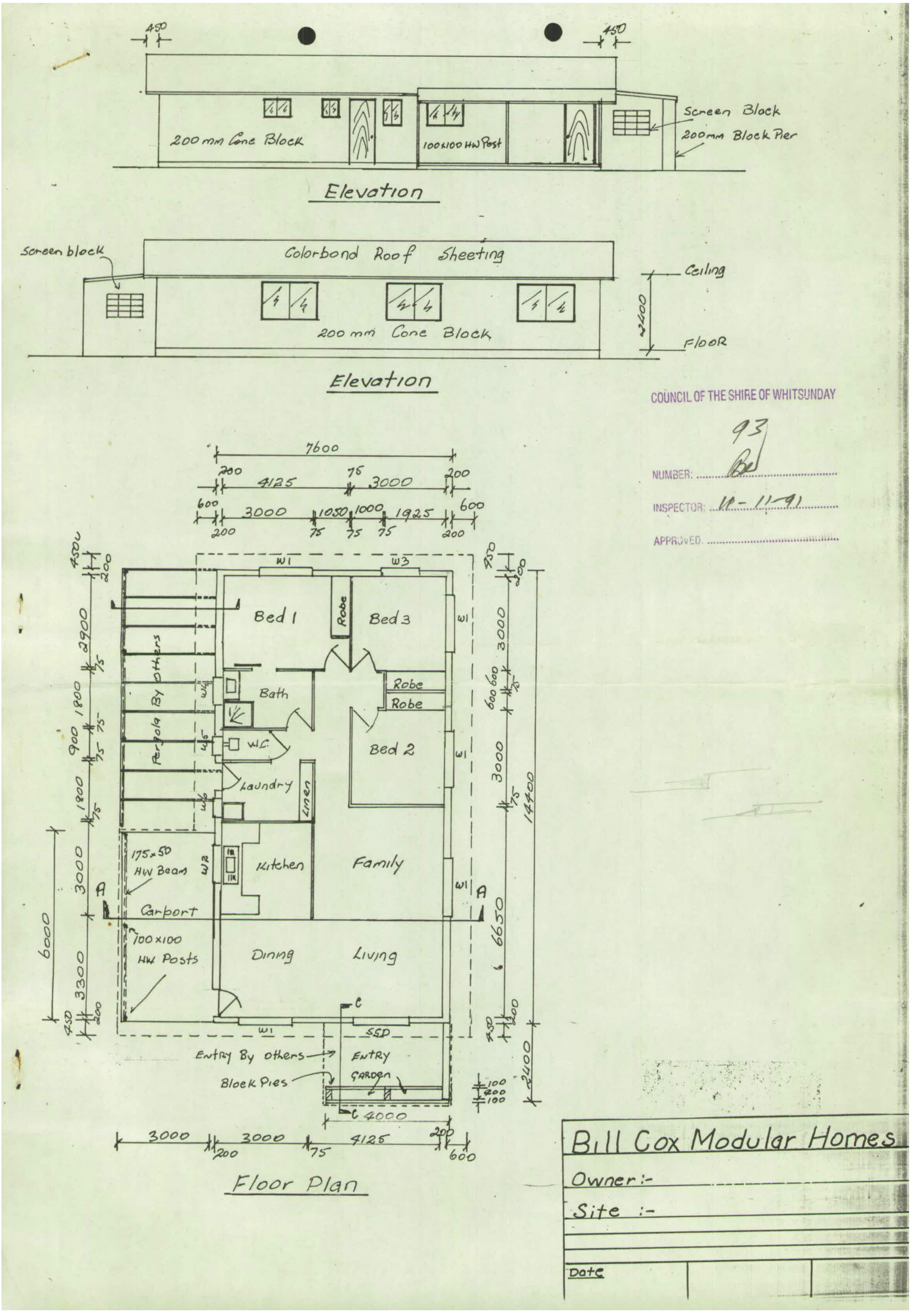
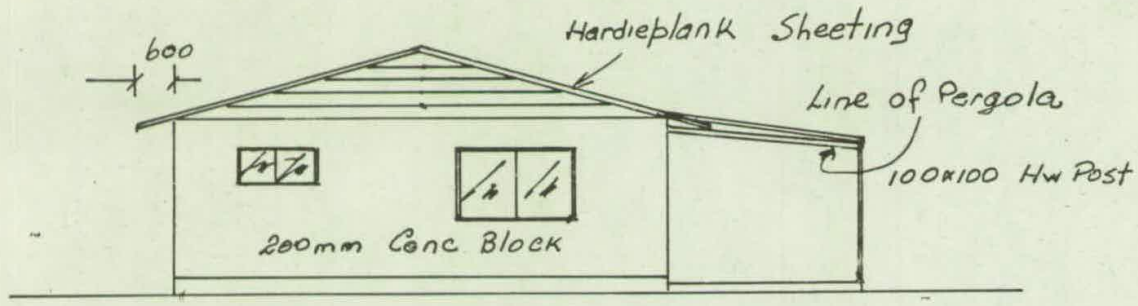
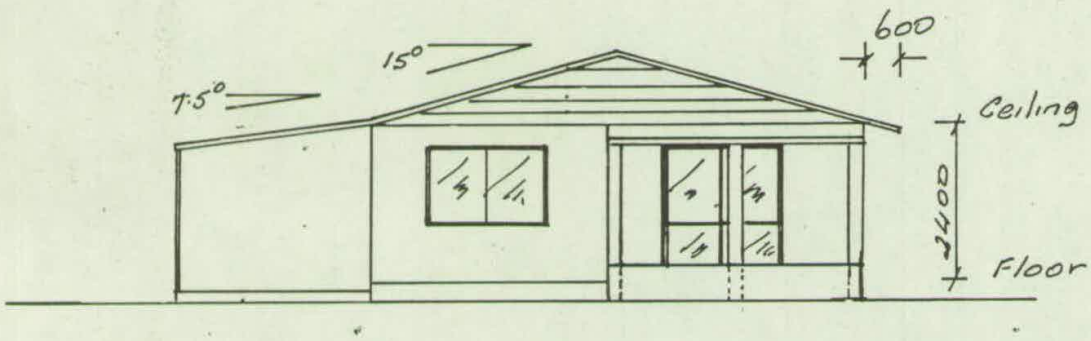
Attachment 13.3.6.6 Street View

HOLIDAY HOME – SITE PLAN

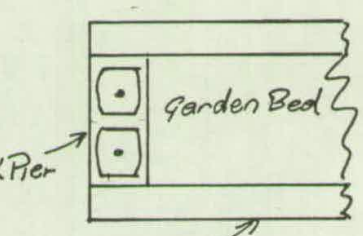

450
450
Screen Block
200mm Block Pier
200 mm Cone Block
100x100 HW Post
Elevation
Screen block
Colorbond Roof Sheeting
Ceiling
2400
FLOOR
200 mm Cone Block
Elevation
COUNCIL OF THE SHIRE OF WHITSUNDAY
93
NUMBER:
INSPECTOR: 10-11-91
APPROVED:
7600
200
4125
75
3000
200
600
3000
1050
1000
1925
600
W1
W3
Bed 1
Robe
Bed 3
Robe
Robe
Bath
W.I.C.
Bed 2
Laundry
Linen
Pergola By others
175x50 HW Beams
Kitchen
Family
Carport
100x100 HW Posts
Dining
Living
Entry By others
Block Piers
ENTRY
GARDEN
SSD
14400
6650
3300
2900
1800
900
3000
4000
Floor Plan
Bill Cox Modular Homes
Owner :-
Site :-
Date



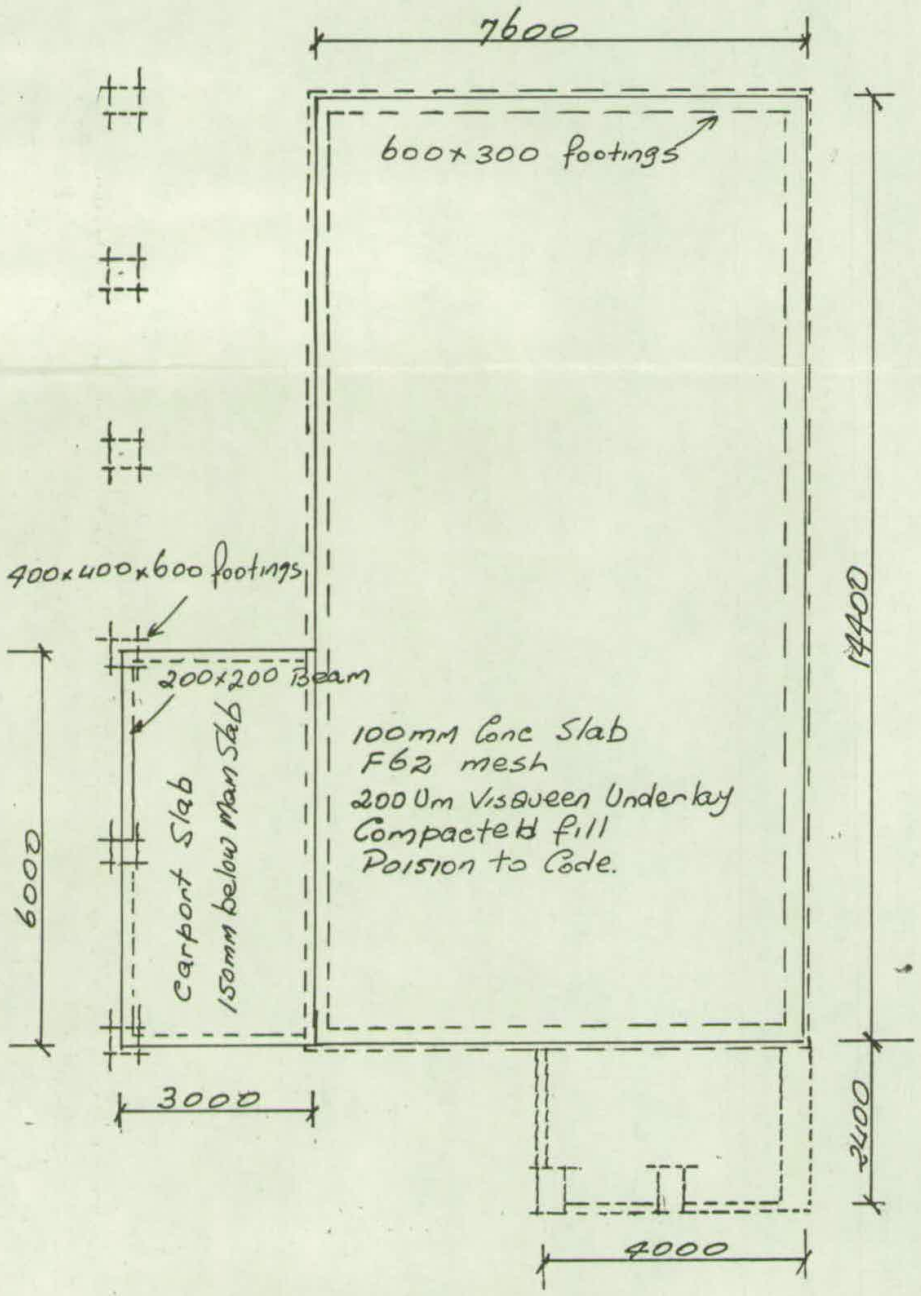
Rear Elevation



Front Elevation



Garden Bed Detail



Bill Cox Modular Homes		
Owner :-		
Site :-		
Date		

HOLIDAY HOME - PROPERTY MANAGEMENT PLAN

PROPERTY ADDRESS: **42 Catherine Crescent, Jubilee Pocket**

PROPERTY MANAGER DETAILS:

Name: Accom Whitsunday

Address: 1/230 Shute Harbour Road, Cannonvale 4802

Telephone Number:1800 466 600

Email: properties@accomwhitsunday.com.au

The nominated Property Manager will:

- Have day-to-day management of the holiday home;
- Specifically respond to complaints pertaining to guest behaviour made before 1am within a reasonable timeframe;
- In relation to any other complaints, respond within a reasonable timeframe but within 24 hours.

DETAILS OF RESERVATIONS ARRANGEMENTS:

- ✓ Internet: Online channels such as Airbnb, Booking.com, Expedia as well as the company website www.accomwhitsunday.com.au
- ✓ Property Manager
- ✓ Other

DUTIES OF PROPERTY MANAGER

- Supply, readily visible in the kitchen or living area of the home, the Code of Conduct, the Property Management Plan and the Fire and Emergency Plan;
- Liaise with tenants for the occupancy and vacation of the premises;
- Ensure the correct maximum number of people are staying overnight in accordance with planning approval conditions;
- Ensure guests are aware of the Code of Conduct;
- Ensure guests are aware of the Fire and Emergency Plan;
- Ensure the premises are clean and maintained to a high standard;
- Ensure bed linen is clean and replaced upon tenant vacation; and
- Ensure rubbish and recycling bins are put out and collected by guests as required.

HOLIDAY HOME - CODE OF CONDUCT

Guests are agreeing to these terms and conditions when a booking is confirmed and payment is made, regardless of the booking platform used to complete the booking. Any breach of these Holiday Letting terms and conditions, as agreed by both parties, permits the owner or Accom Whitsunday to refuse entry, amend the rent or immediately terminate the letting.

License Not a Tenancy

The booking with Accom Whitsunday is not a residential tenancy agreement under residential tenancy legislations. Failure to comply with any of the guest's fundamental obligations and the terms and conditions of the property may result in immediate termination and eviction. Refunds will not be paid on terminated occupancies.

Number of Persons, Noise, Parties and Functions

Properties are for guests only. No outside guests are permitted on the premises without pre-arrangement from Accom Whitsunday Management. The number of occupants must not exceed the number of persons shown on your confirmation. Any increase in numbers must be agreed in advance and may incur additional fees. Guests numbers are limited to a maximum of 8, or two (2) persons per room, whichever is lower.

The property may not operate as a ‘party house’. Excessive noise, parties and functions are not permitted as they can cause disruption to neighbours as well as nearby residents and other holiday makers. If an unauthorised function is held at the property the bond processed for the booking will be retained and additional fees to cover the standard function fee may apply.

Outdoor entertaining should not take place after 9pm to reduce noise disturbance to neighbours.

Inappropriate Bookings, Schoolies, Functions, Hens and Bucks Groups

There are a select few properties where functions are permitted however permission must be granted for any booking and additional function fees apply. A bond will be required for these properties. Accom Whitsunday does not permit Hens or Bucks groups in any of its properties. Accom Whitsunday reserves the right to refuse/cancel any bookings that are determined to be inappropriate or that fall across Schoolies dates or are suspected Hens or Bucks bookings. This may result in loss of deposit.

Check in/Check out - Whitsunday Coast

Check in is available from 2pm on the day of arrival. Check out is 10am on the day of departure.

Accom Whitsunday will try to accommodate requests for early check in/late check out however they are subject to availability (i.e. other bookings in place, cleaners available to accommodate the request, maintenance schedule) and fees may apply. Despite any early applications, approval will only be granted 1-2 days prior to entry/departure, if available. Early requests do not guarantee early access/late checkout unless a full day’s rate is paid.

Guests are required to contact the Accom Whitsunday office 1-2 working days prior to the date of the early check in/late check out to make final arrangements which will be recorded in the booking details.

Keys

Guests will be provided with details of the key location and/or property lockbox access codes via email approximately 30 minutes prior to check in (2pm), provided full payment has been made and the guest agreement form has been completed. Guests are requested to take this access information with them in order to access the property.

Deposit

A deposit of 30% of total rent is required at time of booking. Final payment is due 30 days prior to arrival. If the booking is made within 30 days of arrival, full payment will be required at the time of booking. Please note that Visa/Mastercard payments will incur a 1% credit card fee.

Booking Fee

A $20.00 non-refundable booking fee will be applied to all bookings. Please note that Visa/Mastercard payments will incur a 1% credit card fee.

Cancellation

Cancellations within 30 days of arrival will result in 100% loss of all monies paid. All cancellations prior to 30 days of arrival will result in loss of 30% deposit. Please note that all credit card fees are non-refundable at any stage.

If final payment is not received within 30 days of arrival, the booking will automatically be cancelled and result in loss of deposit.

Date Changes

Date changes are only possible at the discretion of Accom Whitsunday and may incur cancellation fees as well as rent charges (against the original booking). Any additional rent charges due to changes in season will apply.

Changes Made by Accom Whitsunday

All bookings are made in good faith of ongoing holiday letting by owners; however, may be subject to change and Accom Whitsunday cannot accept responsibility for actions taken by the owner(s) of the property which are outside its control. In this case, a full refund will be given and the opportunity to re-book alternative accommodation provided. Accom Whitsunday is not responsible for providing alternative accommodation and will not be held liable for any additional costs that may occur.

Event Beyond Control

Accom Whitsunday is not responsible for any loss arising out of any occurrences or conditions beyond its control, including but not limited to acts of terrorism, acts of God, defects in vehicles (e.g. golf buggies, and any other private vehicles included in stay), theft, delay, cancellation, civil disorder, disaster, government regulations or changes in itinerary or schedule.

Travel Insurance

Accom Whitsunday will accept no liability in the event of a cancellation due to weather conditions (e.g. excessive rain and flooding, cyclones, etc.). We strongly recommend that you purchase Travel Insurance to cover unforeseen circumstances and include cover for involuntary cancellation of your accommodation.

Property Presentation

The description of the premises is given in good faith. From time to time, changes occur at properties, sometimes by owners and outside of Accom Whitsunday's control or knowledge, therefore no responsibility for irregularities will be accepted.

Many of Accom Whitsunday's properties are located in regional locations where, from time to time, there may be building / construction on houses within the nearby vicinity of the property booked. Accom Whitsunday takes no responsibility for any issues relating to noise on neighbouring properties.

Indemnity

Guests actions, conduct and safety are the responsibility of the guests. The agent and owner(s) of this property do not condone: unsafe, irresponsible or illegal actions/behaviour etc. on or off the premises, during a stay or at any other time.

A condition of entering and/or staying at this property means that all guests understand and agree to indemnify the agent and owner(s) against any responsibility or action(s) (legal or other), due to any action(s), incident(s), loss or injury(s) while within or outside of the premises (including, but not limited to, the grounds, facilities, structures, etc.) during a stay or at any other time.

Lost Keys/Keys Locked Inside

If guests lose keys or lock keys inside the property then that guest will be responsible for any charges incurred by a locksmith. During business hours this should be reported to Accom Whitsunday; any afterhours call outs will need to be organised by the guest and any expenses will be the guest's responsibility. If replacement keys need to be cut, key barrels need to be replaced, or in secure complexes re-keying is required, costs will be calculated based accordingly and charged to the guest.

If there is a keys lockbox at the property, please use it to secure one set of keys at all times when you leave the property, including when you check out. If a tradesman needs to attend to any requested or agreed maintenance during your stay, this will ensure they can access the property.

Linen

Linen and bath towels are provided with each property (one bath towel per person).

Most properties also provide pool towels, please clarify with agent before arrival. If the property does not supply pool towels you will be required to supply your own. Our properties are self-contained holiday homes, so please note linen will not be changed throughout your stay. You are welcome to use the laundry facilities at the property during your stay.

No Smoking

For the comfort of all our guests, our properties are strictly non-smoking. Any damages caused by smoking on or inside the premises will be charged to the guest upon check out.

Excess Cleaning

Accom Whitsunday requests guests to leave the property as it was found to avoid extra cleaning charges. This includes washing dishes, placement of rubbish in the bins provided and cleaning of the BBQ. In the event that linen/towels are stained or excessively soiled, a charge to replace these items will occur.

Damages

In the event of breakages, damages and lost items, Accom Whitsunday requests that guests contact their office to report the incident as soon as possible. Any unreported damages will be identified by cleaners or Accom Whitsunday. Damages may be charged to the guest.

Movement of Items Within/Between Properties

Accom Whitsunday has a strict policy on moving items or furniture (indoor and/or outdoor) within a property, or in the case of bookings across multiple properties, from house to house. Movements may cause unnecessary damage to items and the property itself and can cause excess cleaning time due to complex housekeeping inventory checks. If you have a large booking where extra items are required (and a function is approved), Accom Whitsunday can supply you with hire company contact information. Any damages/excess cleaning caused by movement of items or furniture will be charged upon check out.

Internet

Some properties provide wireless internet for guests for the purpose of email, perusing social media, and web browsing. It is not provided for video streaming or downloading e.g. movies/shows. Excess usage may be charged to guest. If WIFI is affected due to power outages or technical issues by the internet provider, compensation will not be provided and Accom Whitsunday will not be responsible for providing alternative internet sources. If a property is not advertised with WIFI then it is unavailable for the stay and is not an optional extra.

Rubbish Collection and Excess Rubbish

Accom Whitsunday requests guests put all rubbish in the appropriate bins provided outside no later than the night before collection (indicated in the property compendium). Please ensure the rubbish is put out at a reasonable hour so as not to cause noise and disrupt the neighbourhood (e.g. with recycling bottles). The bin lids must be able to close for the collection.

If the bins are not put out or if there is excess rubbish upon check out, a private contractor will be organised to empty the bins and expenses will be charged to the guest.

Parking

Each property listing available on the relevant Accom Whitsunday website outlines the number of off-street parks available and number of cars permitted at the property. On-street parking is not provided or guaranteed for guests or visitors. Accom Whitsunday cannot be held responsible or liable for any fines or penalties incurred by guests or visitors from parking on the street (where local parking restrictions/metered parking applies).

Parking campervans, caravans and trailers (with or without boats) on a residential street at a holiday home is not permitted under any circumstances. Guests will be required to remove any campervans, caravans or trailers. If a guest fails to comply, the item may be towed away at the guests expense. Any boat parking will be clearly advertised on individual property listings on our website. The violation of terms and conditions may also result in guest eviction and loss of rent.

Personal and Lost Property

No responsibility will be taken by Accom Whitsunday for guests personal property. If items are left at a property it is the guest's responsibility to notify Accom Whitsunday within 24 hours notice of check out. If during this time the cleaners have reported the item/s then this/they may be returned to guest via post/mail at guest expense. If left items are not reported within 24 hours then they will be disposed of. Any heavily soiled items or undergarments will be disposed of immediately.

Animals and Pets

Pets are only permitted at pet-friendly properties and only if pre-arranged with and approved by Accom Whitsunday. A bond will be required for such properties. Pet-friendly terms and conditions must be agreed to, and any damages caused will be deducted by bond. This permission is provided on a case-by-case basis and is subject to the following terms and conditions.

All pets are to remain outside, however small and toy breeds may be allowed inside following specific approval. Guests must ensure their dog:

Is groomed to avoid moulting and is cleaned prior to entering the house to avoid marks to the property
Has had up to date worming, flea treatments, vaccinations
Has had nails trimmed to avoid scratches to the floors and furnishings
Does not jump up on beds, furniture or rugs (indoors or outdoors)
Is not left unattended as excessive barking may result in complaints from neighbours. If noise complaints are received and the pet cannot be quietened, guests will be required to remove the dog from the property at their own expense.
Additional cleaning charges may apply should pet hair, urine, fleas or any evidence (including smell) of the pet be left behind when guests leave. It is advised for pets to wear tick/flea collars to avoid bringing or picking up ticks/fleas to/from the area.

Accom Whitsunday accepts no responsibility for death of, loss of, injury or sickness to pets during the accommodation period - full and sole responsibility for the pet and its actions lie with the pet owner and upon acceptance of terms and conditions the guest agrees that no legal action (including payment of veterinary accounts) will be taken against the landlord and that no discussion will be entered into. Please be aware that some properties have not been designed to be pet-friendly.

Maintenance

In the event of faults and or malfunctions of appliances, fixtures or inclusions, there is no obligation from the owner or agent for compensation or discount. In such circumstances, the agent will undertake best endeavours to repair or replace the item (subject to availability). It is the guest's responsibility to report faults or malfunctions to the agent immediately should this occur throughout the stay.

Accom Whitsunday reserves the right to further charge your provided credit card to recover reasonable costs for damage of the property and/or its furnishings during your stay.

- After-hours key lock-out (at cost)
- Cleaning/and or putting away of crockery, cutlery pots, pans etc. (at cost)
- Replacement of lost keys, remote controls (at cost)
- Removal of excess garbage, boxes, bottles etc. (at cost)
- Damages/breakages to the above property (at cost)
- $50.00 cleaning fee for unclean BBQs
- Any other incidental charges that may be incurred as per our Terms and Conditions, which shall be deemed to form part of this agreement

The remaining balance will automatically be debited from your provided credit card 30 days prior to your arrival. We will email a receipt together with further information on the holiday property you have selected (including arrival details).

HOLIDAY HOME - FIRE AND EMERGENCY PLAN

PROPERTY ADDRESS: 42 Catherine Crescent, Jubilee Pocket

EMERGENCY CONTACT DETAILS

FOR ALL EMERGENCIES DIAL 000

Property Manager: Accom Whitsunday

Whitsunday Police: 4948 8888

Whitsunday Regional Council: 4945 0200

Proserpine Hospital: 4813 9400

DIASTER MANAGEMENT INFORMATION

DISASTER MANAGEMENT

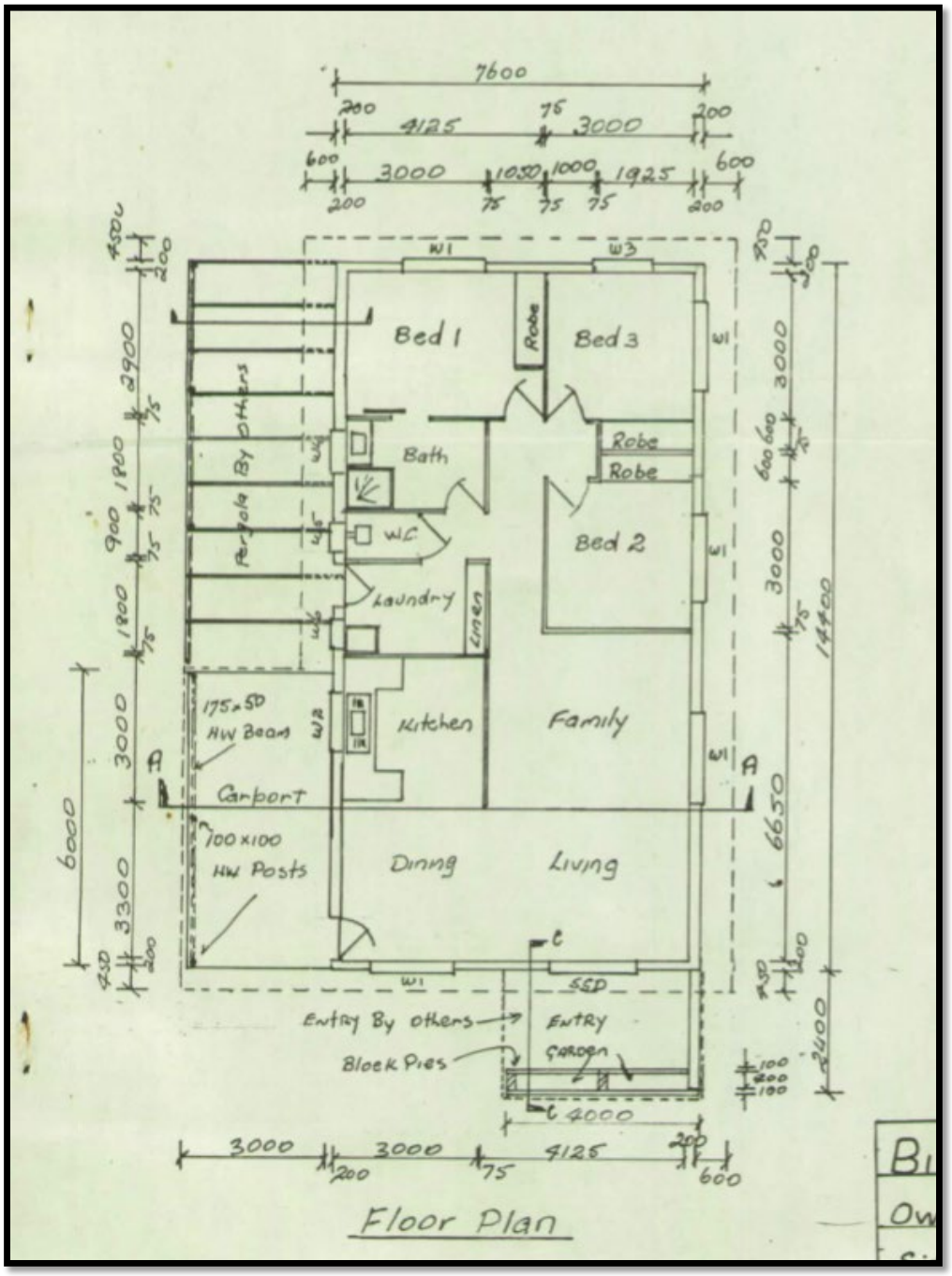
The Whitsunday Disaster Coordination Centre number is **1300 972 006.**

This number is only operational when the Centre has been officially opened by the Whitsunday Disaster Management Group. Whitsunday Regional Council will advise the public when this has occurred.

For the most up to date information in a disaster event 'Like' the Whitsunday Disaster and Emergency Information Facebook page

Other important disaster information can be found by navigating the left hand menu on Council's webpage at https://www.whitsunday.qld.gov.au/140/Disaster-Management

HOLIDAY HOME - FIRE EVACUTION ROUTE



13.3.7 - Development Services Monthly Report - June 2022

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Tamara Dansie - Administration Coordinator Development Services

AUTHORISING OFFICER: Neil McGaffin - Director Development Services

PRESENTED FOR: Information

ATTACHMENTS

1. Development Services Monthly Report - June 2022 [**13.3.7.1** - 16 pages]

PURPOSE

This report presents information relating to the operations of the Development Services Directorate for the month of June 2022.

OFFICER'S RECOMMENDATION

That Council receives the Development Services Monthly Report for June 2022.

BACKGROUND

The Development Services Directorate has a vision of a prosperous, liveable and sustainable Whitsundays.

The Directorates purpose is to lead the delivery of economic, social and environmental outcomes for the Whitsundays through services in partnership with stakeholders.

The Directorates vision is delivered by bringing together the functions of Strategic Planning, Development Assessment, Building and Plumbing Assessment and Compliance.

DISCUSSION/CURRENT ISSUE

See Attachment 1 – Development Services Monthly Report.

STATUTORY/COMPLIANCE MATTERS

N/A

STRATEGIC IMPACTS

Monitor development and land use to ensure compliance with statutory requirements and development conditions.
Develop and maintain a local government infrastructure plan that aligns with Council's Asset Management Plans and long-term Financial Forecast in compliance with State Interests.
Provide a consistent and transparent strategic framework and direction for the development industry and community.

FINANCIAL IMPLICATIONS

N/A

CONSULTATION/ENGAGEMENT

Manager Strategic Planning
Manager Development Assessment
Team Leader Plumbing Services

RISK ASSESSMENT

Regular reporting on the Directorate's progress and achievements ensures accountability and fosters a positive culture.

TIMINGS/DEADLINES

N/A

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

No

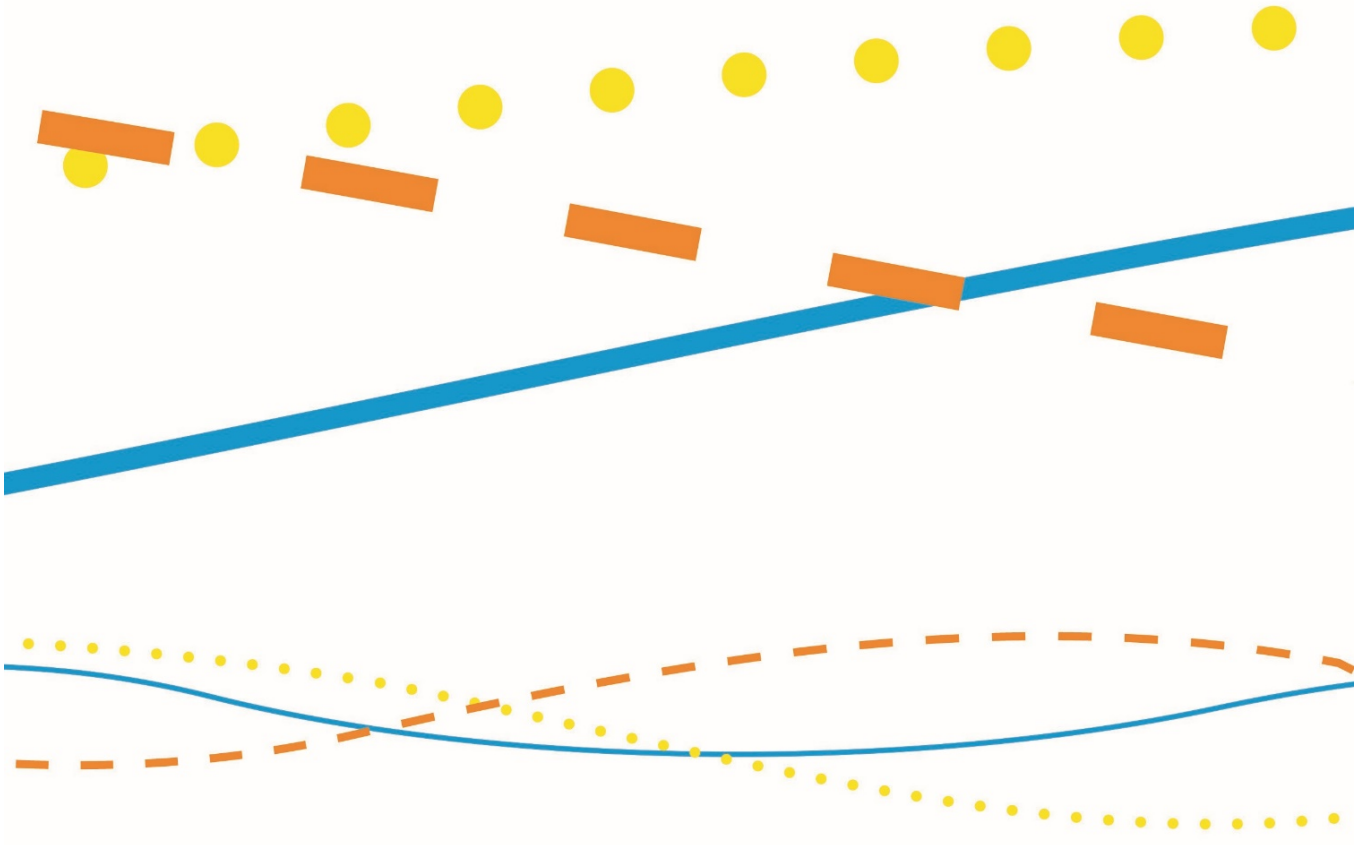
ALTERNATIVES CONSIDERED

N/A

Whitsunday Regional Council

Development Services Monthly Report

Strategic Planning
Development Assessment
Building, Plumbing & Compliance



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Directors Report

STRATEGIC PLANNING

Council was briefed on the early consultation of potential changes to the Planning Scheme to support Housing Affordability initiatives. The Community Engagement Plan for the Whitsunday Open Space Strategy and Development Manual Amendment was also presented prior to public consultation. Council was also updated on the current social and affordable housing reforms, presented in collaboration with the Economic Development team.

A letter of support for the Local Government Infrastructure Plan, subject to one condition, was received from the Department of Transport and Main Roads (TMR). Follow up meetings with TMR to discuss the condition have continued through June.

The Whitsunday Planning Scheme Major Amendment was originally submitted to the State for State Interest Review on 29 March 2021 and was resubmitted for Ministerial approval to undertake community consultation on 17 February 2022, Council is still awaiting approval.

The Proserpine to Airlie Beach Growth Study; Proserpine to Airlie Beach Structure Plan and Heritage Placecard updates will also be advertised concurrently with the Major Amendment.

DEVELOPMENT ASSESSMENT

The first 6 months of 2022 has seen a record number of applications lodged at 154, outpacing the previous 5-year average by 50 applications. The increase during the back half of 2021 which as carried into 2022 shows a surge in development within the area and confidence returning in the real estate market. A significant rise in the number of subdivision applications has also been observed with 40 applications lodged in the first half of 2022. Council is on track to outdo the next highest performing year of 2017 where 62 applications were received in that calendar year.

A reduction in operational works applications has been noted, with rising costs in the construction sector likely holding back some developments. Despite these headwinds a number of large developments have commenced constructions in 2022 including Valley Drive Estate, Mandara Rise and Airlie Summit.

In mid-June Council farewelled the Manager of Development Assessment, Doug Mackay who has retired after leading the Development Assessment Team for six years. We thank Doug for all his hard work and dedication and wish him the best in retirement. The recruitment process is underway with a new appointment to the position expected to be made in early July.

BUILDING, PLUMBING & COMPLIANCE

Building

Building within the region remains strong with a large focus on dwellings, domestic sheds and swimming pools. The number of Building Applications lodged by Private Certifiers this month remains consistent.

Plumbing

The number of applications and inspections completed continue to reflect the Regions active building market. Of note, a Plumbing permit was recently issued for the next stage of renovations at Reef View on Hamilton Island.

Compliance

Complaints and concerns received tend to fluctuate depending on multiple contributing factors. As the wet weather continues, the complaints and concerns received regarding storm water runoff rise expectedly. When complaints increase, it has significant impacts on the time and resources required from the department to ensure matters are prioritised and actioned within appropriate time frames.

Strategic Planning

The Strategic Planning Branch is responsible for developing and maintaining land use and infrastructure plans and policies, such as the Planning Scheme, as well as reviewing various planning related State planning instruments and legislation, including the Mackay, Isaac, Whitsunday Region Plan.

Operational Activities

The Strategic Planning Branch is undertaking several projects, including;

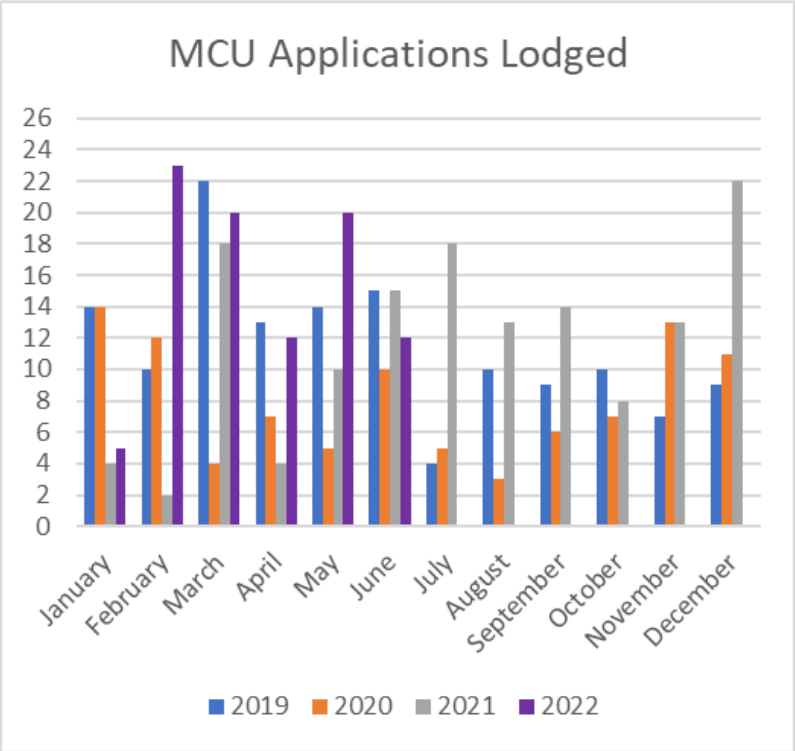
- Completion of State Interest Review of the Proposed Major Amendment of the Planning Scheme;
- State approval of the Airlie Beach Land Management Plan;
- Consult on the Local Heritage Register Review;
- Brief Council on the LGIP V2 Amendment;
- Brief Council on the Open Space Strategy & prepare Open Space Standards (Development Manual);
- Consult on the Affordable Housing Strategy;
- Implementation of Town Master Plan Projects;
- On-going Strategic Referrals for Development Assessment; and
- On-going assessment of Façade Improvement Policy Applications.

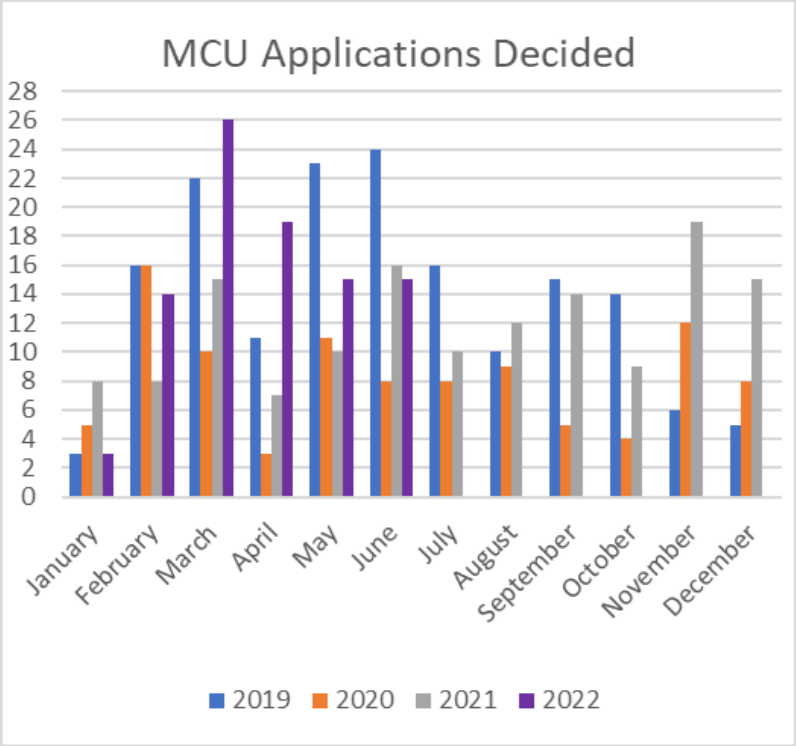
Development Assessment

The Development Assessment Unit is responsible for assessing development applications, reviewing referrals for state land, environmental impact statements and other material for coordinated projects, activities, preparing planning and development certificates and inspecting developments for compliance with development approvals and other planning requirements.

Development Statistics

JUNE 2022




MCU Applications Decided
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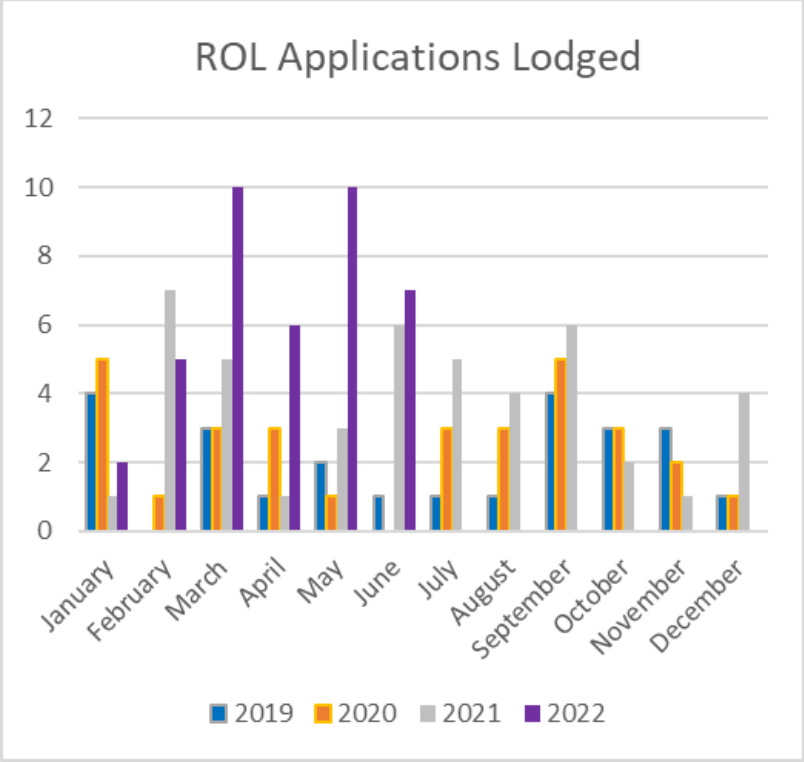
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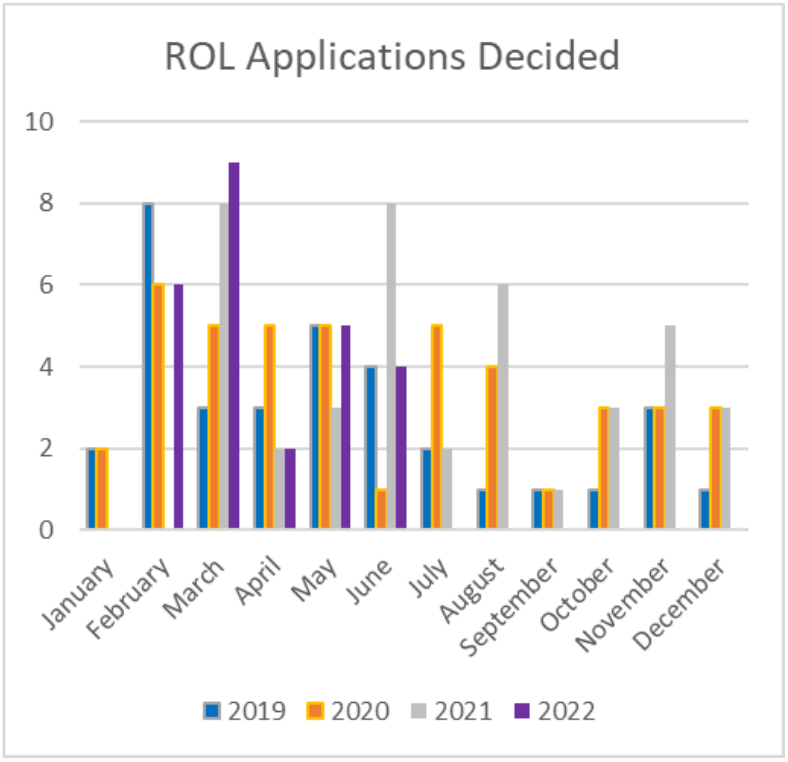
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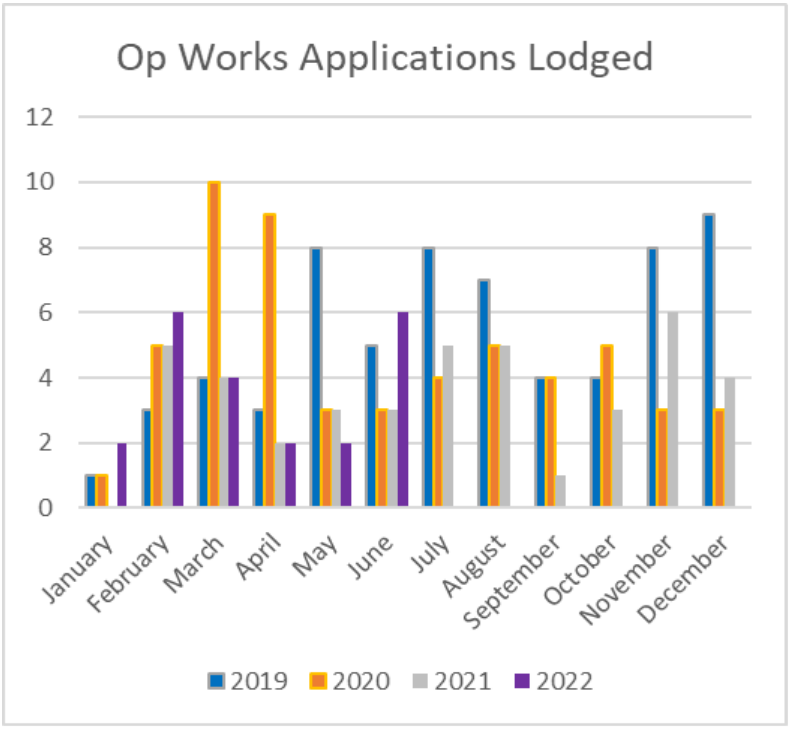
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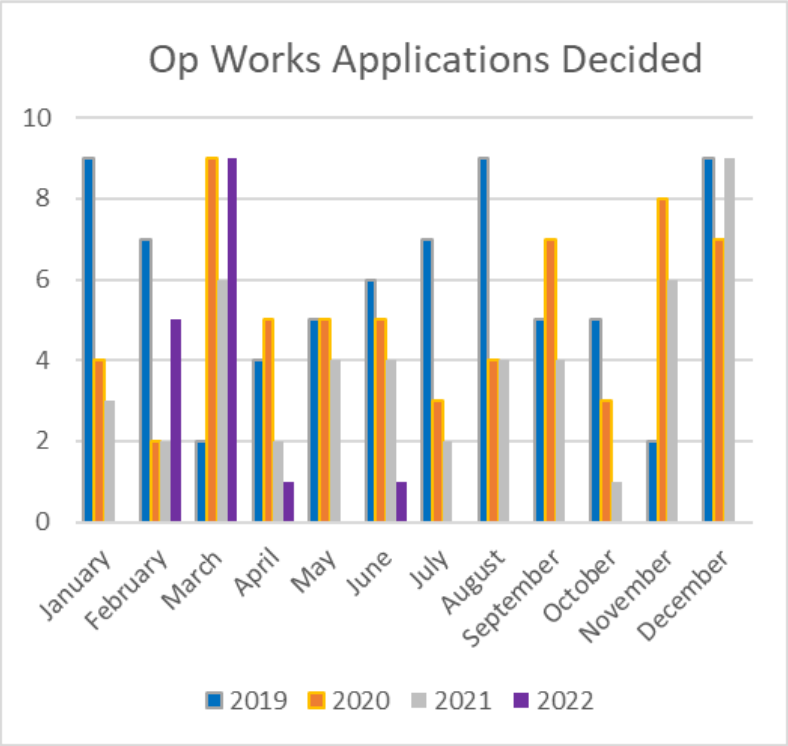
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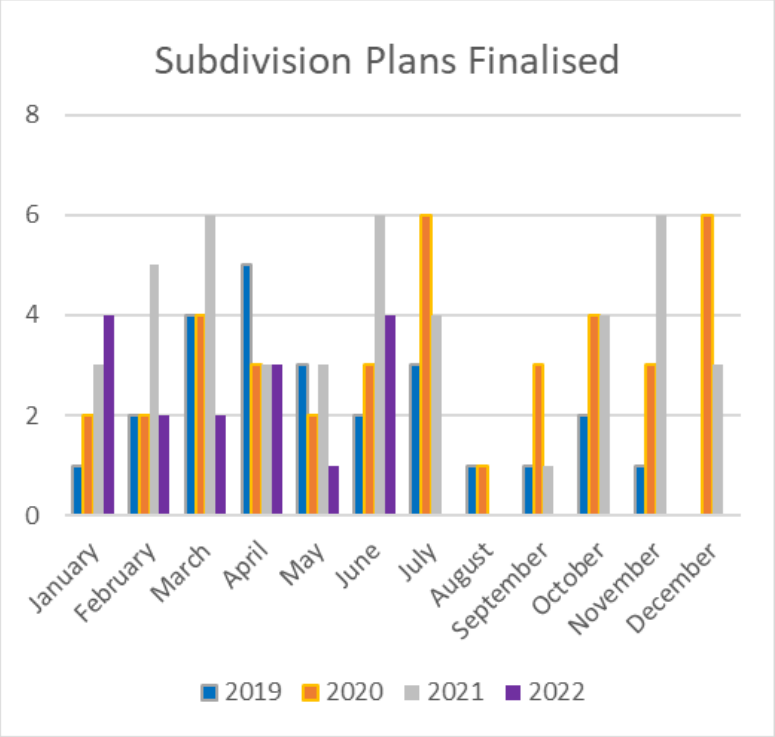
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Summary of Applications Approved Under Delegated Authority 25 May 2022 - 27 June 2022

Application #	Applicant & Location	Approval Details
20040153	The Trust Company (PTAL) Limited 14 Mt Whitsunday Drive, Airlie Beach	Development Permit for Generally in Accordance with Development Approval
20220109	I J Skinner 7 Pleasant Drive, Cannonvale	Development Permit for Material Change of Use - Dwelling House (Siting Variation)
20220468	N F Leppard 20 Mosswood Court, Cannon Valley	Development Permit for Material Change of Use - Dwelling House, Shed & Retaining Wall (Siting Variation)
20220300	M A Sverdloff 1 Braithwaite Court, Woodwark	Development Permit for Material Change of Use - Dwelling House (Secondary Dwelling)
20220340	C M Dunn 55 Horseshoe Bay Road, Bowen	Development Permit for Material Change of Use - Shed (Siting Variation)
20220361	L J Burns 9 & 11 Illawong Street, Cannonvale	Development Permit for Reconfiguration of a Lot - Two (2) Lot into Two (2) Lots (Boundary Realignment)
20220110	D M & M T Nolan Pty Ltd Jurgens Place, Bowen	Development Permit for Material Change of Use - Storage Premises and Vehicle Depot & Operational Works (Access, Earthworks & Stormwater Drainage
20220434	D M Smith 27 Conway Road, Preston	Development Permit for Material Change of Use - Carport (Siting Variation)
20220489	Leben Pty Ltd as TTE 11, 13 & 15 Lamond Street, Airlie Beach	Development Permit for Reconfiguration of a Lot - Three (3) Lots into Two (2) Lots (Boundary Realignment)
20210890	Stunning View Seaview Drive, Airlie Beach	Development Permit for Operational Works - Reconfiguration of One (1) Lot into Sixteen (16) Lots (Roadworks, Drainage, Landscaping, Stormwater, Earthworks, Water Infrastructure, Sewerage Infrastructure)
20220104	Gails Pty Ltd as TTE 383 Mandalay Road, Mandalay	Development Permit for Material Change of Use - Short Term Accommodation (Dwelling)
20220398	Pedrazzini Super Pty Ltd as TTE 16 Marina View Court, Airlie Beach	Development Permit for Material Change of Use - Siting Variation - Dwelling & Swimming Pool
20220196	P C Meyers 20 Nathan Court, Jubilee Pocket	Development Permit for Material Change of Use - Dwelling House (Patio)
20220436	G C Raiteri 15 Staniland Drive, Strathdickie	Development Permit for Development Permit for Reconfiguration of a Lot - One (1) Lot into Two (2)
20220427	Hamilton Island Enterprises Ltd Hamilton Island Resort, Hamilton Island	Development Permit for Material Change of Use (Telecommunications Facility)
20220546	M G Richardson 48 & 64 Gillies Road, Strathdickie	Development Permit for Reconfiguration of a Lot - Two (2) Lot into Two (2) Lots (Boundary Realignment)

20220384	Lake Studio Architecture & Design Hamilton Island Resort, Hamilton Island	Development Permit for development permit for Material Change of Use - Dwelling House and Pool
20220142	I A & R P Drover 42 Blackcurrant Drive, Hydeaway Bay	Development Permit for Material Change of Use - Short-Term Accommodation (Dwelling)

Summary of Applications Approved By Council 25 May 2022 - 27 June 2022

Application #	Applicant & Location	Approval Details
20220248	Top Shelf International Pty Ltd 81 Bridsons Road, Bowen	Development Permit for Material Change of Use – Special Industry (Spirit Distillery) & Reconfiguration of a Lot – Boundary Realignment (Road Opening)

Summary of Applications Refused By Council 25 May 2022 - 27 June 2022

Application #	Applicant & Location	Approval Details
20210040	One Whitsundays Developments Pty Ltd 125 Shingley Drive, Cannonvale	Minor Change Application – Preliminary Approval for Building Works; and Development Permit for Material Change of Use (Resort Complex)
20210040	One Whitsundays Developments Pty Ltd 125 Shingley Drive, Cannonvale	Development Application for Preliminary Approval (Variation Request: Building Works); and Development Permit for Material Change of Use (Resort Complex)

Year to Date Comparison

Planning Applications increase by 58.24%

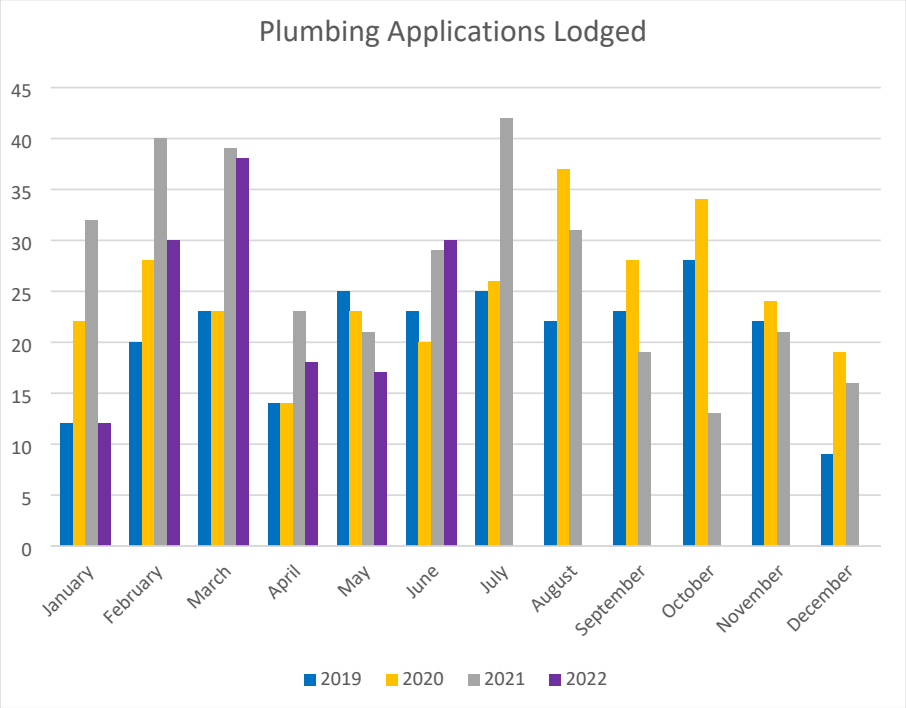
Applications lodged with Council increased from 182 in 20/21 to 288 in 21/22.

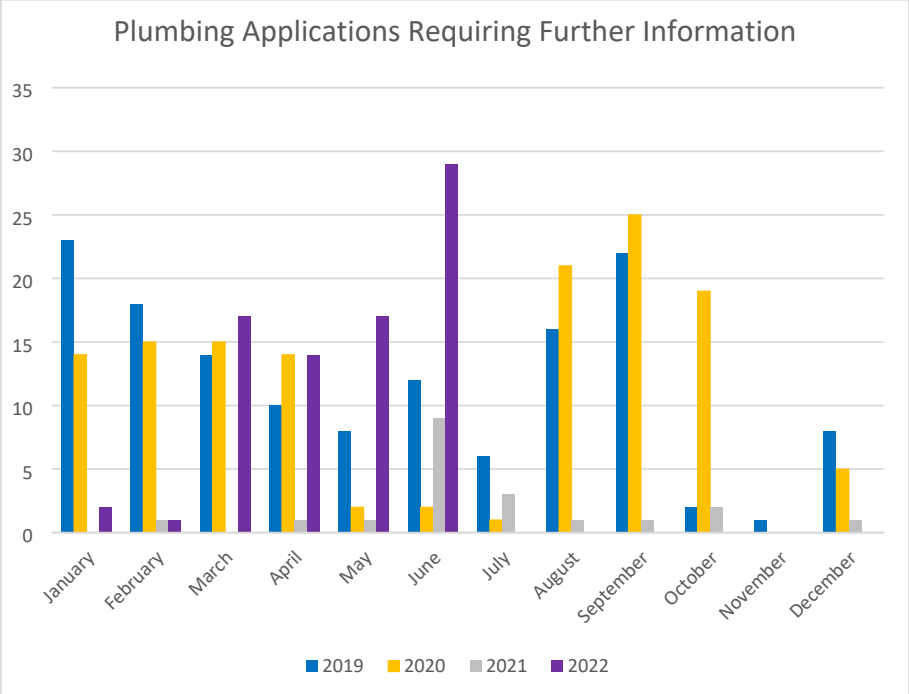
Building, Plumbing & Compliance

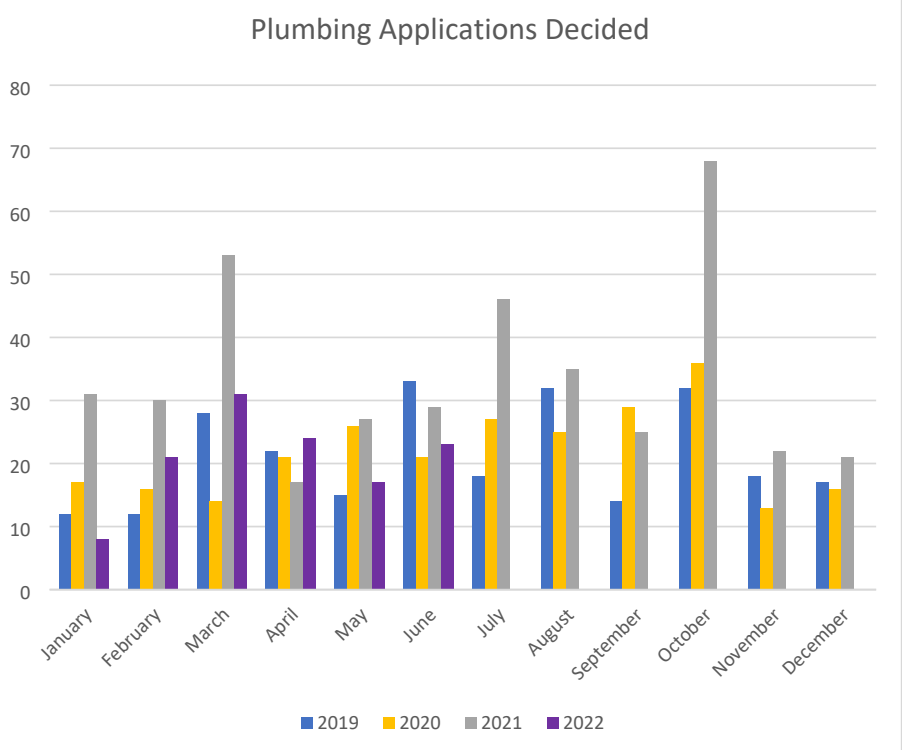
The Building, Plumbing & Compliance branch is responsible for reviewing building and plumbing applications, developing and maintaining various building and plumbing related policies and registers; carrying out Building regulatory functions; manage and regulate enforcement and compliance procedures.

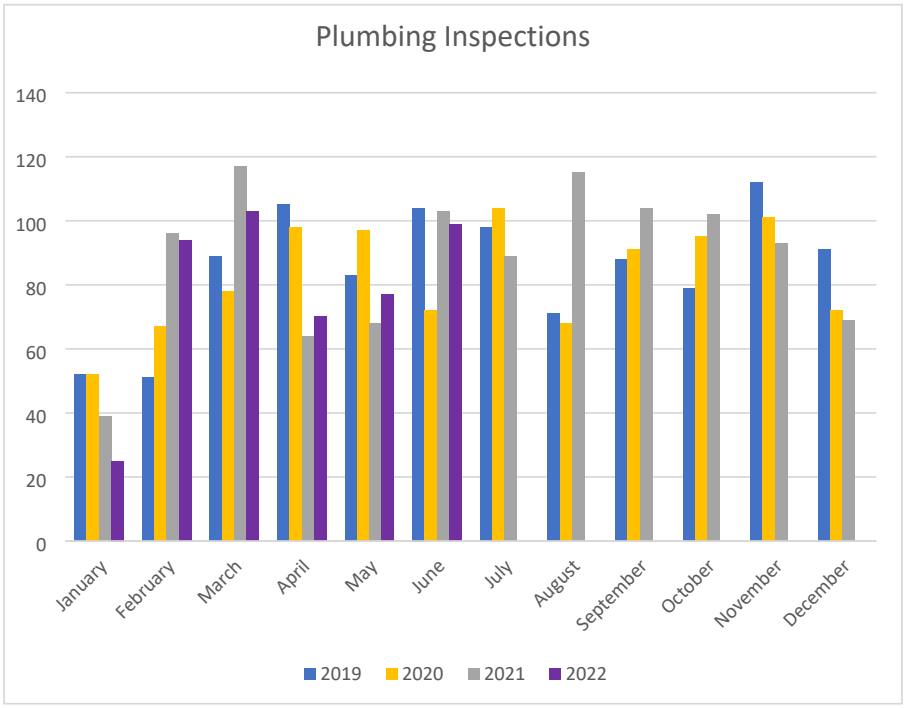
Building, Plumbing & Compliance Statistics

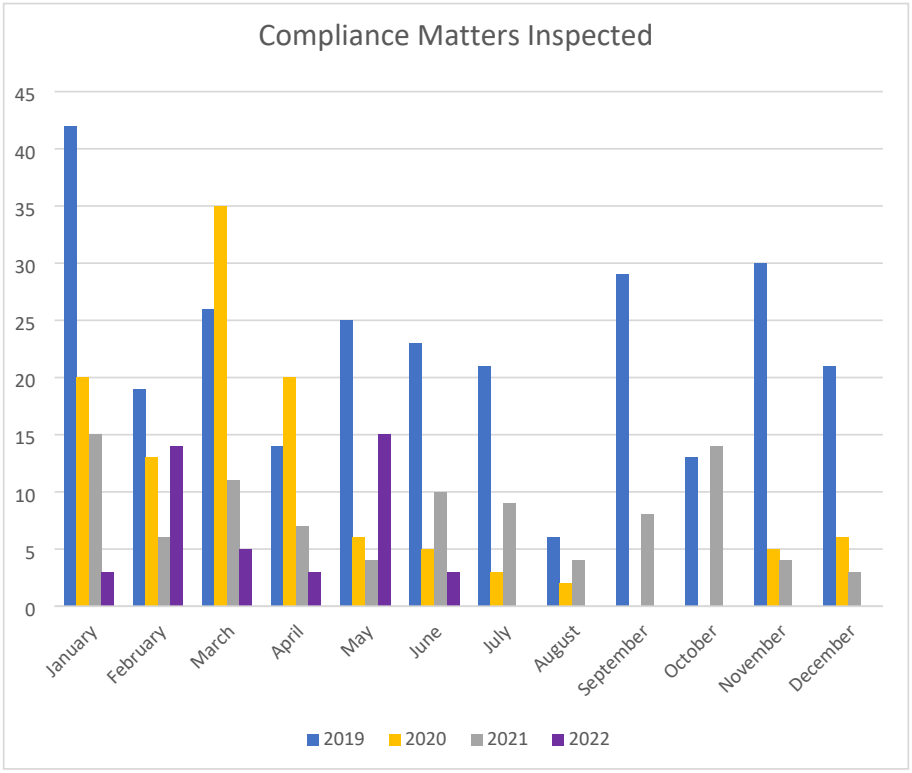
JUNE 2022




Plumbing Applications Requiring Further Information
35
30
25
20
15
10
5
0
January
February
March
April
May
June
July
August
September
October
November
December
2019
2020
2021
2022


Plumbing Applications Decided
80
70
60
50
40
30
20
10
0
January
February
March
April
May
June
July
August
September
October
November
December
2019
2020
2021
2022


Plumbing Inspections
140
120
100
80
60
40
20
0
January
February
March
April
May
June
July
August
September
October
November
December
2019
2020
2021
2022


Compliance Matters Inspected
45
40
35
30
25
20
15
10
5
0
January
February
March
April
May
June
July
August
September
October
November
December
2019
2020
2021
2022

4800

Total of 9 Lodgements

1 House
approved to be constructed

3 Sheds
approved to be constructed

4802

Total of 21 Lodgements

5 Houses
approved to be constructed

4 Sheds
approved to be constructed

4803

Total of 1 Lodgement

1 House
approved to be constructed

1 Commercial
approved to be constructed

4805

Total of 21 Lodgements

8 Sheds
approved to be constructed

2 Commercial
approved to be constructed

Year to Date Comparison

Building applications increase by 123%

Applications lodged by Private Certifiers increased from 326 in 20/21 to 727 in 21/22.

With Council no longer providing building certification services from late 2020, the increase of privately certified applications has increased exponentially. The Regions growth remains strong with a hot property market with a large focus on dwellings, domestic sheds and swimming pools.

Plumbing applications decrease by 18.47%

Applications lodged with Council decreased from 352 in 20/21 to 287 in 21/22.

Interestingly, whilst plumbing applications lodged with Council decreased, plumbing inspections increased from 1018 in 20/21 to 1040 in 21/22.

277
backflow device
renewal letters posted to property owners

1862
backflow devices
registered throughout the Region

Each year the plumbing team are required to process the backflow device renewal program. This required the team to initially clean the data to ensure accurate records, examine the device information and process the renewals. This was a lengthy detail-orientated process as most properties contained multiple devices with Hamilton Island being the largest having over 500 devices spread throughout the island.

13.4.1 - Financial Support for a Junior Elite Athlete - July 2022

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Hayley Borg - Events and Community Sponsorship Officer

AUTHORISING OFFICER: Julie Wright - Director Community Services

PRESENTED FOR: Decision

ATTACHMENTS

Nil

PURPOSE

For Council to consider the applications for Financial Support for a Junior Elite Athlete.

OFFICER'S RECOMMENDATION

That Council approve financial support for the following applicants:

a) Jake Pettigrew - Northern 13-16 years Boys Football (Soccer) Team - $250
b) Eneliko Savelio – Queensland U15 Rugby League Championships - $500
c) Justin Meeks - Boxing U19 Australian Championships - $1,000
d) Russell Harris - 2022 ISAF Open Skiff World Championships at Lac de Carcans, Maubuisson, France - $2,000
e) Connor Harris - 2022 ISAF Open Skiff World Championships at Lac de Carcans, Maubuisson, France - $2,000

BACKGROUND

At the Ordinary Council Meeting held on 28 July 2021, Council resolved to adopt a policy to provide Financial Support for a Junior Elite Athlete. The level of funding available to individual Junior Elite Athletes is calculated on a progressive scale, the higher the level of representation the greater the financial support, as outlined below:

Level of Representation	Allocation ($)
Representing North Queensland or equivalent in State level competition	250
Representing Queensland within Queensland	500
Representing Queensland Interstate	1,000
Representing Australia Overseas	up to 2,000

DISCUSSION/CURRENT ISSUE

Name	Age	Competition	Representation Level	Sport	Amount ($)
Jake Pettigrew	16	Northern Region School Sport U16 Boys Football (Soccer) Team	North Queensland	Rugby League	250
Eneliko	15	Queensland U15 Rugby	Queensland	Rugby	500

Savelio		League		League	
Justin Meeks	15	Boxing Australian U19 Championships	Queensland	Boxing	1,000
Connor Harris	12	2022 ISAF Open Skiff World Championships	Australia	Sailing	2,000
Russell Harris	12	2022 ISAF Open Skiff World Championships	Australia	Sailing	2,000
				Total	**5,750**

Jake Pettigrew, Connor Harris, Russell Harris and Justin Meeks have not received funding through the Junior Elite Athlete program previously.

Eneliko Savelio has previously received funding through the Junior Elite Athlete program for representing North Queensland. Eneliko has progressed to representing Queensland.

STATUTORY/COMPLIANCE MATTERS

Local Government Act 2009
Local Government Regulation 2012
LSP_COMM_05 – Financial Support for a Junior Elite Athlete Policy

STRATEGIC IMPACTS

Facilitate, foster and encourage region wide activities and programs that engage our community.

FINANCIAL IMPLICATIONS

The funds will be taken from JC: 2967.11074 – Community Donations (2967) / Donations (11074).

Description	**Amount ($)**
2022/23 Budget	100,000
Actual + Commitment Spend	0
YTD Remaining Budget	**100,000**

CONSULTATION/ENGAGEMENT

Manager Community Development & Libraries

RISK ASSESSMENT

The financial assistance shows Council's commitment to providing support to local junior elite athletes competing in a regional, state or national level competition.

TIMINGS/DEADLINES

To be paid within one month of approval.

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

No

ALTERNATIVES CONSIDERED

N/A

13.4.2 - Sport & Recreation Clubs Grant - July 2022

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Jacqueline Neave - Arts & Community Programs Officer

AUTHORISING OFFICER: Julie Wright - Director Community Services

PRESENTED FOR: Decision

ATTACHMENTS

Nil

PURPOSE

For Council to consider the payment of the Sport & Recreation Club Grants for July 2022 in accordance with Council's Sport & Recreation Grant Guidelines.

OFFICER'S RECOMMENDATION

That Council approve the payment of a Sport & Recreation Clubs Grant to the following recipients:

1. Cannonvale Kyokushin Karate Club Inc. – Band 1 - $5,500
2. Collinsville Sports Inc. – Band 2 - $3,000
3. Whitsunday Moto Sport Club Inc. – Band 2 - $3,000
4. Proserpine Veteran Golfers Association Inc. – Band 3 - $1,500
5. Whitsunday Bald Eagles Inc. – Band 3 - $1,500
6. Proserpine Bowls Club Inc. – Band 3 - $1,500
7. Bowen Athletics Club Inc. – Band 3 - $1,500
8. Whitsunday Athletics Club Inc. Band 3 - $1,500
9. Proserpine District Lawn Tennis Association Inc. – Band 3 - $1,500
10. Cricket Whitsundays Inc. – Band 3 - $1,500

BACKGROUND

To be eligible for the Sport & Recreation Grant a club must meet the following criteria:

- Is incorporated and meets its obligations with the Office of Fair Trading
- Is covered with the appropriate level of public liability insurance (20 million)
- Provides membership data (as defined by Council) to Council on an annual basis

The level of funding available to clubs will be based on a progressive scale, the larger the participation rate, the larger the support to the club. Participation is defined as being the total number of active members within the club.

The Sport & Recreation Clubs Grants are allocated based on the following:

Band Level	No. of Active Participants	Grant Allocation ($)
Band 1	>250	5,500
Band 2	101 – 250	3,000
Band 3	51 – 100	1,500
Band 4	4 - 50	1,000

DISCUSSION/CURRENT ISSUE

The following applications were submitted:

Organisation Name	Junior Members	Senior Members	Total Members	Band	Public Liability	Amount Requested ($)
Cannonvale Kyokushin Karate Club Inc.	225	52	277	1	Yes	5,500
Collinsville Sports Inc.	17	88	105	2	Yes	3,000
Whitsunday Moto Sports Club Inc.	45	111	156	2	Yes	3,000
Proserpine Veteran Golfers Assoc	0	70	70	3	Yes	1,500
Whitsunday Bald Eagles Inc.	0	60	60	3	Yes	1,500
Proserpine Bowls Club Inc.	3	51	54	3	Yes	1,500
Bowen Athletics Club Inc.	14	37	51	3	Yes	1,500
Whitsunday Athletics Club Inc.	57	9	66	3	Yes	1,500
Proserpine District Lawn Tennis Assoc	31	22	53	3	Yes	1,500
Cricket Whitsundays Inc.	15	49	64	3	Yes	1,500
					Total	**22,000**

STATUTORY/COMPLIANCE MATTERS

Local Government Act 2009
Local Government Regulation 2012
LSP_COMM_03 – Community Grants Policy

STRATEGIC IMPACTS

Facilitate, foster and encourage region wide activities and programs that engage our community.

FINANCIAL IMPLICATIONS

The funds will be taken from budget code JC: 2967.10250 – Community Donations (2967) / Club Grants (10250).

Description	Amount ($)
2022/2023 Budget	150,000
Actual + Commitment	0
YTD Remaining Budget	**150,000**

CONSULTATION/ENGAGEMENT

Manager Community Development & Libraries

RISK ASSESSMENT

Reputational Risk – Providing funding support to the community and recognising the efforts of local Sport & Recreational Clubs is a positive outcome for Council.

TIMINGS/DEADLINES

Payment will be made within one month of approval.

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

No

ALTERNATIVES CONSIDERED

N/A

13.4.3 - Request for Funding 2022/23 - Greater Whitsunday Communities

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Rod Cousins - Manager Community Development & Libraries

AUTHORISING OFFICER: Julie Wright - Director Community Services

PRESENTED FOR: Decision

ATTACHMENTS

1. Whitsunday Regional Council Funding Proposal 2022 2023 [**13.4.3.1** - 11 pages]

PURPOSE

For Council to consider a request for funding from Greater Whitsunday Communities for the 2022/23 financial year.

OFFICER'S RECOMMENDATION

That Council approve a financial commitment of $82,800 (plus GST) to Greater Whitsunday Communities in support of Strengthening Communities across Greater Whitsunday Region program for the 2022/23 financial year only.

BACKGROUND

Representatives from Greater Whitsunday Communities made representation to Council on 14 April 2021 outlining an overview of their plans for the organisation and the rationale behind the new funding requirements. At the Ordinary Council meeting held on 25 August 2021, Council agreed to provide funding of $80,000 (plus GST) to support the Strengthening Communities across the Greater Whitsunday Region program for the 2021/22 financial year.

DISCUSSION/CURRENT ISSUE

Council has received a request for funding from Greater Whitsunday Communities for the 2022/23 financial year. The request is for $82,800 (plus GST).

In return for this investment, Greater Whitsunday Communities, under the KPI's set out for the Whitsundays region, has committed to the following in 2022/23:

- 3 Committee Induction Workshops
- Attendance at 4 Regional Network Meetings
- 10 Locality Meetings
- 1 Whitsundays Regional Forum
- Support/mentor two Community Champions
- Support BCCA and three sub committees
- Maintain relationships with QCOSS, CSIA, QShelter, QDN

STATUTORY/COMPLIANCE MATTERS

Local Government Act 2009
Local Government Regulation 2012

STRATEGIC IMPACTS

Advocate for the community on issues of regional importance.
Facilitate, foster and encourage region wide activities and programs that engage our community.

FINANCIAL IMPLICATIONS

The funding is budgeted for and will be taken from JC: 7841.10668 – Regional Social Development Coalition (7841) / Strengthening Communities Project (10668).

CONSULTATION/ENGAGEMENT

Director Community Services

RISK ASSESSMENT

Reputational – providing support for this program indicates a significant investment by Council into the social and health related issues of the local community.

TIMINGS/DEADLINES

Payment to be made within one month of approval.

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

No

ALTERNATIVES CONSIDERED

N/A

https://www.greaterwhitsundaycommunities.org.au/

At Greater Whitsunday Communities, we are working towards a future where our regional communities achieve and enjoy a high level of social wellbeing. We know that when people feel connected, safe and supported – our communities thrive.

As social development practitioners and the peak regional body, we amplify the Greater Whitsunday community's voice on important issues and continue to promote the social sector as a major contributor to economic growth and prosperity for our region, *making our communities better places to live*.

Alone, we can do so little; together, we can do so much. - Helen Keller

Funding Proposal

Strengthening Communities across Greater Whitsunday Region

2022 - 2023

Prepared by **Greater Whitsunday Communities**

For **Whitsunday Regional Council**

Date **30 March 2022**

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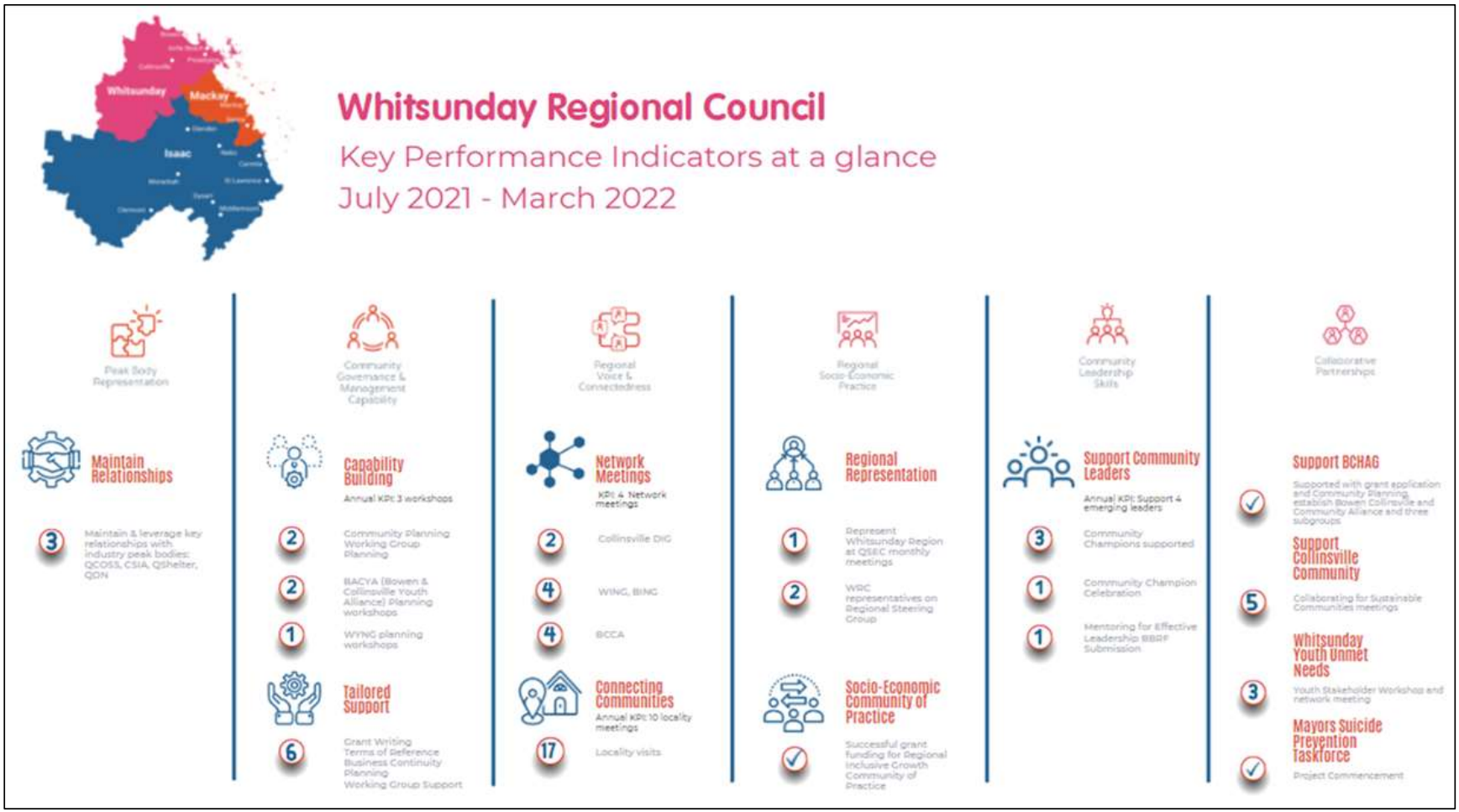
Greater Whitsunday Communities
Stronger Together

1. Progress towards 2021 – 2022 KPI'S (March 2022)



2. Return on Whitsunday Regional Councils'2021 – 2022 investment to date

Outcome	Impact	Alignment to Whitsunday Regional Councils 'Corporate Plan Vision and Community objectives 2021 – 2026
Recruitment of Executive Officer	Drive and align the strategic direction of Greater Whitsunday Communities to the needs of the Mackay, Isaac and Whitsunday Communities.	*"Our vision is to be a sustainable and progressive region achieved by unified and innovative leadership for the benefit of our diverse community, visitors and the environment"*
	Planning the implementation and delivery of **1** major grant project. (Mayors' taskforce suicide prevention project)	*"Protect community health and safety, biosecurity, and amenity within the region by providing community education and administrative services"*
	Overseeing the application to **2** major grant rounds to drive regional youth outcomes and community leadership	*"Our vision is to be a sustainable and progressive region achieved by unified and innovative leadership for the benefit of our diverse community, visitors and the environment"*
	Free up specialist community development workers to better support the Whitsunday region	*Facilitate, foster and encourage region wide activities and programs that engage our community.*

Outcome	Impact	Alignment to Whitsunday Regional Councils 'Corporate Plan Vision and Community objectives 2021 – 2026
KPI's achieved: **Fostering regional connectedness**	Strengthening regional connectedness: **17** locality visits Participated in **10** interagency meetings, **5** community forums facilitated	*Facilitate, foster and encourage region wide activities and programs that engage our community.*
Community Leadership	Working with **3** emerging leaders to drive community initiatives **1** Community Champion Celebration **Mentoring for effective Leadership** BBRF Submission	*"Our vision is to be a sustainable and progressive region achieved by unified and innovative leadership for the benefit of our diverse community, visitors and the environment"*

Outcome	Impact	Alignment to Whitsunday Regional Councils 'Corporate Plan Vision and Community objectives 2021 – 2026
Community Governance and Capability	Provided **10** support service activities in capability building to **7** Community Groups **Support services include:** • business continuity planning, • community planning, • identifying key priorities for the organisation, • developing Terms of Reference, • grant writing workshops, • program and policy development. **Organisations supported:** • BCCA • BCCA Health / Mental Health subgroup • Whitsunday Housing Company Ltd • Proserpine Respite Services • Whitsunday Sports Park • Bowen and Collinsville Youth Alliance • Merging Moongunya	*Facilitate, foster and encourage region wide activities and programs that engage our community* *"Connect with Traditional Owners within the region to recognise and support each group's rights and interests"*
Peak Body representation	Maintain and leverage key relationships with industry peak bodies such as QCOS, CSIA, QShelter and QDN	*Facilitate, foster and encourage region wide activities and programs that engage our community*

3. Executive Summary

Greater Whitsunday Communities is a regional social development organisation, committed to improving the social infrastructure and overall livability of our region so that we can grow strong economies and strong communities together. We work closely with all 3 Regional Councils to progress this work.

The **"Strengthening Communities across Greater Whitsunday Region"** project has it's beginnings in 2015 through a partnership with QLD Community Foundation, QLD Coalition of Community Boards and Volunteering QLD. This was followed by successive rounds of the Australian Government Building Better Region Fund in 2018 and 2019-2020, 2022 and 2023. In all cases, financial support through GWCOM has allowed us to apply under the matched funding conditions.

4. Strengthening Communities across Greater Whitsunday Region

Project Aim

- Strengthen regional interconnectedness and cohesiveness through ongoing community engagement
- Develop capability of NFP organisations through better Governance and planning
- Develop and enhance community leadership for greater resilience and viability
- Facilitate and promote collaborative partnerships for sustainability and to capture synergies.
- Support and promote the social sector as a key partner in economic growth and prosperity for our Greater Whitsunday Region

Key activity areas for 2022 – 2023

1. Community Governance and Management capability
2. Regional Voice and Connectedness
3. Community Leadership Skills
4. Collaborative partnerships
5. Regional Socio-Economic practice
6. Peak Body representation

5. Funding Proposal

Greater Whitsunday Communities is seeking renewed financial assistance from Whitsunday Regional Council to continue its funded work of the last 3 and a half years to deliver meaningful regional socio economic and community development outcomes, and to ensure Whitsunday Regional Council maintains a leadership role in the delivery of these outcomes in the Whitsunday region.

Greater Whitsunday Communities is requesting financial assistance of **$ 82,800 (Eighty-Two Thousand, Eight Hundred Dollars) plus GST.** This figure includes a 3.5% CPI increase from last year's funding (based on ABS figures to December 2021 (Q3)). These funds will be applied to continue and strengthen the work in: ***"Strengthening Communities across the Whitsunday Region".***

6. Proposed Key Performance indicators 2022 - 2023

Strategic Pillar	Outcome	What we will do KPI	Alignment to Whitsunday Regional Councils 'Corporate Plan Vision and Community objectives 2021 – 2026
Regional Community Governance and Management Capability	**1.** Tailored support for community organisations **2.** Committee induction and upskilling workshops	• Tailored support to Not for Profits on request • Facilitate and convene 3 workshops to support the needs**,** goals and future action plans of community organisations • Further support regional community organisations to co-operate and collaborate in times of disaster • Continue to support BCCA and the 3 sub groups being Health/Mental Health, Housing and Youth/Education	"Our vision is to be a sustainable and progressive region achieved by unified and innovative leadership for the benefit of our diverse community, visitors and the environment"
Community Leadership	Identify and support community champions	• Identify support, upskill and mentor 2 Whitsunday community champions per year • Seek funding opportunities to continue community leadership programs • Continue individual support, provide PD opportunities to existing Community Champions	*"Our vision is to be a sustainable and progressive region achieved by unified and innovative leadership for the benefit of our diverse community, visitors and the environment"*

Strategic Pillar	Outcome	What we will do KPI	Alignment to Whitsunday Regional Councils 'Corporate Plan Vision and Community objectives 2021 – 2026
Regional Voice and Connectedness	1. Attend regional network meetings 2. Convene locality meetings 3. Whitsunday Regional Community Forum 4. Whole of Greater Whitsunday Forum	• 4 network locality network meetings per year • 10 locality visits per year • 1 Whitsunday Regional Community Forum per year • Whole of Greater Whitsunday Region Forum • Continue to revitalize and drive the youth networks	*Facilitate, foster and encourage region wide activities and programs that engage our community*
Collaborative partnerships	**1.** Support BCCA and its subgroups **2.** Support Collinsville Community 5. Address the Whitsunday Youth unmet needs	• Provide ongoing support and planning to BCCA and its subgroups • Hold workshop to identify Collinsville Community needs, explore collaboration and sustainable model for an overarching organisation in Collinsville • Further support regional community organisations to co-operate and collaborate in times of disaster • Seek project funding to address Youth unmet needs in the Whitsundays. • Support collaborative planning and action across networks to address Youth unmet needs	*Facilitate, foster and encourage region wide activities and programs that engage our community*

Strategic Pillar	Outcome	What we will do KPI	Alignment to Whitsunday Regional Councils 'Corporate Plan Vision and Community objectives 2021 – 2026
Socio Economic Practice	1. Represent Whitsunday at QSEC 2. Convene locality meetings 3. Whitsunday Regional Community Forum 4. Whole of Greater Whitsunday Forum	• Monthly meetings with QSEC • Develop and support a Regional Steering Group • Facilitate a regional socio-economic forum for the wider community	*Facilitate, foster and encourage region wide activities and programs that engage our community*
Peak Body Representation	1. Maintain and leverage key relationships with industry peak bodies	• Continue to meet and represent Whitsunday Community needs at meetings with QCOSS, CSIA, QShelter and QDN	*Facilitate, foster and encourage region wide activities and programs that engage our community*

7. Conclusion

Greater Whitsunday Communities has over forty years' experience working with groups and individuals to address social issues which affect them. We are experts in facilitating community ownership and decision making. Our organisation is in a trusted and independent position in the Greater Whitsunday region. We have strong leadership from a Board that comprises industry and local community representatives from the Whitsunday, Mackay, and Isaac regions.

We coordinate and advocate for inclusive, supportive, and participatory social development practice, which is grounded in our core values"

- Social justice and inclusion
- Promoting respect and diversity
- Empowering people to have a voice
- Fostering grassroots action
- Integrity

Greater Whitsunday Communities strive to be recognized as the regional body for community and social development. Whitsunday Regional Council's investment of **$ 82,800(Eighty-Two Thousand, Eight Hundred Dollars) plus GST,** will ensure that together, Greater Whitsunday Communities and Whitsunday Regional Council can work towards a future in which the Whitsunday region (and the Greater Whitsunday region) has a high standard of social wellbeing.

13.4.4 - Community Services Monthly Report - June 2022

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Erin Finau - Administration Coordinator Community Services

AUTHORISING OFFICER: Julie Wright - Director Community Services

PRESENTED FOR: Information

ATTACHMENTS

1. Community Services Monthly Report June 2022 [**13.4.4.1** - 24 pages]

PURPOSE

The purpose of the report is to set out an account of statistics pertaining to the functions of each branch within the Community Services Directorate for the month of June 2022.

OFFICER'S RECOMMENDATION

That Council receive the Community Services Monthly Report for June 2022.

BACKGROUND

The Community Services Directorate has a departmental vision of a prosperous, liveable, and sustainable Whitsundays. The directorate's purpose is to lead the delivery of economic, social, environmental, and recreational outcomes for the Whitsundays through services in partnership with stakeholders.

The directorate's vision is delivered by bringing together the functions of Community Development & Libraries, Aquatic Facilities & Caravan Parks, Environmental Health & Local Laws, Natural Resource Management & Climate, Customer Service, Cultural Heritage and Proserpine Entertainment Centre & Associated Venues.

DISCUSSION/CURRENT ISSUE

This report provides an overview of Whitsunday Regional Council's Community Services Directorate for the 2021/2022 financial year with particular focus on the month of June 2022.

STATUTORY/COMPLIANCE MATTERS

N/A

STRATEGIC IMPACTS

Through strong and open leadership, develop an organisation with a culture of respect, accountability and community service.

FINANCIAL IMPLICATIONS

N/A

CONSULTATION/ENGAGEMENT

Coordinator Natural Resource Management & Climate
Manager Community Development & Libraries

Manager Customer Service
Manager Proserpine Entertainment Centre

RISK ASSESSMENT

Regular reporting on the Directorate's progress and achievements ensures accountability and fosters a positive culture.

TIMINGS/DEADLINES

N/A

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

No

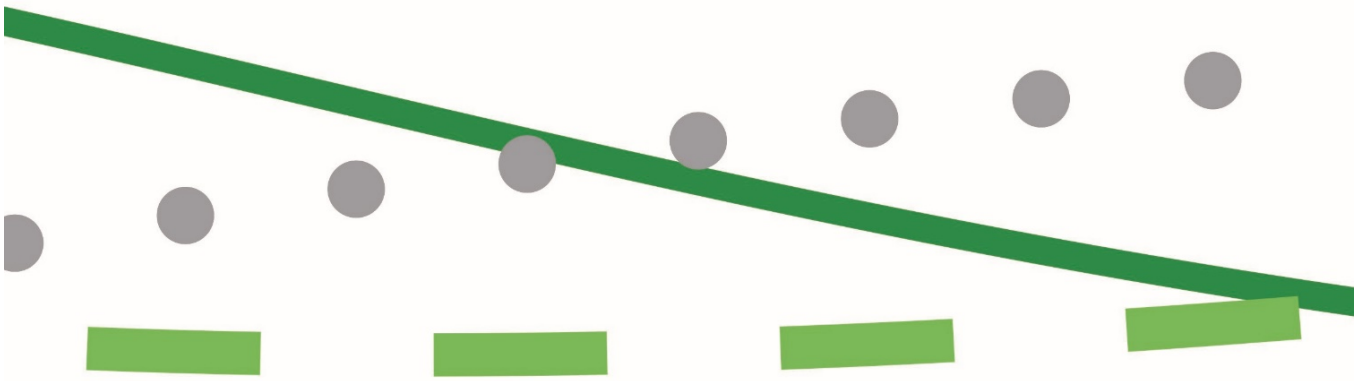
ALTERNATIVES CONSIDERED

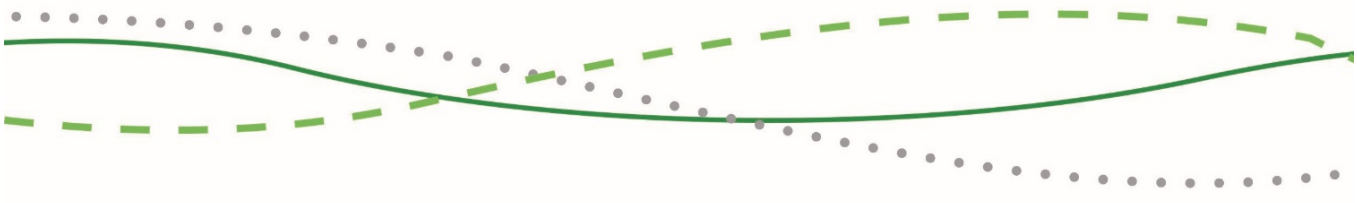
N/A

Community Services

Community Development & Libraries
Aquatic Facilities & Caravan Parks
Environmental Health & Local Laws
Natural Resource Management & Climate
Customer Service
Cultural Heritage

Monthly Report | June 2022





Director's Report

June 2022 saw the Community Services team accomplish several events, activities, projects and compliance issues.

Thursday 30 June wasn't just the EOFY it was the start of super school holiday screenings at the Airlie Beach Foreshore outdoor cinema! With food trucks, giant bubbles and double screenings both big and little kids enjoyed the movies Yogi Bear and The Mask. Approximately 200 people were in attendance on the night.

The Biggest Morning tea was also held at the Proserpine Administration Building on Thursday 9 June 2022.

For the 21/22 financial year Council approved a number of grants & donations including the following:

- Sport & Rec Clubs – 66 ($150,000)
- Junior Elite Athletes - 29 ($8,800)
- Special Projects – 13 ($133,092)
- Donation Requests – 69 ($84,358)
- Fee Waivers – 40 ($19,339)
- Sponsorships – 16 ($71,000)
- RADF Projects – 9 ($54,637)
- Facility Management 3 ($60,000)

Tickets have gone on sale for the following shows to be held at the PEC:

- Beyond the Sea, Tenori – 21 July 2022
- SILENCE by Karul Projects - 9 September 2022
- The Gruffalo, Live on Stage - 15 and 16 September 2022
- Fairytales on Ice - 17 September 2022

My Community Directory + Diary searches totalled 6,155 an increase of 10.28% from May 2022. The top five searched categories for June are Health Services; Community Clubs & Interest Groups; Sport; Child Services and Recreation & Leisure.

The Cannonvale Library building has received an eye-catching new look, now proudly displaying Whitsunday Regional Council Libraries signage and branding. Completed through State Library of Queensland grant funding as part of a project to update and rebrand the regions libraries, this has definitely been Cannonvale's highlight of the month.

Week one activities of the June-July school holiday activities have been popular with children and families. The Pyjama Party Storytime for children 6 years & under was definitely the biggest (and noisiest) hit, with 41 children and 32 adults enjoying the event. Other holiday activities included an Illustrating Workshop with local author/journalist Sofia Fortunato for children aged 10+, Chess session (all ages), and Creating Dream Catchers for ages 6+. Excluding regular First 5 Forever sessions, a total of 381 people (230 children and 151 adults) attended the library during the month specifically for events. Public computer usage and assistance increased, with staff kept busy with the increasing number of people accessing Commissioner for Declarations services.

June 3 saw Library staff participate in the Queens Beach State School Under 8's Day. The annual event is a great opportunity for the libraries to connect with local community organisations and provide school children and their families with a fun Paper Cup Toy making activity to fit in with the theme "Play in a Changing World".

Photo 1 - Local author/journalist - Sofia Fortunato

School holidays workshops included Chris Collin entertaining families at Bowen, Collinsville and Proserpine libraries with his Funky Chicken Man show that encourages a love of books through story, music, fun and loads of funkiness. Young local author, Pagan Malcolm held storytelling workshops at Proserpine and Bowen Libraries -

budding novelists were taught techniques and tips on writing their own stories by providing foundation skills to help each produce a first draft. Families also enjoyed creating fun children's book characters at Proserpine Library with another local author/illustrator, Sofia Fortunato.

Another activity held at the Bowen Library included the making of glass lanterns where families got very creative - some drew or cut out fish and turned their jars into a fishbowl and another copied the solar system that's hanging up in the library by cutting out the planets and gluing them around the jar. After they'd finished, they collected their battery powered tealight and turned the jar into a lantern.

The Region's Libraries monthly attendance and borrowings increased plus e-Library also increased from May 2022.

- Attendance 8,733 – 15.8%% increase
- Borrowings 13,632 – 4.42% increase
- e-Library 16,994 – 9.68% increase
- Library Website Visits 2,975 – 54.7% increase.

Natural Resource Management's Projects for June 2022 include:

- The first self-watering street trees in Whitsunday Regional Council area have been installed at the Galbraith Park development. A total of 13 self-watering street trees have been approved for the Galbraith Park Estate. A bio-basin and revegetation of the riparian area will also follow. Self-watering street trees are part of the toolkit available to developers to improve stormwater water quality which in turn will assist in keeping our reef in good condition. As a Reef Guardian Council, it is important to ensure there is regard to water quality in the region's urban drainage catchments. Collaboration between the private sector, NRM and Development Assessment has achieved the outcome to the project. Whilst the trees look very similar to any other street trees, the hard and soft infrastructure around them is quite different.
- Land Protection Officer, Bren Fuller attended a week long "Thermal Assisted Aerial Shooting" course in Western Australia. Bren was one 1 of 6 invited to participate and was the only participate from Queensland.
- Land Protection Officer, Melissa Hayes and our NRM Trainee, Kayla Simpson conducted Yellow Crazy Ant inspection on Hamilton Island as part of Council's Pest Surveillance program. The inspection found island infestation area had not spread.
- Council along with QRFS conducted a controlled burn on Bowen's Hospital Hill.
- Tree trimming at 3 Strathmore Street was successful with the Flying Fox not returning to the property.
- NRM Officers conducted 92 property inspections regarding the detection of pest weeds.
- Community consultation process was commenced for the Wilsons Beach Swimming Enclosure with letters and surveys being sent to the Wilson Beach property owners along with a meeting with residents held on 9 June 2022 with 33 residents attending.

Photo 2 - Self watering trees - Galbraith Park Development

Due to the unavailability of a Council EHO/s an Environmental Health Officer has been engaged on a consultancy arrangement two days per week until the EHO vacancy is filled.

The following are the average monthly occupancy rates at each of Council's Caravan Parks:

- Proserpine Tourist Park – 69.64% a 3.6% increase from June 2021.
- Wangaratta Caravan Park – 89.51% a 2.0% increase from June 2021.

The Bowen Work Camp contributed a huge total of 737.25 hours during this month with mowing, landscaping and general Community and Council assistance.

The Community Services Team received 284 CRMs for June (231 completed) with the Environmental Health and Local Law units receiving 247 (207 completed) complaints/requests for the month.

Council's Off-Street Carparks generated $71,628 for the month with 10,745 transactions, an increase of 5.5% from the previous month.

The Community Services Administration Officers' statistics for June 2022 include the following:

- Correspondence Generated – 666 items
- Civica & ECM Registrations – 1,708 tasks
- 970 Telephone Calls (internal and external).

4,855 Dog Registration Renewals (including Working Dogs) + 30 Multiple Animal Renewals were issued on 27 June 2022.

Customer Service saw 1,824 visitors through the service centres, an increase of 30.7% attendance to the previous month.

Telephone calls decreased from 4,477 to 4,228 a decrease of 18.27% from the previous month.

After hours calls generated 87 tasks to be actioned for June 2022.

Aquatic Facility user statistics for June 2022 in comparison to June 2021 are listed below:

- Airlie Beach Lagoon increased by 77.16% to 13,236
- Bowen Pool increased by 219% to 1,076
- Proserpine Pool increased by 11.9% to 693
- Collinsville Pool closed for the winter months

Julie Wright
Director Community Services

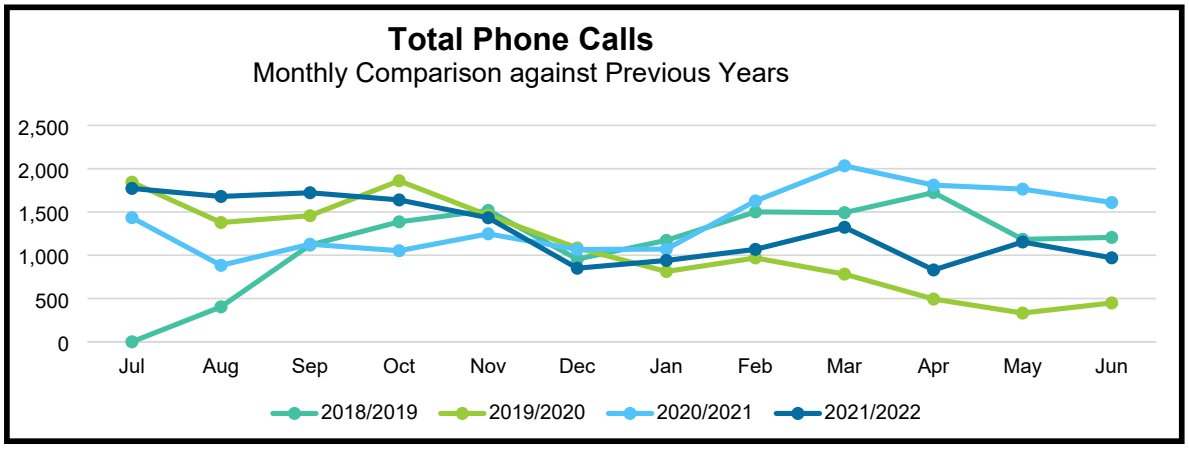
General

The Community Services Directorate has a departmental vision of a prosperous, liveable, and sustainable Whitsundays. The directorate's purpose is to lead the delivery of economic, social, environmental, and recreational outcomes for the Whitsundays through services in partnership with stakeholders.

The directorate's vision is delivered by bringing together the functions of Community Development & Libraries, Aquatic Facilities & Caravan Parks, Environmental Health & Local Laws, Natural Resource Management & Climate, Customer Service, Cultural Heritage & Collinsville Independent Living Facility.

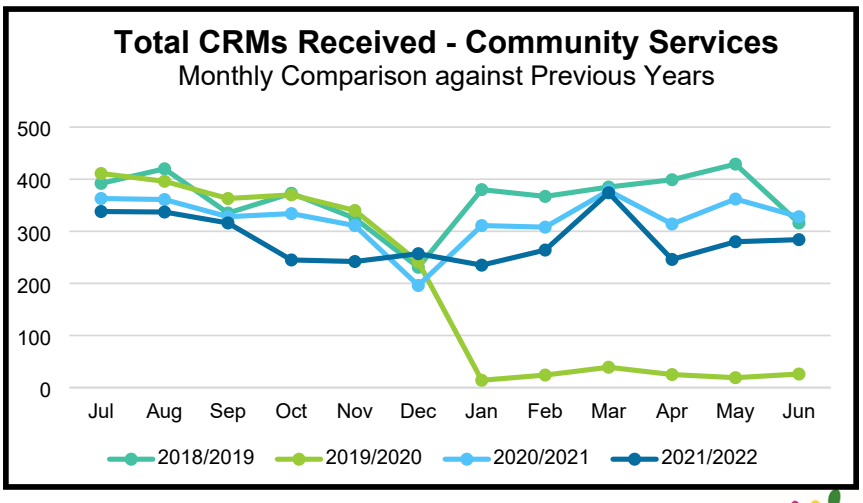
Administration Officers

Service	YTD	Apr	May	June	Monthly Trend
Correspondence Generated	9,932	410	508	666	
ECM Task List	6,939	288	398	372	
Civica Registers	9,576	394	590	569	
Data Input	6,305	354	293	304	
CRMs Generated	713	70	55	43	
CRMs Closed	1,116	84	112	54	
Phone Calls - Internal	9,707	518	749	655	
Phone Calls - External	5,672	312	404	315	
Phone Calls - Total	15,379	830	1,153	970	
ECM Registering	7,831	422	578	420	
Purchase Orders	784	56	49	27	
Receipt Invoices	1,066	81	84	48	
Reports	613	17	45	31	



Customer Request Management (CRM)

Service	YTD	Apr	May	June	Monthly Trend
Community Development					
CRM Received	80	9	6	4	
CRM Completed	57	7	4	4	–
Library Services					
CRM Received	4	0	0	1	
CRM Completed	1	0	0	0	–
Aquatic Facilities					
CRM Received	37	3	4	0	
CRM Completed	23	3	2	0	
Caravan Parks					
CRM Received	9	1	0	2	
CRM Completed	5	0	0	2	
Environmental Health & Local Laws					
CRM Received	2,961	205	245	247	
CRM Completed	2,445	173	197	207	
Parking					
CRM Received	38	2	1	0	
CRM Completed	37	2	1	0	
NRM & Climate					
CRM Received	235	22	22	23	
CRM Completed	107	10	10	12	
Customer Service / E-Services					
CRM Received	54	4	2	7	
CRM Completed	47	4	2	6	
Total CRMs for Community Services					
CRM Received	3,418	246	280	284	
CRM Completed	2,721	199	216	231	



Community Development

The Community Development branch is responsible for assessing and acquitting community grants, developing and maintaining various community development related policies and registers, developing, and implementing various community programs such as cultural and recreational programs as well as maintaining various community facilities.

Operations

Service	YTD	Apr	May	June	Monthly Trend
Grant Applications					
Facility Management - Approved	4	0	0	1	
Facility Management - Approved ($)	80,000	0	0	20,000	
Junior Elite Athlete - Approved	29	1	2	8	
Junior Elite Athlete - Approved ($)	8,800	250	500	2,250	
RADF - Received	11	0	4	0	
RADF - Approved	9	0	0	4	
RADF - Approved ($)	54,637	0	0	27,031	
RADF - Acquittals	10	0	2	1	
Special Projects - Received	19	1	2	0	
Special Projects - Approved	13	0	0	3	
Special Projects - Approved ($)	133,092	0	0	28,000	
Special Projects - Acquittals	15	1	2	0	
Sport & Rec Club - Received	67	1	2	9	
Sport & Rec Club - Approved	66	11	4	2	
Sport & Rec Club - Approved ($)	150,000	26,000	9,000	4,500	
Donation & Sponsorship Requests					
Donation Requests - Received	72	8	5	6	
Donation Requests - Approved	69	1	9	6	
Donation Requests - Approved ($)	84,358	770	8,400	3,780	
Fee Waivers - Approved	40	11	0	6	
Fee Waivers - Approved ($)	19,339	5,017	0	2,825	
Sponsorships - Received	21	1	2	3	
Sponsorships - Approved	16	1	1	3	
Sponsorships - Approved ($)	71,000	3,000	7,500	10,000	
Sponsorships - Approved (in kind)	3	0	0	1	
Sponsorships - Acquittals	3	0	0	0	–
Events					
Council Events - External - Completed	21	2	2	0	
Council Events - External - Participants	5,130	521	187	0	
Council Events - Internal - Completed	24	0	0	1	
Council Events - Internal - Participants	738	0	0	35	

Junior Elite Athlete Recipients for June:

- Abigail Lee – Pony Club Qld Jump Equitation and Show Jumping
- Charlotte Lee – Pony Club Qld Jump Equitation and Show Jumping
- Blake Tissington – North Queensland U15 AFL
- Hugo Williams – North Queensland U12 Touch Football
- Eneliko Savelio – North Queensland U15 Rugby League

Events:

External:

- Outdoor Airlie Beach movie night – Yogi Bear and The Mask – Thursday 30 June 2022

Internal:

- The Biggest Morning Tea – Thursday 9 June 2022

Event Postponed due to COVID-19:

- Nil

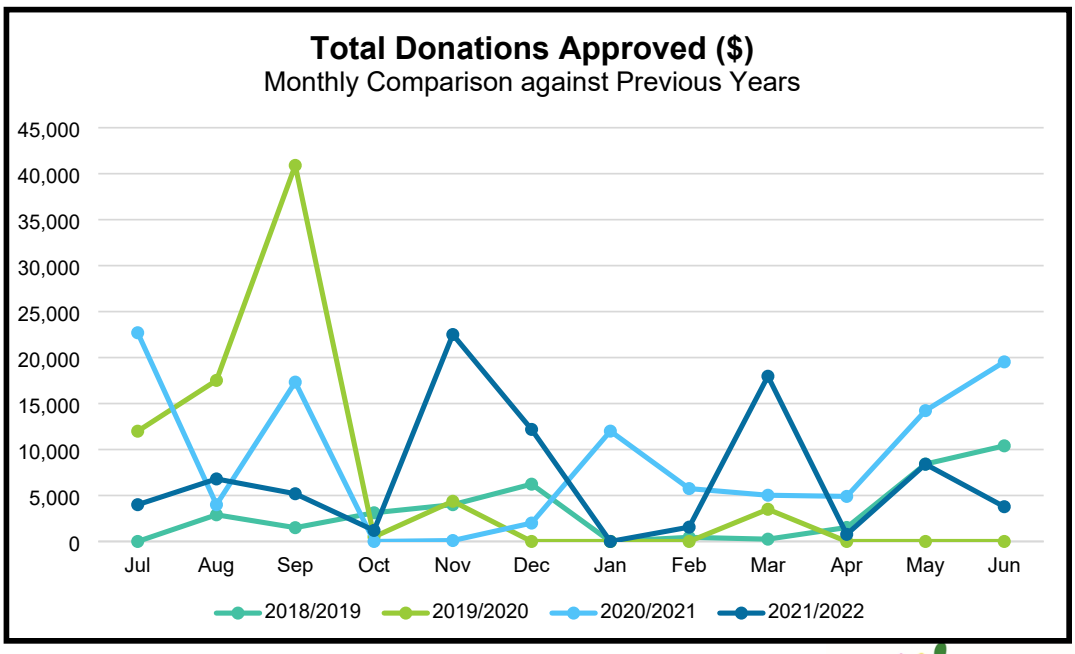
Special Project Grants Successful Recipients:

3 applications approved in June for Round 3 which closed 6 May 2022

- Bowen Cricket - $15,000
- Bowen Community Council - $5,000 and
- Proserpine Agricultural Pastoral & Industrial Association - $8,000

2 applications approved for Donations

- Collinsville Community Association - $2,000
- Gloucester Sports and Recreation Association - $2,000



The report from My Community Directory + Diary is currently unavailable while they install upgrades to the software. My Community Directory + Diary have supplied the following stats for the month of June:

Year	Month	Listing Views	Results Views	Users	Events
2022	April	1,253	5,755	2,223	38
2022	May	1,091	5,581	2,426	38
2022	June	1,291	6,155	2,613	39

Top categories viewed for the month of June:

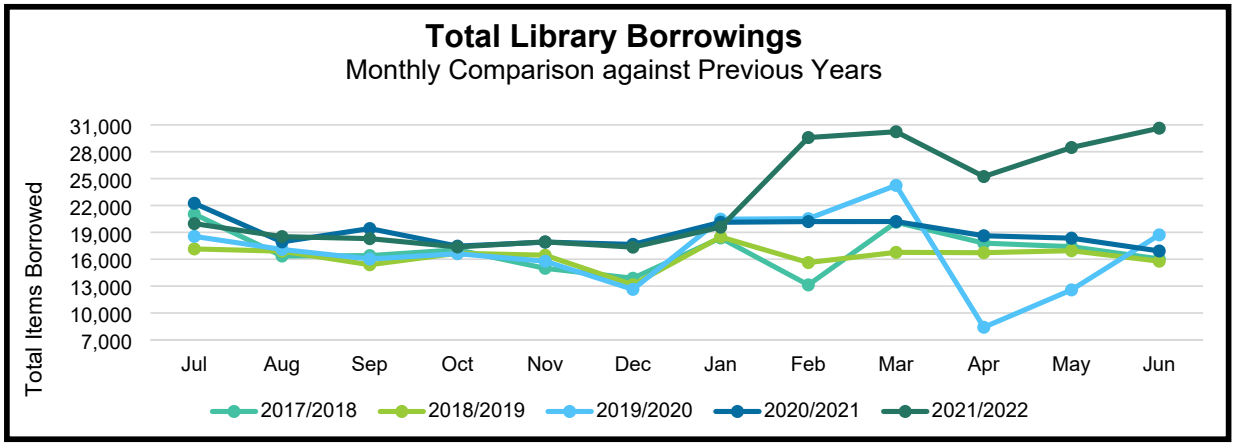
Rank	Category	Listing Views
1	Health Services	373
2	Community Clubs & Interest Groups	170
3	Sport	121
4	Child Services	107
5	Recreation & Leisure	101

Library Services

The Library Services branch is responsible for the provision of customer-centric services and resources to meet the information, recreation, cultural and lifelong learning needs of individuals and groups within the Whitsundays. The branch responsibilities include the design and delivery of library programs, promotion and marketing, collection development and maintenance, information/digital literacy opportunities, outreach, and service extension.

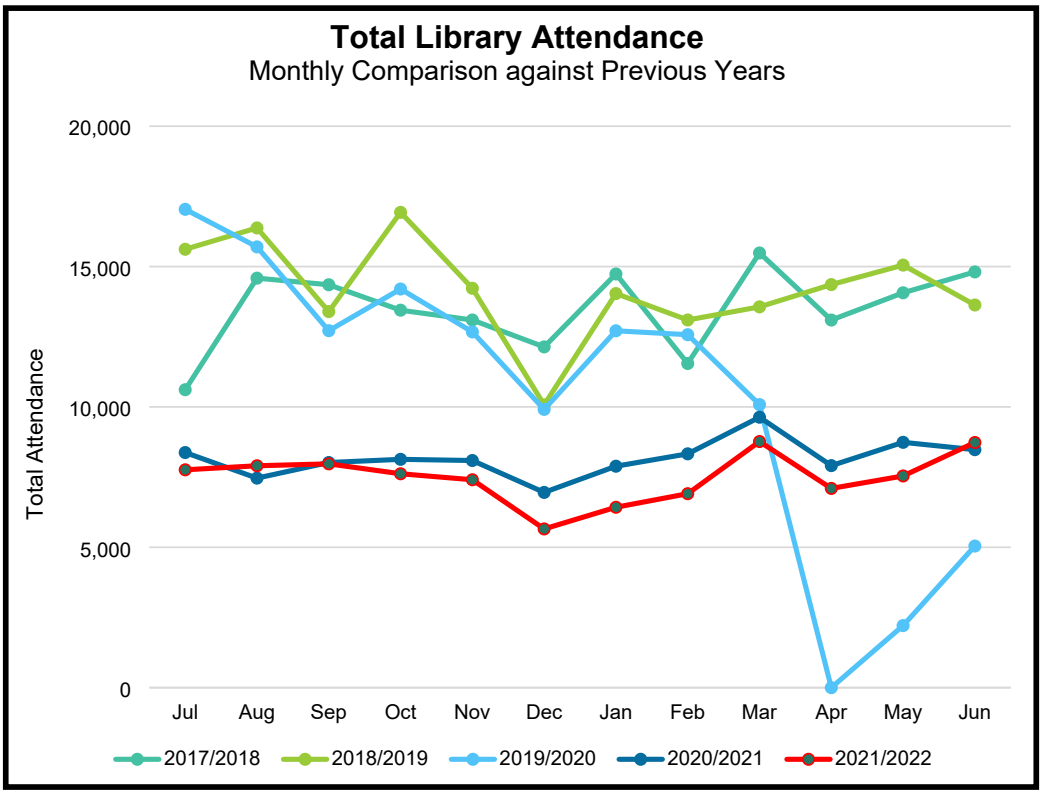
Operations

Service	YTD	Apr	May	June	Monthly Trend
Library Resources Acquired					
Bowen & Collinsville Libraries	3,406	310	401	298	
Cannonvale Library	5,248	466	416	480	
Proserpine Library	2,401	216	445	197	
e-Library	1,795	149	87	234	
Library Resources Borrowed					
Bowen Library	41,873	3,240	3,468	3,669	
Cannonvale Library	83,496	6,522	5,867	5,921	
Collinsville Library	5,557	354	431	475	
Proserpine Library	26,927	2,938	3,212	3,567	
e-Library	115,226	12,174	15,494	16,994	
Mobile Library	88	0	0	0	–
Library Attendance					
Bowen Library	29,820	2,050	2,193	2,362	
Cannonvale Library	44,735	3,434	3,279	3,619	
Collinsville Library	6,272	306	329	512	
Proserpine Library	8,961	1,307	1,740	2,240	
Library Website					
Website Visits	27,176	2,106	1,922	2,975	



Community Services
Monthly Report | June 2022

Service	YTD	Apr	May	June	Monthly Trend
First 5 Forever (F5F)					
Resources - Acquired	369	3	6	152	
Resources - Borrowed by Branches	618	53	61	83	
Community Partnership Interactions	346	19	54	25	
Toolkits Distributed	147	5	15	0	
F5F In Library - Activities Held					
Bowen Library	71	4	9	5	
Cannonvale Library	115	6	13	11	
Collinsville Library	34	1	3	3	–
Proserpine Library	112	6	13	11	
F5F In Library - Activities Attendance					
Bowen Library	691	31	77	52	
Cannonvale Library	2,255	92	269	230	
Collinsville Library	322	12	21	4	
Proserpine Library	1,334	73	163	213	
F5F Community Outreach - Events Held					
Bowen Library	26	2	2	4	
Cannonvale Library	20	2	1	2	
Collinsville Library	11	0	1	1	–
Proserpine Library	18	0	3	1	
F5F Community Outreach - Events Attendance					
Bowen Library	1,036	41	42	300	
Cannonvale Library	2,830	75	16	301	
Collinsville Library	309	0	125	21	
Proserpine Library	1,237	0	348	37	


Total Library Attendance
Monthly Comparison against Previous Years
Total Attendance
20,000
15,000
10,000
5,000
0
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
2017/2018
2018/2019
2019/2020
2020/2021
2021/2022

Service	YTD	Apr	May	June	Monthly Trend
In Library Programs - Events Held					
Bowen Library - Adults	36	0	0	1	
Bowen Library - Children	73	10	5	9	
Cannonvale Library - Adults	59	4	7	3	
Cannonvale Library - Children	156	16	13	16	
Collinsville Library - Adults	2	0	0	0	–
Collinsville Library - Children	16	4	0	2	
Proserpine Library - Adults	18	3	5	4	
Proserpine Library - Children	32	7	7	7	–
In Library Programs - Events Attendance					
Bowen Library - Adults	166	0	0	3	
Bowen Library - Children	755	157	26	114	
Cannonvale Library - Adults	385	12	20	14	
Cannonvale Library - Children	3,052	415	251	367	
Collinsville Library - Adults	28	0	0	0	–
Collinsville Library - Children	104	20	0	40	
Proserpine Library - Adults	119	9	23	20	
Proserpine Library - Children	319	110	81	83	
Community Outreach - Events Held					
Bowen Library - Adults	50	3	4	5	
Bowen Library - Children	0	0	0	0	–
Cannonvale Library - Adults	55	5	4	4	–
Cannonvale Library - Children	0	0	0	0	–
Collinsville Library - Adults	0	0	0	0	–
Collinsville Library - Children	0	0	0	0	–
Proserpine Library - Adults	51	4	4	5	
Proserpine Library - Children	4	0	0	0	–
Community Outreach - Events Attendance					
Bowen Library - Adults	234	22	17	19	
Bowen Library - Children	0	0	0	0	–
Cannonvale Library - Adults	374	36	33	31	
Cannonvale Library - Children	0	0	0	0	–
Collinsville Library - Adults	0	0	0	0	–
Collinsville Library - Children	0	0	0	0	–
Proserpine Library - Adults	637	59	53	71	
Proserpine Library - Children	84	0	0	0	–
Public Computer Usage					
Bowen Library	4,826	368	408	422	
Cannonvale Library	7,177	481	545	566	
Collinsville Library	173	6	7	37	
Proserpine Library	1,005	186	221	201	

Bowen Work Camp

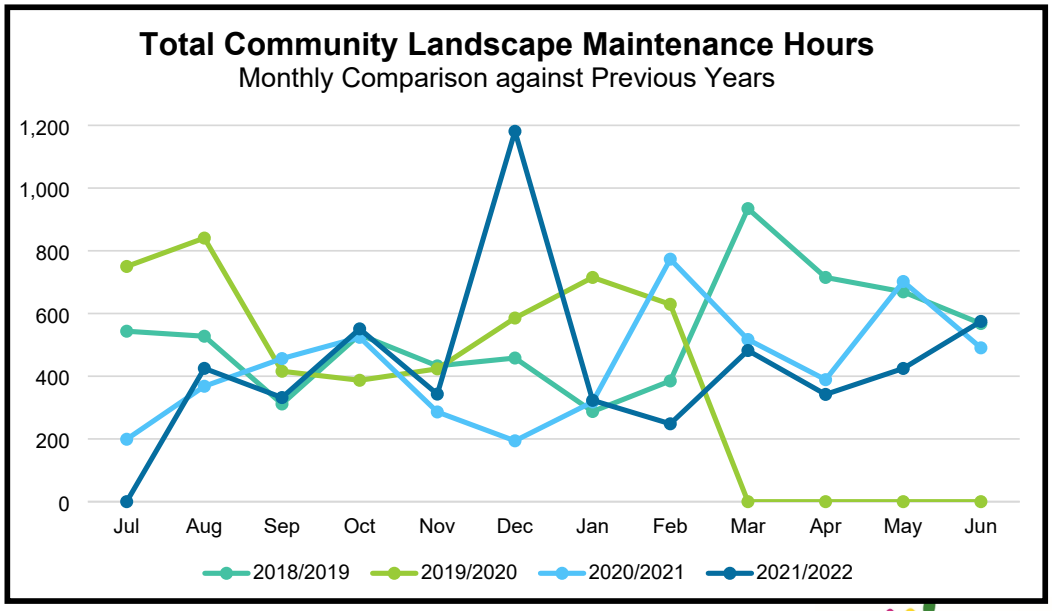
Council partners with Queensland Corrective Services to provide beneficial works projects for the community and rehabilitate offenders with their return to society. They perform a multitude of tasks including maintenance of fences, cemeteries, sportsgrounds and showgrounds, propagation of plants and they also participate in many restoration and general maintenance projects.

Operations

Service	YTD	Apr	May	June	Monthly Trend
Community Landscape Maintenance Hours	5,227	342	424.75	574.75	▯
Community Indoor Tasks Hours	756	63	84	88.5	▯
New Project Assessment Hours	11	0	1	0	▯
WRC Landscape Maintenance Hours	887	48	31.5	68	▯
WRC Nursery Maintenance/Propagation Hours	118	3	8.5	6	▯
WRC Indoor Tasks Hours	188	0	0	0	–
QCS Compound Duties Hours	1,220	120	80.5	99	▯

Projects

Project	Status	% Complete	Budget
Whitsunday Moto Sports Club	In Progress	75%	✓
Collinsville Youth Coalition – Installing table and chairs	Scheduled	0%	✓
Bowen Neighbourhood Centre – Snipping and mowing yard until they move into new premises	Scheduled	60%	✓
Gordon Street Vacant Land – Snipping and spraying during wet season	Scheduled	80%	✓



Aquatic Facilities & Caravan Parks

The Recreation Services branch is responsible for delivering recreation and youth programs that activate our public and open spaces, supporting recreation groups to secure funding for projects, maintaining Council's caravan parks and aquatic facilities, and master planning for future sport and recreation assets.

Aquatic Facilities – Operations

Service	YTD	Apr	May	June	Monthly Trend
Airlie Beach Lagoon – Total Users	181,360	19,450	14,112	13,236	
Airlie Beach Lagoon – Total Offences	5,828	260	188	98	
Pool Attendance – Bowen	57,968	3,233	1504	1,076	
Pool Attendance – Collinsville	10,510	1,522	0*	0*	–
Pool Attendance – Proserpine	29,935	1,711	1,677	693	

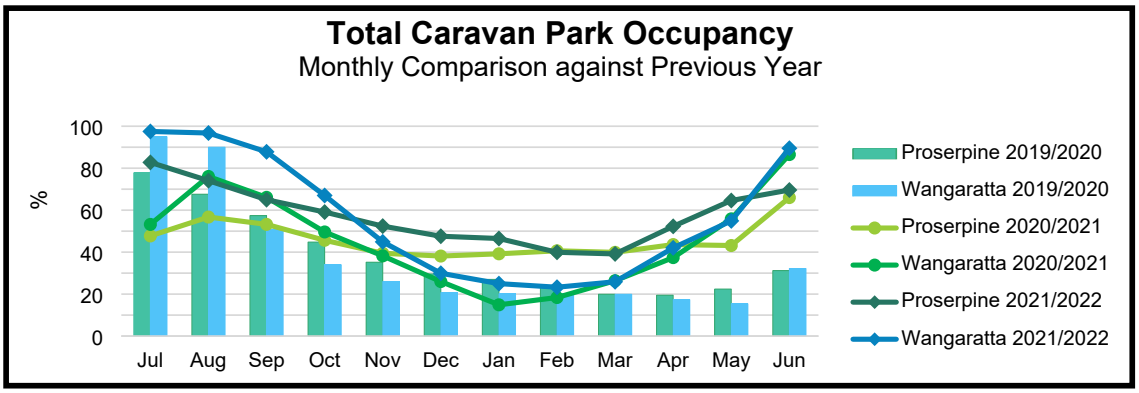
*Collinsville Swimming Pool currently closed during Winter months

Caravan Parks – Operations

Service	YTD	Apr	May	June	Monthly Trend
Proserpine Tourist Park					
Occupancy (%)	57.8	52.29	64.67	69.64	
Revenue ($)	412,309	29,363	36,555	50,442	
Accumulated Revenue - Laundry Service ($)	8,232	566	896.36	1,205.94	
Wangaratta Caravan Park					
Occupancy (%)	57.0	42.04	54.93	89.51	
Revenue ($)	636,046	39,678	45,300	89,695	
Accumulated Revenue - Laundry Service ($)	6,876	342	610.91	421.83	

Caravan Parks Occupancy – Yearly Comparison for June

Service	2019	2020	2021	2022	Yearly Trend
Occupancy (%)					
Proserpine Tourist Park	51.3	31.2	66.0	69.6	
Wangaratta Caravan Park	76.2	32.2	86.5	89.5	

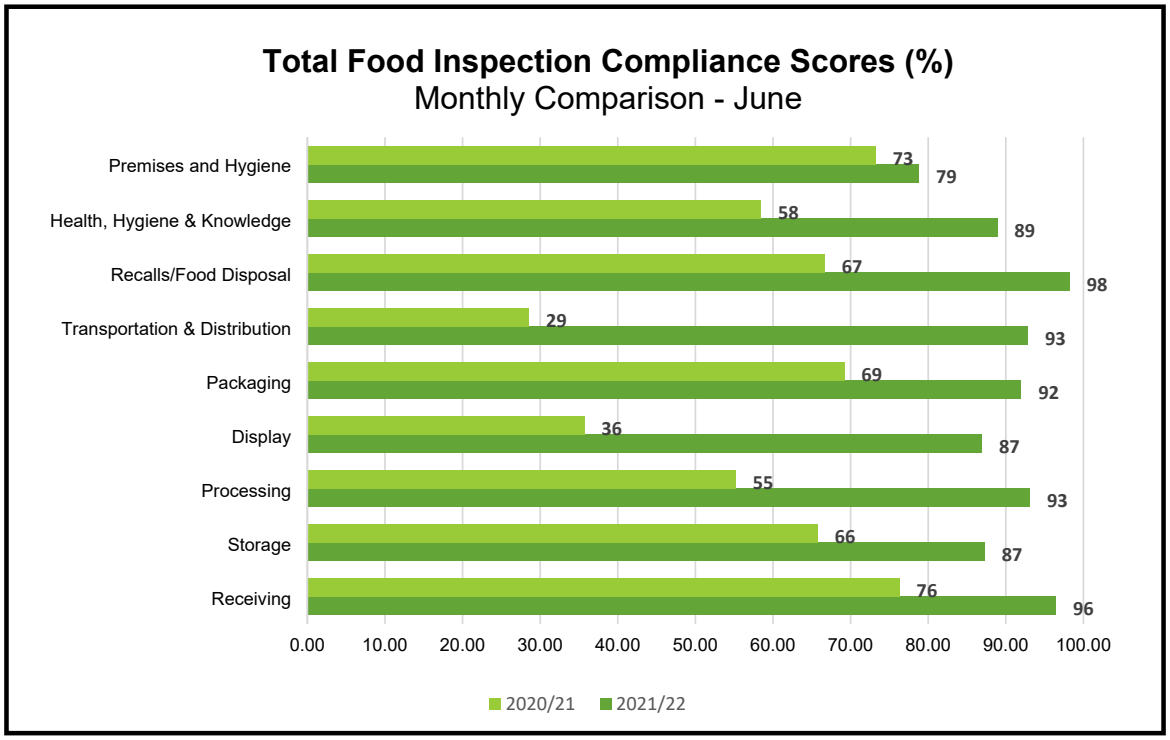


Environmental Health & Local Laws

The Environmental Health & Local Laws branch is responsible for regulation of all local laws and laws associated with Environmental Protection and Public Health. The Environmental Health Unit is responsible for licensing and inspection of food and accommodation premises, assessment of liquor licensing referrals, provides development conditions and the protection of the environment and public health. The Local Laws unit licenses prescribed activities and addresses all breaches of Local Laws including animal control and property compliance involving vegetation, accumulation and temporary homes. Local Laws is also responsible for maintaining the animal impoundment facility, on/off-street car parking compliance and commercial parking operations. The branch is active in development, review and maintenance of related policies and registers.

Environmental Health – Operations

Service	YTD	Apr	May	June	Monthly Trend
Environmental Health					
Environmental Health – Plan Approval Applications Received	109	6	4	7	
Environmental Health Applications Received	90	4	5	7	
Food Safety Programs Received	5	0	0	1	
Liquor Licence Referrals Received	16	0	2	3	
Food Business - Inspections	178	5	1	8	
Food Business - Re-Inspections	87	11	0	3	
Food Safety Programs Audit Reports Reviewed	17	2	1	0	
Personal Appearance Services - Inspections	5	0	0	0	–
ERAs - Inspections	0	0	0	0	–
Development Applications Referrals Received	8	0	0	0	–
Accommodation - Inspections	26	1	0	0	–
Accommodation - Re-inspections	9	0	0	0	–
Erosion Sediment Control - Inspections	19	0	0	0	–
Complaints Received - Asbestos	11	1	0	0	–
Complaints Received - Litter & Dumping	1	0	0	0	–
Complaints Received - EH General	166	14	0	27	
Event Application Assessment	26	3	0	0	–
Food Inspection Compliance Categories					
Receiving (%)	82.30	66.67	0	76.32	
Storage (%)	61.04	53.70	0	65.79	
Processing (%)	74.61	52.17	0	55.22	
Display (%)	60.89	22.22	0	35.71	
Packaging (%)	78.94	61.11	0	69.23	
Transportation & Distribution (%)	60.61	22.22	0	28.57	
Recalls/Food Disposal (%)	79.80	61.11	0	66.67	
Health, Hygiene & Knowledge (%)	79.62	52.22	100	58.46	
Premises and Hygiene (%)	72.94	47.35	66.67	73.23	



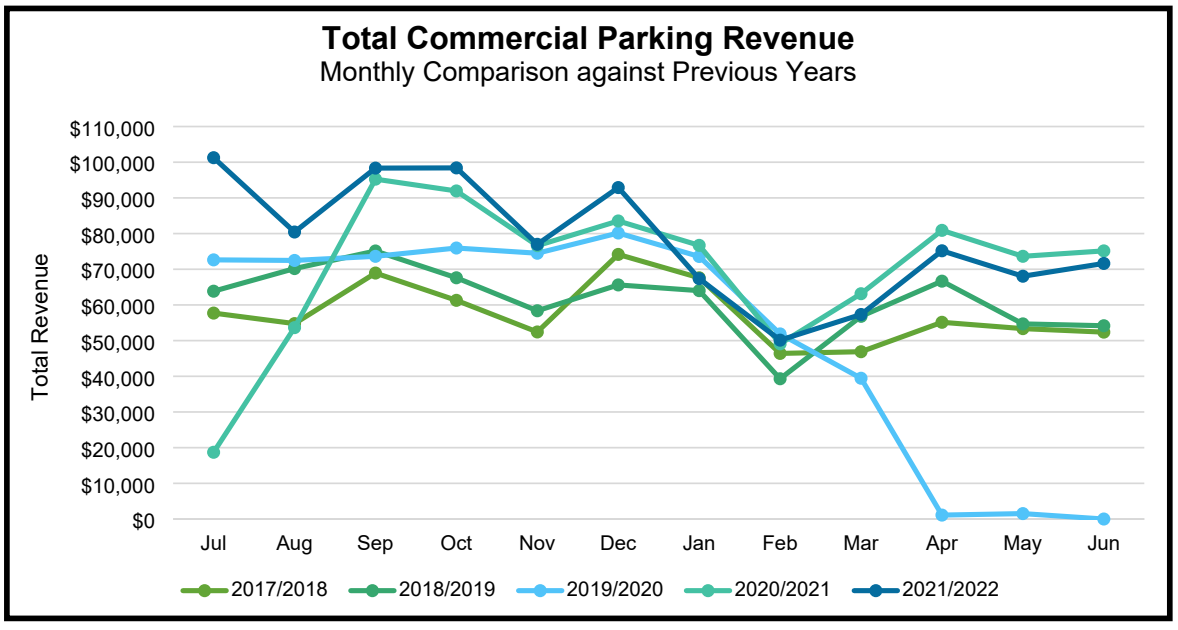
Local Laws – Operations

Service	YTD	Apr	May	June	Monthly Trend
Local Laws					
Local Law Applications Received	183	5	2	6	
Complaints Received - Animal Management	1,005	74	91	95	
Complaints Received - Other Local Law	1,477	101	112	108	
Compliance Notices Issued	483	40	61	36	
Renewal/Reminder/Final Notices	1,140	43	47	77	
Infringement Responses	1,236	79	29	42	
Dog Registrations	4,332	50	38	124	
Cat Registrations	550	3	5	19	
Parking Infringements - Issued	2,576	105	191	233	
Parking Infringements - Waived	273	6	6	4	
Other Infringements - Issued	576	30	27	48	
Other Infringements - Waived	147	5	6	2	
Infringement Reminder Notices Sent	1,277	96	0	19	
COVID-19 Inspections	3,320	N/A	N/A	N/A	–
Proserpine Self-Contained Vehicle Park Inspections	4,185	71	0*	191	

* Note - Proserpine Self-Contained Vehicle Park is closed during May due to unexpected large amount of rainfall.

Commercial Parking – Operations

Car Parks	YTD	Apr	May	June	Monthly Trend
Heart of the Reef Transit Facility					
Occupancy (no.)	6	0	0	0	–
Revenue ($)	298	0	0	0	–
Port of Airlie					
Average Spend ($)	12.47	11.76	12.06	12.03	
Tariff (most selected)	12-24hr	12-24hr	12-24hr	12-24hr	–
No. of tickets purchased	30,785	2,530	2,263	2,457	
Revenue ($)	386,254	29,754	27,285	29,554	
Airlie Lagoon Precinct					
Average Spend ($)	4.45	4.29	4.21	4.26	
Tariff (most selected)	2-4hr	2-4hr	2-4hr	2-4hr	–
No. of tickets purchased	75,085	6,867	5,726	5,783	
Revenue ($)	333,703	29,502	24,131	24,631	
Abell Point Marina					
Average Spend ($)	8.79	8.73	8.59	8.02	
Tariff (most selected)	4-12hr	4-12hr	4-12hr	4-12hr	–
No. of tickets purchased	18,493	1,357	1,503	1,578	
Revenue ($)	160,673	11,849	12,915	12,648	
Coconut Grove					
Average Spend ($)	5.56	5.69	5.37	5.17	
Tariff (most selected)	4-12hr	4-12hr	4-12hr	4-12hr	–
No. of tickets purchased	10,278	715	692	927	
Revenue ($)	57,382	4,072	3,715	4,795	



Natural Resource Management & Climate

The Natural Resource Management & Climate branch is responsible for developing and implementing various environmental and community health and safety programs such as pest, weed and water quality programs as well as maintaining stock routes and implementing the Biosecurity Plan.

Natural Resource Management – Operations

Service	YTD	Apr	May	June	Monthly Trend
Complaints Received - Pest & Weed	132	15	13	15	
Complaints Received - Environmental	102	7	9	8	
Property Pest Management Plan (PPMP) Implemented/Reviewed	34	0	1	1	–
PPMP Annual Reviews Completed	32	0	1	1	–
Notices Issued - Biosecurity	0	0	0	0	–
Notices Issued - Penalty Infringement	0	0	0	0	–
Landholder Access - Herbicide Rebate	72	7	8	3	
Landholder Access - Mechanical Rebate	6	0	0	4	
Letters/Emails to Landholders - Weeds	503	29	47	40	
Property Visit/Inspections - Weeds	668	24	67	92	
Property Visit/Inspections - Feral Animals	37	5	9	0	
Feral Animals - Traps Set	12	0	4	0	
Feral Animals - Trapped	10	1	7	0	
Aerial Shooting - Flights	21	0	0	2	
Aerial Shooting - Feral Animals Shot	2,097	0	0	85	
Properties Baited	50	18	0	1	
Baits Laid (kg)	5,385	2,430	0	30	
Length of Road Reserve Sprayed (km)	3.5	0	3.5	0	
No. of Council Lots Sprayed/Inspected	23	0	0	5	
Mixed Chemicals Used (L)	2,773	0	67.5	400	
Pest Workshops	2	0	0	0	–
Field Days Run/Involved	5	0	0	1	
Landholder Contacts	0	0	0	0	–
Project Reports - not to Council	44	5	2	0	
Briefing / Council Reports	21	1	3	3	–
Bushfire Hazard Reduction Burns	1	0	0	1	
Environmental Planning Projects Completed	2	0	0	0	–
DA's Assessed (including RFI & Conditions & Advice) Completed	119	8	12	13	

Projects

Project	Status	% Complete	Budget	Time
Bushfire Management Program	In Progress	50%	✓	✓
Reef Guardian Council Action Plan	Complete	100%	✓	✓

Climate Hub – Operations

Service	YTD	Apr	May	June	Monthly Trend
Media Releases	13	1	0	1	
Facebook Post Reach	34,332	2,707	3,428	886	
Facebook Followers	6,812	621	650	665	
Website Views	2,716	192	268	189	
Projects Underway	105	7	7	10	
Projects in Developments	228	2	2	4	

Projects

Project	Type	Status
Developing a Whitsundays Carbon Offset Project	Economic	BMT contracted to deliver project stage 1
Whitsunday Industry Resilience Project	Economic	Final report from Griffith received - Completed
Regional Heat Mitigation	Social	Planning implementation of study findings
Funding and Financing Adaptation – A Case Study	Economic	Stage 2 contracted
Whitsunday Water Treatment and Pumping Optimisation	Economic	Underway - CQU Masters student in year 1 of 2
Whitsunday Healthy Heart (WHH) Project	Social	Underway (year 2 of 4)
Climate Ready Biodiversity Mapping	Environmental	Underway
Hub Partnership Program	Social	In development, risk assessment completed. Project prospectus in development.

Update

Pest Management Projects:

- Land Protection Officer, Bren Fuller attended a weeklong “Thermal Assisted Aerial Shooting” course in Western Australia. Bren was one 1 of 6 invited to participate and was the only participant from Queensland. Bren has been using thermal equipment from both the ground and air for quite a few years now and thought he had a fair understanding of it. Having the opportunity to learn from people experienced in using the high-level gear and flying and shooting with it has opened his eyes to what can be achieved with it. He is hoping to explore some practical applications here and would like to attract some external funding and trial this method in some of our sensitive areas.
- Land Protection Officer, Melissa Hayes and our NRM Trainee, Kayla Simpson conducted Yellow Crazy Ant inspection on Hamilton Island as part of Council’s Pest Surveillance program. They found the island infestation area had not spread.
- Land Protection Officers are working on a “Grader Grass Management Report” for the region.
- Council participated in the Under 8’s week with officers dressing up as a cat and dog to attend.
- Contractors have nearly finished weed spraying and mulching along Council’s state roads as part of the Road Maintenance Performance Contract with TMR.

Other Natural Resource Management Projects:

Coastal

- Community consultation process was commenced for the Wilsons Beach Swimming Enclosure with letters and surveys being sent to the Wilson Beach property owners and a meeting with residents was held.

Bushfire Management

- Council along with QRFS conducted a controlled burn on Bowen's Hospital Hill.

Environment Projects:

Collinsville Flying Fox

- A public meeting was held at the beginning of June where 5 residents attended. All residents were in agreeance that they want the Flying Fox gone and for the trees not to be cut down but would rather noise be used to move the Flying Fox on. More community consultation is needed.
- Upon the last inspection of Pelican Park on 22 June 2022 there were no Black Flying Fox however the little Red Flying Fox are up to 920 spreading across trees in Pelican Park, 1 tree on private land and the old caravan park.
- Since the tree trimming at 3 Strathmore Street the Flying Fox have not returned.

Climate Change

-

C-CAT Projects:

- No updates for C-CAT this month.

Customer Service

Call Centre – Operations

Service	YTD	Apr	May	June	Monthly Trend
Business Hours Call Centre					
Calls Received – Total	59,488	4,477	5,173	4,228	
Calls Received – 1300 WRC QLD	36,850	2,813	2,793	2,769	
Calls Answered	33,087	2,431	2,511	2,464	
Calls Overflowed	2,439	262	197	220	
Calls Abandoned	798	102	66	67	
Calls Abandoned (%)	2.17%	3.63%	2.36%	2.42%	
Untracked Calls (Voice Msg)	340	18	19	18	
***ASL - Average Service Level (%)**	81.6%	77.5%	83.3%	81.2%	
***ASA - Average Speed of Answer**	19	22	17	19	
***AHT - Average Handle Time/Secs**	193	199	190	195	
After Hours Call Centre					
Calls Received– Total (inc test)	2,361	269	266	200	
Calls Answered– (Charged)	1,148	103	99	76	
Calls Abandoned (%)	12.13%	9.67%	13.91%	3.5%	
***ASL - Average Service Level (%)**	76.75%	78.07%	71.80%	84.5%	
***ASA - Average Speed of Answer**	-	19	38	15	
***AHT - Average Handle Time/Secs**	-	88	123	89	

Customer Transactions

Service	YTD	Apr	May	June	Monthly Trend
Receipts	146,061	10,172	7,270	7,703	
eServices Receipts	3,512	200	68	101	
eServices Receipts (%)	2.40%	1.97%	0.94%	1.31%	
CRMs (within timeframe)	12,814	1,062	1,149	1,081	
eServices CRMs	43	2	2	7	
eServices CRMs (%)	0.33 %	0.19%	0.17%	0.65%	

Payments:

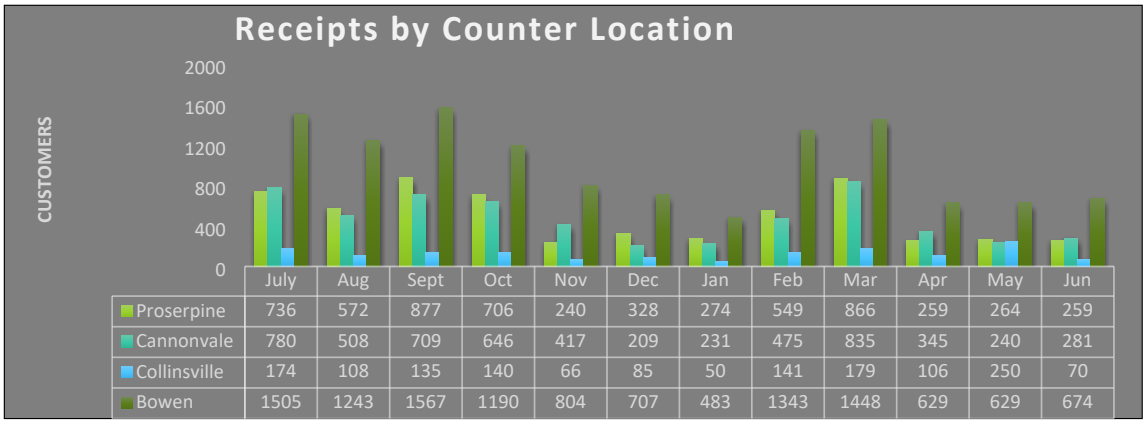
- Total BPay, Austpost, Direct Deposits & EServices payment at **61.17%** of total payments.

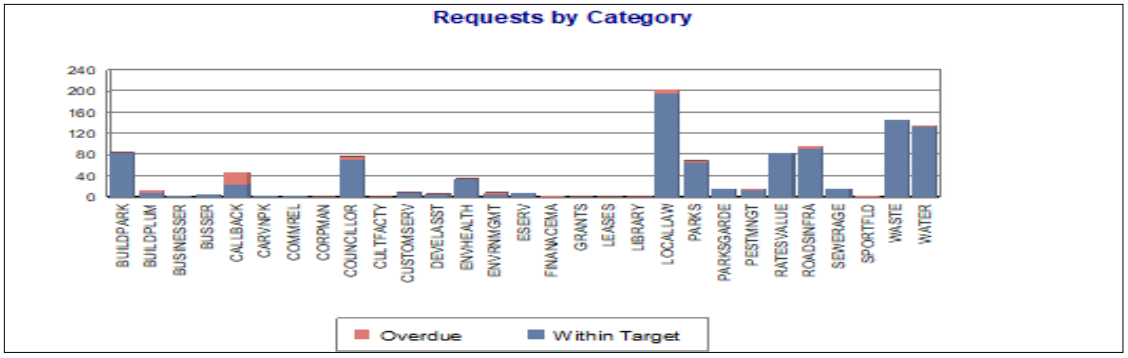
Incoming Calls & Requests:

- Total of **1,824** visitors through the service centres.
- WRC Call Statistics at **81.2%** of calls answered in 25 seconds.
- CRM completion was **96.4%** within timeframe (**94.6%** including call backs).
- First Point of Contact (FPOC) resolution was at **78.73%** for June.

Top Issues

Service	YTD	Apr	May	June	Monthly Trend
Counter Receipts					
Rates Search	2,541	181	187	182	
Rates Receipt	5,449	203	109	145	
Animal Tag Renewal	1,835	1	4	93	
Special Water Meter	1,060	78	83	79	
New Animal Registration	779	58	39	46	
Telephone (First Point of Contact)					
Local Laws/Compliance and Environment	1,344	127	119	160	
General	2,724	52	76	141	
Rates/Water Billing	2,847	135	113	136	
Waste (Bins/Recycling/Refuse Centres)	893	60	80	76	
Building/Plumbing/Planning and Develop	676	42	64	75	
After Hours					
Water Supply Issue	323	44	31	20	
Security	43	2	5	14	
Wandering Animals	106	15	11	12	
Illegal Fire	15	1	0	8	
Roaming Stock	42	3	4	6	





Cultural Heritage

Our Cultural Heritage includes all the elements of our cultural way of life which have gone before us, and which exist now. Cultural Heritage is an expression of the ways of living developed by a community and passed on from generation to generation, including customs, practices, places, objects, artistic expressions, and values.

Cultural Heritage includes the Reconciliation Act Plan (RAP) for increased recognition of the Indigenous People in the Whitsunday Region and the Indigenous Land Use Agreement (ILUA) sets out activities and communications with all Traditional Owners in the region. The ILUA will ensure Council is compliant and provide the community with knowledge on the Traditional Owners within our region.

Operations

Service	YTD	Apr	May	June	Monthly Trend
Meetings with Traditional Owners	3	0	1	0	

- On-site meeting held in Collinsville with Jangga Operations on Tuesday, 29 March 2022
- Consultative Committee Meeting held in Glenden with Jangga Operations, Isaac Regional Council & Charters Towers Regional Council on Monday, 30 May 2022.

Projects

Project	Status	% Complete	Budget	Time
Reconciliation Action Plan (RAP)	Complete	100%	✓	✓
Indigenous Land Use Agreements (ILUA)	In Progress	80%	✓	✓

13.5.1 - 500.2022.0034 Disaster Recovery Funding Arrangements (DRFA) Sealed Road Package E4 - Regional

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Adam Hagy - Director Infrastructure Services

AUTHORISING OFFICER: Adam Hagy - Director Infrastructure Services

PRESENTED FOR: Decision

ATTACHMENTS

Nil

PURPOSE

This report presents to Council for consideration the Evaluation Panel's Recommendation to award Contract 500.2022.0034 Disaster Recovery Funding Arrangements (DRFA) Sealed Road Package E4 – Regional.

OFFICER'S RECOMMENDATION

That Council award Contract 500.2022.0034 Disaster Recovery Funding Arrangements (DRFA) Sealed Road Package E4 – Regional to Beddaws Pty Ltd T/As Copp & Co Plant Hire for the amount of $952,657.51 (excluding GST).

BACKGROUND

In January 2021, North Queensland suffered another severe weather event and Council's assets once again received significant damage. The new road works will be funded under the Queensland State Government's Disaster Recovery Funding Arrangements (DRFA).

Whitsunday Regional Council is responsible for the maintenance of an extensive network of Sealed roads including roads of varying geometric standards, widths and pavement types. These roads are generally located in suburban localities. The impacted assets form an integral part of the Whitsunday Regional Council road network and provide motorists, commercial transport and essential services access to the Council Region.

PROCESS

Tender Release

A Request for Tender (RFT) was released on 20 April 2022 and as advertised as follows in accordance with *Local Government Regulation 2012 S228*:

a) eTenderBox

b) Newspapers:

   i. Whitsunday News

   ii. Whitsunday Times

   iii. Council's website.

Tender Evaluation Panel

The Tender Evaluation Panel (TEP) comprised:

a) Disaster Recovery Project Manager – Disaster Recovery (PDM)
b) Disaster Recovery Project Officer – Disaster Recovery (PDM)
c) Contracts Officer – Corporate Services

Summary of Tenders Received

The following tenders were received by the closing time of 2.00pm on Wednesday 1 June 2022:

a) Beddaws Pty Ltd T/As Copp & Co Plant Hire
b) Seaforth Civil Pty Ltd
c) Stabilised Pavements of Australia Pty Limited

Note: An initial compliance check was conducted on the tender submissions to identify if the responses were non-conforming with the requirements of the RFT. This included compliance with contractual requirements and provision of requested information.

All of the Tenderers marked conforming progressed to the qualitative criteria assessment on the basis that all the terms, conditions and mandatory requirements of the RFT had been met.

Evaluation of Tenders

The Tenderers were assessed against the qualitative selection criteria. The qualitative criteria were weighted according to their importance as perceived and agreed by members of the TEP. Relative weightings were published within the RFT as per below:

Criteria	Weighting
Relevant Experience & Key Personnel	20%
Demonstrated Understanding	20%
Suppliers Resources and Availability	20%
Pricing	30%
Local Content	10%

Summary of Evaluation Scores

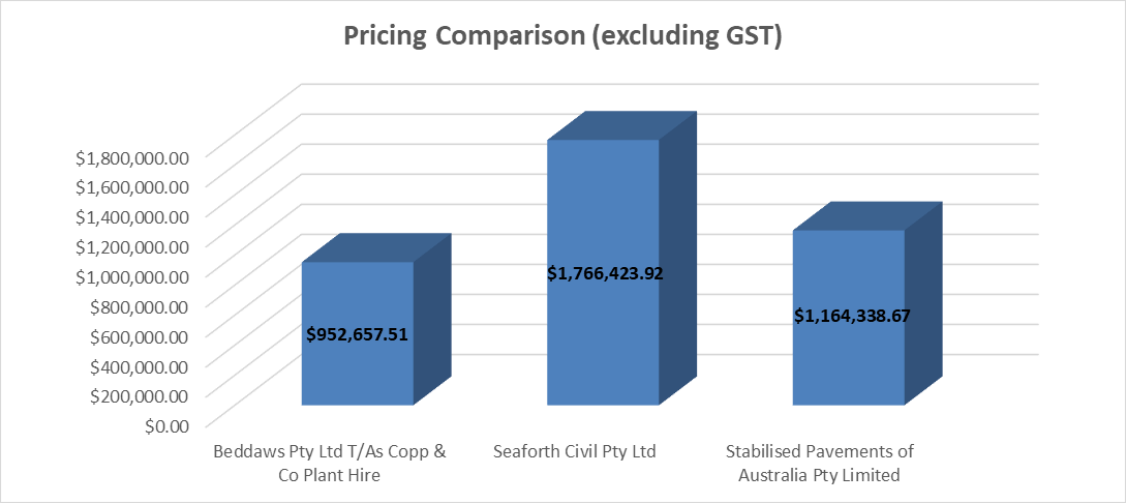
The qualitative criteria assessment was carried out by the TEP members individually on all the information provided by the Tenderers according to the level of response and compliance to the requirements of the contract to determine the overall capability and best value for money for Council.

The evaluation of the conforming tenders involved an assessment of the level of each Tenderers responses to each of the criterion and was given a score between 0-10 with each criterion having an overall % weighted proportionally of the total evaluation score.

A summary of the tender final assessment is detailed below:

Respondents	Evaluation panel averaged Score	Total rank
Beddaws Pty Ltd T/As Copp & Co Plant Hire	82.3%	**1**
Seaforth Civil Pty Ltd	47.0%	3
Stabilised Pavements of Australia Pty Limited	67.7%	2

The below graph shows the pricing difference between the Tenderers:



Combined Weighting Summary

Based on the results from the evaluation, Beddaws Pty Ltd T/As Copp & Co Plant Hire scored the highest percentage overall, offered the most competitive pricing and have the required experience, understanding and resources to complete this project for Council within the funding timeframe.

The Evaluation Panel recommends the Contract for 500.2022.0034 DRFA Sealed Road Package E4 - Regional be awarded to Beddaws Pty Ltd T/As Copp & Co Plant Hire for the amount of $952,657.51 (excluding GST) as it represents the most advantageous outcome to Whitsunday Regional Council.

DISCUSSION/CURRENT ISSUE

Whitsunday Regional Council (Council) requires a suitably experienced and qualified contractor to carry out repairs and rehabilitation work on Council's sealed road network in localities near Proserpine, Airlie Beach, Bowen, Dingo Beach and Collinsville.

This package of works is for fifty-five sealed roads throughout the Whitsunday Region.

STATUTORY/COMPLIANCE MATTERS

Local Government Act 2009
S227 & S228 Local Government Regulations 2012
Work Health and Safety Act 2011
The procurement process has been conducted in accordance with Council's Policy and Legislative obligations

STRATEGIC IMPACTS

Maintain a high level of preparedness, capability, and responsiveness to respond to and recover from natural disasters that impact on our local communities and infrastructure.

FINANCIAL IMPLICATIONS

Works will be required to be completed prior to 30 June 2023.

CONSULTATION/ENGAGEMENT

Director Infrastructure Services
Disaster Recovery Project Manager – Project Delivery Managers Pty Ltd (PDM)
Disaster Recovery Project Officer – Project Delivery Managers Pty Ltd (PDM)
Contracts Officer – Corporate Services

RISK ASSESSMENT

Risks Management – The awarding of the Contracts will enable damaged roads in the Whitsunday Region to be repaired.

TIMINGS/DEADLINES

The funding deadline for this package is the end of June 2023, with the works expected to be completed by the end of 2022.

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

No.

ALTERNATIVES CONSIDERED

N/A

13.5.2 - 500.2022.0051 Disaster Recovery Funding Arrangements (DRFA) Road Packages K4 & C4 – Collinsville Region

DATE: Wednesday 13 July 2022

TO: Ordinary Council Meeting

AUTHOR: Adam Hagy - Director Infrastructure Services

AUTHORISING OFFICER: Adam Hagy - Director Infrastructure Services

PRESENTED FOR: Decision

ATTACHMENTS

Nil

PURPOSE

This report presents to Council for consideration the Evaluation Panel's Recommendation to award Contract 500.2022.0051 Disaster Recovery Funding Arrangements (DRFA) Road Packages K4 & C4 – Collinsville Region.

OFFICER'S RECOMMENDATION

That Council award Contract 500.2022.0051 Disaster Recovery Funding Arrangements (DRFA) Road Packages K4 & C4 – Collinsville Region as follows:

a) Separable Portion 1 - DRFA Road Package K4 - Collinsville Central to LD & LJ Hillery Pty Limited for the amount of $158,937.14 (excluding GST)
b) Separable Portion 2 - DRFA Road Package C4 - Glen Avon to Adam Stroud Enterprises Pty. Ltd. for the amount of $1,333,975.00 (excluding GST)

BACKGROUND

In January 2021, North Queensland suffered another severe weather event as a result of Ex-Tropical Cyclone Imogen and the Monsoon Season and Council's assets once again received significant damage. The new road works will now be funded under the Queensland State Government's Disaster Recovery Funding Arrangements (DRFA).

Council is responsible for the maintenance of an extensive network of unsealed rural roads including roads of varying geometric standards, widths and pavement types. These roads are generally located in rural or remote localities with limited access to water or any other facilities. The impacted assets form an integral part of the Council road network and provide motorists, commercial transport and essential services access to the furthest extent of the Council Region in most weather conditions. The proposed works to nominated road segments include heavy formation grading, full-width formation grading with the incorporation of a Type 2.5 road base top-up and Re-sheets to various road segments in accordance with the attached schedule.

PROCESS

Tender Release

A Request for Quotation (RFQ) was released via eTenderBox on 16 May 2022 to all the Suppliers on Council's Wet & Dry Hire Arrangement that indicated they wish to be included on Minor Works Projects.

Evaluation Panel

The Evaluation Panel (EP) comprised:

a) Disaster Recovery Project Manager – Disaster Recovery (PDM)
b) Disaster Recovery Project Officer – Disaster Recovery (PDM)
c) Contracts Officer – Corporate Services

Summary of Tenders Received

The following submissions were received by the closing time of 2.00pm Friday 3 June 2022:

a) Adam Stroud Enterprises Pty. Ltd. T/As Adams Earthworks
b) Beddaws Pty Ltd T/As Copp & Co - Civil and Plant Hire
c) Durack Civil Pty Ltd
d) D J Brazil Pty Ltd
e) LD & LJ Hillery Pty Limited
f) Seaforth Civil Pty Ltd
g) Searles Transport Pty Ltd.

Beddaws Pty Ltd T/As Copp & Co - Civil and Plant Hire only provided a submission for Package K4.

Note: An initial compliance check was conducted on the supplier submissions to identify if the responses were non-conforming with the requirements of the RFT. This included compliance with contractual requirements and provision of requested information.

All of the Suppliers marked conforming progressed to the qualitative criteria assessment on the basis that all the terms, conditions and mandatory requirements of the RFT had been met.

Evaluation of Tenders

The Suppliers were assessed against the qualitative selection criteria. The qualitative criteria were weighted according to their importance as perceived and agreed by members of the EP. Relative weightings were published within the RFQ as per below:

Criteria	Weighting
Relevant Experience & Key Personnel	20%
Demonstrated Understanding	20%
Suppliers Resources and Availability	20%
Pricing	30%
Local Content	10%

Summary of Evaluation Scores

The qualitative criteria assessment was carried out by the EP members individually on all the information provided by the Suppliers according to the level of response and compliance to the requirements of the contract to determine the overall capability and best value for money for Council.

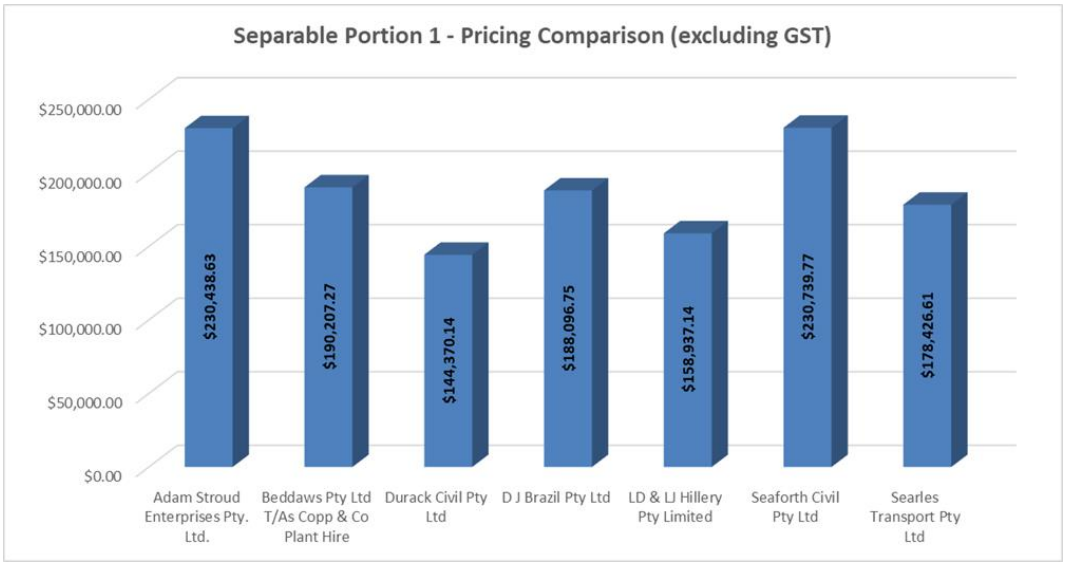
The evaluation of the conforming submissions involved an assessment of the level of each Suppliers responses to each of the criterion and was given a score between 0-10 with each criterion having an overall % weighted proportionally of the total evaluation score.

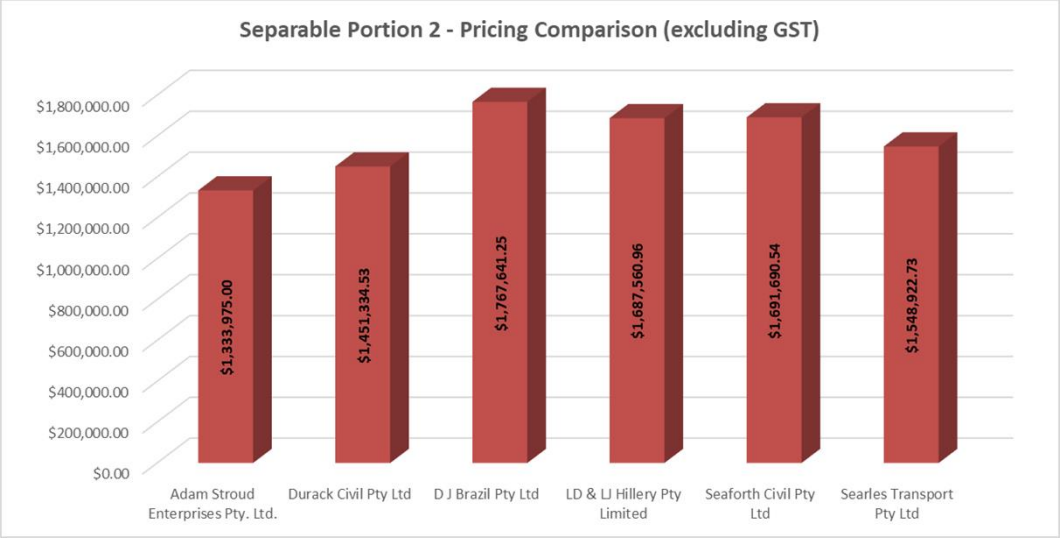
A summary of the final assessment is detailed below:

Respondents	Evaluation panel averaged Score	Total rank
Separable Portion 1 - DRFA Road Package K4 - Collinsville Central		
Adam Stroud Enterprises Pty. Ltd.	59.9%	6
Beddaws Pty Ltd T/As Copp & Co Plant Hire	82.3%	4
Durack Civil Pty Ltd	74.0%	5
D J Brazil Pty Ltd	84.0%	3
LD & LJ Hillery Pty Limited	89.3%	**1**
Seaforth Civil Pty Ltd	48.0%	7
Searles Transport Pty Ltd	85.3%	2

Respondents	Evaluation panel averaged Score	Total rank
Separable Portion 2 - DRFA Road Package C4 - Glen Avon		
Adam Stroud Enterprises Pty. Ltd.	86.3%	**1**
Durack Civil Pty Ltd	71.5%	5
D J Brazil Pty Ltd	78.5%	4
LD & LJ Hillery Pty Limited	82.8%	3
Seaforth Civil Pty Ltd	66.3%	6
Searles Transport Pty Ltd	85.5%	2

The below graph shows the pricing difference between the Suppliers:





Combined Weighting Summary

Based on the results of the Evaluation, the following Suppliers scored the highest percentage overall, offered competitive price and have the necessary resources and experience to successfully complete these packages of work for Council within the funding timeframe:

a) Separable Portion 1 - DRFA Road Package K4 - Collinsville Central: LD & LJ Hillery Pty Limited

b) Separable Portion 2 - DRFA Road Package C4 - Glen Avon: Adam Stroud Enterprises Pty. Ltd

The Evaluation Panel recommends that Contract 500.2022.0051 DRFA Road Packages K4 & C4 – Collinsville Region be awarded as follows:

a) Separable Portion 1 - DRFA Road Package K4 - Collinsville Central: LD & LJ Hillery Pty Limited for the amount of $158,937.14 (excluding GST)

b) Separable Portion 2 - DRFA Road Package C4 - Glen Avon: Adam Stroud Enterprises Pty. Ltd. for the amount of $1,333,975.00 (excluding GST)

as per their submissions, as it represents the most advantageous outcome to Whitsunday Regional Council.

DISCUSSION/CURRENT ISSUE

Whitsunday Regional Council (Council) requires a suitably experienced and qualified contractor to carry out repairs and rehabilitation work on Council's rural road network in localities around Collinsville.

This contract includes two Separable Portions, which Council reserves the right to award in whole or per Portion:

a) Separable Portion 1 – DRFA Road Package K4 – Collinsville Central

b) Separable Portion 2 – DRFA Road Package C4 – Glen Avon

STATUTORY/COMPLIANCE MATTERS

Local Government Act 2009
S227 & S228 Local Government Regulations 2012
Work Health and Safety Act 2011
The procurement process has been conducted in accordance with Council's Policy and Legislative obligations.

STRATEGIC IMPACTS

Maintain a high level of preparedness, capability, and responsiveness to respond to and recover from natural disasters that impact on our local communities and infrastructure.

FINANCIAL IMPLICATIONS

Works will be required to be completed prior to 30 June 2023.

CONSULTATION/ENGAGEMENT

Director Infrastructure Services
Disaster Recovery Project Manager – Project Delivery Managers Pty Ltd (PDM)
Disaster Recovery Project Officer – Project Delivery Managers Pty Ltd (PDM)
Contracts Officer – Corporate Services

RISK ASSESSMENT

Risks Management – The awarding of the Contracts will enable damaged roads in the Whitsunday Region to be repaired.

TIMINGS/DEADLINES

By awarding the road packages to two Contractors will ensure a shorter timeframe for the completion works within the funding deadline of 30 June 2023.

CONFLICT OF INTEREST DECLARATION

Council officers contributing to the preparation and approval of this report have no conflicts of interest to declare.

HUMAN RIGHTS IMPACT

No.

ALTERNATIVES CONSIDERED

N/A

14 MATTERS OF IMPORTANCE

This item on the agenda allows Councillors the opportunity to raise an item not included on the agenda for discussion as a matter of importance.

15 LATE REPORT ITEMS

No late report items for this meeting.

16 CONFIDENTIAL MATTERS

16.1 Corporate Services

16.1.1 - Microsoft Volume Licensing Government Agreement Extension - Data#3

CONFIDENTIAL

S254J Local Government Regulation 2012 - Closed Meetings

(1) A local government may resolve that all or part of a meeting of the local government be closed to the public.

(3) However, a local government or a committee of a local government may make a resolution about a local government meeting under subsection (1) or (2) only if its councillors or members consider it necessary to close the meeting to discuss one or more of the following matters—

*– **(g) negotiations relating to a commercial matter involving the local government for which a public discussion would be likely to prejudice the interests of the local government.***

16.1.2 - Shoreline Whitsunday CTS 34049 - Cancellation of Water Charging Agreement

CONFIDENTIAL

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(3) However, a local government or a committee of a local government may make a resolution about a local government meeting under subsection (1) or (2) only if its councillors or members consider it necessary to close the meeting to discuss one or more of the following matters—

*– **(d) rating concessions.***