



Whitsunday Regional Council Bushfire Management Plan

2018 - 2020

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Date: 22 June 2018

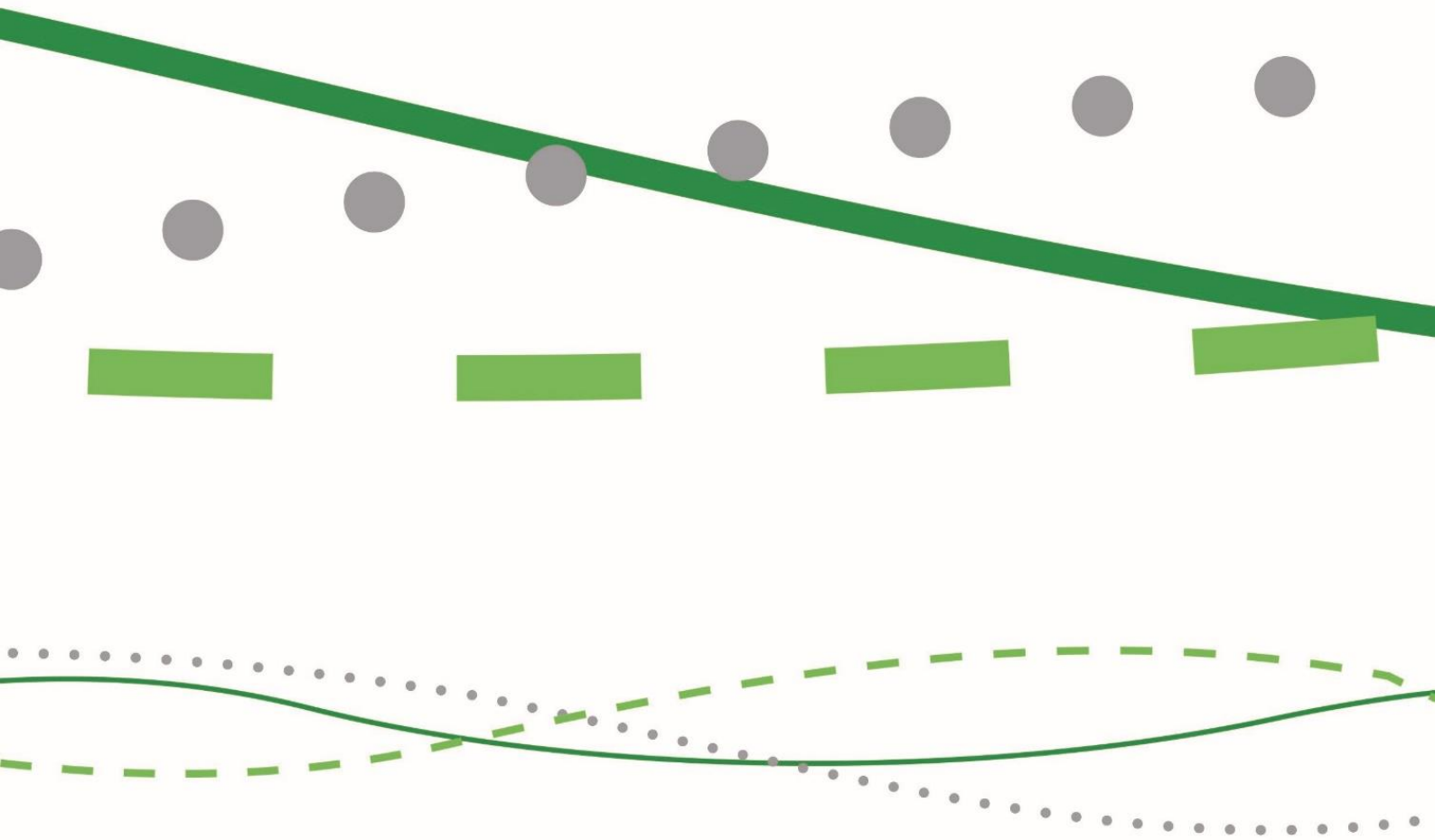


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Executive Summary

The Whitsunday Regional Council has developed a Bushfire Management Plan to coordinate the management of bushfire hazard on Council managed and owned public land. The Council intends to work with land management stakeholders such as Queensland Fire and Emergency Services and state government agencies to manage bushfire hazard to protect people, infrastructure and to achieve conservation outcomes. This Bushfire Plan is designed to provide direction to Council and the community over a three year period (2018-2020).

The Whitsunday Council believes that good planning and communication are essential in managing bushfire hazard and coordinating the implementation of effective bushfire management actions. The information in this Bushfire Management Plan is designed to inform the general community on how the Council intends to undertake bushfire management and planning in the region.

The Whitsunday Regional Council Bushfire Management Plan is designed to complement regional bushfire management planning by regional Bushfire Management Groups and should be consistent with the Queensland State Planning Policy and State Government Bushfire Management guidelines.

The outcomes sought from the Whitsunday Regional Council Bushfire Management Plan are:

- Clarification of bushfire management stakeholder roles.
- Describe the process used to identify high priority council owned and managed lots for bushfire mitigation actions.
- Describe how bushfire management and planning will be undertaken.
- Describe council's role in bushfire management.

Document Control

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Version 3	22 nd of June 2018

1. Introduction

Bushfires are a natural part of the Australian landscape and have the potential to cause serious social, economic and environmental damage (National Forest Fire Management Group, 2014). Poorly planned bushfire management can put lives and infrastructure at risk. A number of Australian ecosystems are adapted to fire and many species need fire to reproduce.

The Whitsunday Regional Council owns or manages approximately 36,000ha of road reserves, stock routes and public blocks of land. There are a number of Council owned or managed lots which have vegetation and topographic conditions which cause a medium and high bushfire hazard. Bushfire hazard is defined as the actual threat imposed by a bushfire to cause damage and potentially loss of life. Bushfire risk reflects the likely occurrence or frequency of a bushfire hazard occurring. Bushfire hazard can be measured, and responses planned. Bushfire management responses need to consider the environmental, economic and social outcomes and impacts.

The Whitsunday Regional Council has a number of roles in bushfire management. The main bushfire management areas include:

- disaster management and planning,
- mitigation activities,
- development control, and,
- community awareness.

The Whitsunday Regional Council is developing a Bushfire Management Plan to work with other bushfire management stakeholders and contractors to reduce bushfire hazard and risk of its properties. Some of the bushfire mitigation strategies which the Council already has in place include the development of bushfire plans, implementation and maintenance of bushfire breaks and supporting hazard reduction burn operations.

The Whitsunday Council is fortunate to have rural fire brigades in the region which have dedicated and passionate people to assist with bushfire mitigation and responses for their local communities. The rural fire brigades operate primarily on a volunteer basis with minor financial assistance emanating from Queensland Fire and Rescue Service and in some areas the Council via levies. The rural fire brigades are called upon to assist council in managing bushfire hazard on public land near residential areas. The rural fire brigade have trained and experienced volunteers which manage the back-burning operations or hazard reduction burns for the community.

The purpose of the Whitsunday Regional Council Bushfire Management Plan is to identify the high priority Council lots where bushfire hazard mitigation is required to protect life and property, and identify an annual works program for the time period 2018-2020. The objectives of this Bushfire Plan are to:

- a) identify factors which cause bushfire hazard and increases in bushfire risk,
- b) identify bushfire hazard and risk for Council lots,
- c) prioritise Council lots for bushfire mitigation work, and,
- d) develop a bushfire mitigation program for high priority council land.

It is anticipated that this report will be used to document Council's role in regional bushfire management. The report will be used to support Council's allocation of funds towards bushfire management operations on its land.

2. Background

2.1. Factors which lead to bushfire

Fire requires oxygen, temperature, dry fuel and an ignition source. The main factors which lead to bushfire are vegetation type, fuel loads, topography, aspect and climate. Some Australian vegetation communities have adapted to fire to reproduce, and therefore have characteristics that may promote fire and spread.

Certain vegetation communities such as those dominated by gum trees (*Eucalyptus* species) have oil in their leaves to assist with combustion and spread of fire. Other characteristics include leaf and branch loss which contribute to litter and fuel load accumulation (Ramsay and Rudolph, 2003). Large fuel loads can increase bushfire hazard. In vegetation communities dominated by Eucalypt trees, fire has a valuable role in preserving native grasses and habitat for specific animals. Vegetation communities that are prone to bushfires can be identified.



Figure 1. Eucalypt woodland areas are adapted to fire and prone to bushfires.

Other factors that influence fire frequency include aspect, slope, rainfall and general climate such as temperature and humidity. North facing slopes receive more sun and are drier than south facing slopes. Proximity to land uses that use fire such as sugarcane and some grazing areas can also increase the risk of fire. Dry and warm climates create favourable conditions for fires to start and move. High winds can increase the spread of fires. Low levels of humidity can dry leaf litter and other forms of fuel and create more favourable conditions for fires (Middelmann, 2007).

Bushfires are ignited by natural processes such as lightning strikes or human activity. Across Australia lightning is responsible for starting more than 50% of fires (Middelmann, 2007).

2.2. Bushfire hazard and risk assessment

2.2.1. Bushfire hazard

Bushfire hazard refers to the conditions which could support the presence of a fire. There are a number of methods that can be used to assess bushfire hazard. One of the most commonly used bushfire hazard assessment tool is documented in the Queensland State Planning Policy 1/03. According to Risk Frontiers (2011) the Queensland Fire and Rescue Service have adapted the SPP 1/03 bushfire hazard methodology and the Interface Zone (I Zone) methodology to identify bushfire hazard areas. The I-Zone is where the urban-rural residential land use meet flammable vegetation (Risk Frontiers, 2011).

The Queensland State Planning Policy bushfire hazard process involves the assessment of vegetation, slope and aspect. Scores are allocated to vegetation, slope and aspect. The bushfire attribute scores are then added to determine the total hazard score. The vegetation communities hazard assessment is shown in table 1, the slope assessment is shown in table 2 and the aspect assessment is shown in table 3. The classification of bushfire hazard is shown in table 4.

Table 1. Vegetation communities assessment table used to determine vegetation hazard score.

Vegetation communities ¹	Fire behaviour	Hazard score
Wet sclerophyll forest, tall eucalypts (>30 m), with grass and mixed shrub understorey.	Infrequent fires under severe conditions, flame lengths may exceed 40 m, floating embers attack structures for 1 hour, radiant heat and direct flame are destructive for 30 minutes.	10
Paperbark heath and swamps, eucalypt forest with dry-shrub ladder fuels.	Fire intensity depends on fuel accumulation, but can be severe, with flame lengths to 20 m, spot fires frequent across firebreaks, radiant heat and direct flame for 15 minutes.	8
Grassy eucalypt and acacia forest, exotic pine plantations, cypress pine forests, wallum heath.	Fire intensity may be severe with flame lengths to 20 m, but less attack from embers.	6
Native grasslands (ungrazed), open woodlands, canefields.	Fast moving fires, available to fire annually to 4 years. Usually no ember attack, radiant heat for >10 m, duration <2 minutes.	5
Intact acacia forests, with light grass to leaf litter, disturbed rainforest.	Fires infrequent, usually burn only under severe conditions, relatively slow fires, usually little ember attack.	4
Orchards, farmlands, kikuyu pastures.	Fires very infrequent, slow moving, may be difficult to extinguish, frequent fire breaks.	2
Grazed grasslands, slashed grass.	Grazing reduces intensity and rate of spread of fire, duration <2 minutes.	2
Desert lands (sparse fuels), mowed grass.	Gaps in fuel, usually slow fire spread.	1
Intact rainforest, mangrove forest, intact riverine rainforest.	Virtually fireproof.	0

Table 2. The slope assessment table used to determine the slope hazard score.

Slope	Hazard score
Gorges and mountains (>30%)	5
Steep Hills (>20% to 30%)	4
Rolling Hills (>10% to 20%)	3
Undulating (>5% to 10%)	2
Plain (0% to 5%)	1

Table 3. The aspect assessment table used to determine the aspect hazard score.

Aspect	Hazard score
North to North-West	3.5
North-West to West	3
West to South	2
North to East	1
East to South and all land under 5% slope	0

Table 4. The determination of bushfire hazard using the Queensland SPP 1/03 system.

Total hazard score	Severity of bushfire hazard
13 or greater	High ⁴⁵
6 to 12.5	Medium
1 to 5.5	Low

Fuel load is a main contributor to bushfire hazard (Middelmann, 2007). There are a number of methods used to estimate, measure and assess fuel loads. Hines *et al.* (2010) have developed a system of measuring forest fuel loads in Victoria. The method developed by Hines *et al.*, (2010) for estimating fuel loads is based on separating the forest into fuel layers and then estimating or measuring the potential fuel within each of these layers (Figure 2). The amount of fuel contained in these layers is measured in terms of tonnes per hectare. Table 5 shows a guide to fuel loads per hectare and the indicative fuel hazard.

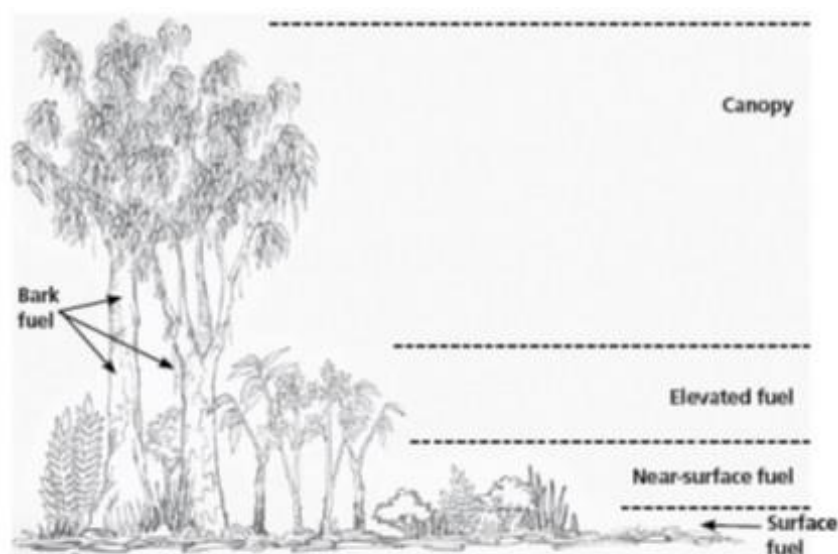


Figure 2. Fuel layers (Hines *et al.*, 2010).

Table 5. Indicative fuel loads (t/ha) and indicative fuel hazard (in Hines *et al.*, 2010)

Fuel	Fuel hazard rating				
	Low	Moderate	High	Very High	Extreme
Bark	0	1	2	5	7
Elevated	0–1	1–2	2–3	3–5	5–8
Near-surface	1–2	2–3	3–4	4–6	6–8
Surface	2–4	4–10	8–14	12–20	16–20+

According to Hines *et al.*, (2010) the overall fuel hazard is calculated by adding the estimated tonnes of fuel per fuel layer (Table 6). The fuel loads can be used to estimate total fuel loads and indicate the fuel hazard rating (Hines *et al.*, 2010). The fuel loads present will influence the vegetation attribute of the bushfire hazard rating.

Table 6. Determining overall fuel hazard rating (after Hines *et al.*, 2010).

① Bark Hazard	② Elevated Fine Fuel Hazard	③ Combined Surface and Near-surface Fine Fuel Hazard *				
		L	M	H	VH	E
Low or Moderate	L	L	M	M	H	H
	M	L	M	M	H	H
	H	L	M	H	VH	VH
	VH	VH	VH	VH	VH	VH
	E	E	E	E	E	E
High	L	L	M	H	H	H
	M	L	M	H	H	H
	H	L	H	H	VH	VH
	VH	VH	VH	VH	VH	E
	E	E	E	E	E	E
Very High or Extreme	L	L	VH	VH	VH	E
	M	M	VH	VH	E	E
	H	M	VH	E	E	E
	VH	E	E	E	E	E
	E	E	E	E	E	E

The Queensland Fire Emergency Service (QFES) have produced bushfire hazard rating maps for Queensland. Bushfire hazard is rated as either low, medium or high based on vegetation type, aspect, topography and climate. The QFES bushfire hazard rating maps are usually produced at a scale of 1:250,000 or 1:100,000. Bushfire hazard areas rated as low on the QFES maps mostly relate to rainforest areas, while high risk areas relate to Eucalypt and wattle areas. The bushfire hazard maps can be a useful guide to bushfire hazard and the likely risk of bushfire occurring in a locality. However, these bushfire hazard maps may not be accurate on properties less than 20ha (Figure 3). Land with a high or medium bushfire hazard rating should have some bushfire management plan or process in place.

2.2.2. Bushfire risk

Bushfire risk refers to the likely occurrence or frequency of a bushfire. Middlemann (2007) states that “the likelihood of bushfire hazard can be summarised in terms of the probability of a fire arriving at a point in the landscape and the intensity of the fire at that point “. Risk can be increased due to a number of factors including a high bushfire hazard and proximity to ignition sources such as roadsides and populated areas. Bushfire planning and mitigation measures can reduce bushfire hazard and risk. Local governments are involved in bushfire risk reduction measures such as the development of local laws regulating fires, development planning, development of disaster management plans and implementation of bushfire mitigation measures (Middlemann, 2010).

There are a number of methods used to measure risk. The NSW Rural Fire Service (2008) have developed a matrix to describe bushfire risk (Figure 5). The NSW Rural Fire Service risk matrix requires the determination of the likelihood of a bushfire occurring and the likely consequences.

Consequence \ Likelihood	Minor	Moderate	Major	Catastrophic
Almost certain	High	Very High	Extreme	Extreme
Likely	Medium	High	Very High	Extreme
Possible	Low	Medium	High	Very High
Unlikely	Low	Low	Medium	High

Figure 5. The determination of bushfire risk (NSW Rural Fire Service 2008).

The likelihood of a bushfire occurring will depend largely on the bushfire hazard. The consequence of a bushfire occurring at a given location will depend on the environmental values and development present (NSW Rural Fire Service, 2008).

2.3 Bushfire mitigation strategies

There are a number of strategies that can be undertaken to reduce bushfire hazard and risk. Table 7 lists the bushfire risk factors and some of the mitigation measures that can be used to reduce the occurrence of bushfires.

Table 7. Bushfire risk mitigation measures

Bushfire Factor	Mitigation strategy or measure
Litter build up from Eucalypt vegetation communities	- Obtain a permit to light fire from the local fire warden to reduce fuel loads. - Liaise with a local Rural Fire Brigade to undertake a fuel reduction burn. Subsequent burns may need to be conducted every 3 years. - Clear juvenile gum tree samplings from areas near the house and property. - Gum trees (such as Iron barks and Blue gums) should be removed from within 30 m of the house and properties. This may require an application to Council for permission. If in doubt contact the Council for advice.
Grass build up	- Grass species such as Guinea grass (<i>Megathyrsus maximus</i>) respond well to fire. This species needs to be chemically controlled, kept short through mowing or slashing, or grazed. - Revegetate areas with rainforest species to shade out grass and therefore reduce fuel loads. - Grass should be kept to a minimal height around houses and property using mowing, brush cutting or use of approved herbicides depending on site conditions. - Establish separation zones between buildings and grassy fuel by installing hard areas eg paving and gravel etc.

Aspect	- Northerly aspects are worse for fires. The siting or positioning of houses on a property should consider aspect. - The head of gullies should also be avoided - East to south facing slopes generally have a low hazard rating.
Slope	- Updraughts assist fire movement upslope. There should be a sufficient distance down slope of houses and properties that are free of fire prone vegetation. - Slopes above 30% have a higher hazard score opposed to flat to undulating land. - Installation of hard areas of gravel and paving may be necessary. - To reduce erosion on steep slopes, these areas could be revegetated using rainforest shrubs or low growing grasses that are easily controlled and are less flammable.
Climate	Hot dry climates assist fire. Beware of climatic conditions that increase fire risk severity such as the dry season in the Whitsunday's, especially between the months of July and December.
Proximity to land uses that use fire	- Fire breaks could be used to reduce spread of fire, provide access for fire fighters, a secure line from which to burn from or back burn from. - Sugarcane land has a moderate to high bushfire risk
Vegetation communities that have a high fire risk	- Fire breaks could be used to reduce the spread of fire. The SPP recommends that perimeter roads be constructed that are cleared for 20 m AND comply with local government standards. - Fire maintenance trails should only be accepted if it is not practicable to provide firebreaks in the form of a road due to topographic conditions or vegetation constraints. - The construction of the fire breaks should consider plants protected under the <i>Nature Conservation Act (1992)</i> or communities protected under the Vegetation Management legislation. - Site the house in the lowest risk area on the property. - For lots greater than 2500m², buildings and structures should be set back from hazardous vegetation by at least 1.5 times the height of the canopy vegetation (particularly if they are Eucalypt) or a minimum of 10 m. - Retention of rainforest in drainage lines and creeks will assist in reducing bushfire risk. - Design subdivisions without cul-de-sacs and provide access for a conventional drive vehicle (eg fire engine).

The bushfire mitigation strategies that may be adopted will depend on individual property characteristics. Some techniques that are appropriate for flat land will cause other problems if used on steep properties. The creation of fire breaks on steep property may cause erosion problems and therefore reduce the chance of maintaining these areas.

There are also strategies that deal with fire fighting. To protect life, property and environmental values, it is important to plan ahead. Some of the issues that need to be considered in planning for fire include;

- requirements for on-site water to fight fire and accessibility by heavy vehicles,
- having an evacuation plan,
- safe exit routes from property,
- having a policy of total fire bans or exclusion from medium and high risk bushfire areas where possible, and,
- banning vegetation rubbish fires in medium to high risk areas.

2.4. Bushfire guidelines

2.4.1. Bushfire guidelines for regional ecosystems

The regional ecosystem characteristics can provide information which can guide bushfire management and planning. The Whitsunday Regional Council is partially included in the Central Queensland Coast and Northern Brigalow Belt bioregions. There are 83 individual regional ecosystems in the Central Queensland Coast bioregion and 172 regional ecosystems found in the Northern Brigalow Belt bioregion.

The type of vegetation community, its fire requirements and hazard can be used for bushfire planning. Bushfire management advice for a selected number of regional ecosystems are listed in table 8. The bushfire management advice provided by the Queensland State government for each regional ecosystem is found at: <https://publications.qld.gov.au/dataset/redd/resource/c77196df-7af9-4c09-ac88-256867c39806>

Table 8. Showing the bushfire management advice for selected regional ecosystems.

Code	Bioregion	RE	Description	Fire management advice
81206	CQC	8.12.6	Eucalyptus drepanophylla +/- E. platyphylla +/- Corymbia clarksoniana woodland on low to medium hills, on Mesozoic to Proterozoic igneous rocks	SEASON: Any time providing sufficient soil moisture is available. INTENSITY: Moderate. INTERVAL: 4-6 years. STRATEGY: Retain at least 20% unburnt in any given year. ISSUES: The location of this ecosystem within the landscape makes it susceptible to widespread fire (both planned and wild). Emphasis should be placed on the general principles of mosaic burning, and diversity of fire types. Progressive burning may be a useful tool in some circumstances.
81213	CQC	8.12.13	Tussock grassland, or Xanthorrhoea latifolia shrubland, on Mesozoic to Proterozoic igneous rocks and Tertiary acid to intermediate volcanics	SEASON: 8.12.13a: Any time providing sufficient soil moisture is available. 8.12.13b: Storm burning season. INTENSITY: 8.12.13a: Low to moderate. 8.12.13b: High. INTERVAL: 8.12.13a: 2 - 4 years. 8.12.13b: 5 to 10 years. Allow to burn if fires carry from adjacent communities. STRATEGY: Aim to retain at least 50 % during any given year. ISSUES: 8.12.13a: In some areas threatened by encroachment of Timonius timon and other rainforest emergents, although the dynamics of this process are poorly understood. Need for monitoring of the geographical extent of these areas (re/- encroachment of woodland). It is likely that the extent of this system is maintained more by geology, and levels of exposure than fire. 8.12.13b: There is evidence to suggest that this ecosystem is a successional stage of ecosystem 8.12.13a. However, it should also be noted that in many areas, the later appears stable even in absence of any significant fire events (i.e. some of the Mackay coast islands). Timonius timon flowers during the period July to November, when fire is most likely to be applied.
Code	Bioregion	RE	Description	Fire management advice
80503	CQC	8.5.3	Eucalyptus drepanophylla +/- Corymbia clarksoniana, +/- E. platyphylla +/- C. dallachiana +/- Melaleuca viridiflora woodland on gently sloping Tertiary sand plains	ISSUES: Generally, drier climate and low fertility precludes large fuel accumulations. Any fire applied should be considered experimental.
80502	CQC	8.5.2	Melaleuca viridiflora +/- Allocasuarina luehmannii, or M. viridiflora and M. nervosa woodland on Tertiary sand plains	ISSUES: Generally, drier climate and low fertility precludes large fuel accumulations. Any fire applied should be considered experimental. Probably not able to be burnt.
80202	CQC	8.2.2	Semi-evergreen microphyll vine thicket to vine forest, on coastal dunes	ISSUES: Although many plants found within this ecosystem will return after fire (i.e. rainforest pioneers), interim disturbance by fire promotes weed infestation including that by guinea grass (Megathyrsus maximus). These weeds alter the structure of the ecosystem, create higher fuel loads and a greater risk of additional fire and higher fire intensities.

2.4.2. Other regional fire management guidelines

The Reef Catchments Natural Resource Management Group together with the Clarke Connors Range Bush Fire Consortium developed fire management guidelines for the Central Queensland coast region (Reef Catchments, 2009). The fire guidelines have been developed for 12 landscape types. For each of the 12 landscape types recommendations are made for fire frequency, fire intensity, season and whether mosaic

burns are required. The purpose of the guidelines is to reduce unplanned burns (wild fires). The landscape types and the recommended guidelines are shown in table 9.

Table 9. Clarke - Connors range fire management guidelines.

Landscape type	Fire frequency	Fire intensity	Preferred season for hazard reduction	Mosaic burning
Mangroves and estuaries	Not burnt	Nil	Nil	No
Beaches and foreshores	Not burnt	Nil	Nil	No
Hind dunes	Not burnt	Nil	Nil	No
Riverine and wetlands	Not burnt	Nil	Nil	No
Alluvial flat country	Every 5 years	Medium	Winter	50%
Grassy woodlands and open forests	Every 5 years	Medium	Winter	50%
Tall wet eucalypt forests	Every 3-5 years	Medium	Winter	50%
Eucalypt forest and woodlands on hills	Every 5 years	Medium	Winter	25%
Rainforest and vine thickets	Not burnt	Nil	Nil	No
Island and rocky headlands	Every 3-5 years	Medium	Winter	50%

The Queensland State government have developed Planned Burn Guidelines for Central Queensland Coast Bioregion of Queensland (DNPRSR, 2012). The planned burn guidelines are used to plan and implement prescribed burns in National Parks and State land. The State government guidelines are also applicable to Council owned and managed bushland lots.

2.4.3. Building construction standards

The design of a house or building can minimise the risk of fire starting from air borne embers. Ramsay and Rudolf (2003) describe house design options that can reduce the risk of embers catching on the house and starting a fire. Some potential ignition points include vertical surfaces, timber surfaces and places where combustible materials accumulate such as gutters. Gullies and hills can be used to offer some protection to houses and should be considered prior to the allocation of a building site. The construction of earth embankments and retaining walls can be useful in reducing the radiation from fires and therefore damage to property (Ramsay and Rudolf, 2003). The Australian Standard AS 3959 (Construction of buildings in bushfire – prone areas), can be used to assist with designing a house or building to minimise the risk of fire starting in and around the house.

In 2009, the AS (3959-2009) was updated and includes a method to determine the Bushfire Attack Level for use in buildings. The Australian Standard (AS 3959-2009) allocates a Bushfire Attack Level (BAL) based on the regional ecosystem, the slope present and the Fire Danger Index (FDI) of any particular area. There are six different BALs under AS 3959-2009, these being:

- BAL – LOW;
- BAL – 12.5;
- BAL – 19;
- BAL – 29;
- BAL – 40; and
- BAL – FZ (Flame Zone).

The BAL for a particular area can be altered based on the distance cleared between the proposed building site and the dominant remnant vegetation. Each BAL has a predetermined building standard that must be adhered to in order to comply with the Australian Standards. These individual levels are based on;

- The region where you live.
- The vegetation type around your property.
- The distance from your home to individual vegetation types.
- Slope on the property.

Once the bushfire attack level has been determined, then the builder will need to review the relevant section of the Australian Standards AS 3959. The sections provide guidance on the steps that should be taken during the construction or retrofitting of buildings to lower the risk associated with occupying land in a bushfire prone area (<http://www.as3959.com.au/bushfire-attack-level/>). Building applications for houses or accommodation need to include the BAL category and ensure compliance with the Australian Standard. Future buildings constructed on Council land should be constructed in accordance with the Australian Standards pertaining to bushfire hazard and risk.

2.5. Other plans and strategies

Bushfire management planning is undertaken by regional natural resource management groups, Queensland Fire and Emergency Services and local government. A number of large Queensland councils have developed their own bushfire management plan or strategy. The following local governments have developed bushfire management plans:

- Rockhampton (Rockhampton Bushfire Management Strategy, 2014)
- Townsville (Natural Disaster Risk Management Strategy, 2010)
- Gold Coast (Bushfire Management Strategy 1998)
- Fraser Coast Regional Council (Bushfire Management Strategy, 2010)

The Gold Coast City Council have developed bushfire management plans for individual reserves in consultation with the surrounding community and stakeholders. Similarly, the Mackay Regional Council have developed bushfire hazard maps for localities within their Shire.

In 2013, the Whitsunday Regional Council developed a bushfire management program. The bushfire management program identified blocks of public land which had medium to high bushfire hazard and medium to high bushfire risk. Most of the high priority blocks of public land were near residential areas. The Whitsunday Regional Council have developed site specific bushfire management plans for the following localities:

- Rose Bay, Bowen (2010)
- Bowen Hospital Hill (2010)
- Dingo Beach and Hydeaway Bay (2017)

Regional natural resource management groups have developed natural resource management plans which include the management of bushfire hazard. The NQDT Regional Natural Resource Management Plan (NQDT, 2016) makes reference to the role of bushfire in our ecosystems. In particular the NQDT report states that the absence of an appropriate fire regime can result in:

- change in woodland structure (thickening);
- loss of riparian vegetation;
- loss of rare fauna and flora species;
- an increase in woody weeds; and
- poor land condition.

In 2014, Reef Catchments released the Mackay Whitsunday and Issacs Natural Resource Management Plan. The Mackay Whitsunday and Issacs (MWI) NRM Plan describes areas of high bushfire hazard in the Central Queensland Coast Bioregion.

In 2016, Reef Catchment Inc. developed a Climate Sustainability Plan. Reef Catchments predict that temperatures will increase, evaporation will increase, and rainfall may marginally decrease (Reef Catchments, 2016;19). It is likely that the predicted changes in climate will favour an increase in bushfire hazard and risk across the Whitsunday Shire.

2.6. Legislation and Policy

2.6.1. Queensland State legislation

There is a legislative requirement under Common Law and the *Queensland Fire and Emergency Services Act 1990* for Local Government as owners and occupiers of land to prevent fires escaping from their land and damaging property (Tran and Peacock, 2002). Councils have an obligation to manage their land responsibly to prevent the loss of life or property and reduce the 'human' impacts of bushfires. Council is also required to achieve this and still maintain their obligations under other legislation. Obligations under the *Nature Conservation Act 1992* for example require local authorities to protect and conserve rare or threatened species, biodiversity and ecological processes.

According to Tran and Peacock (2002), the challenge for Council is to deliver management actions which will protect and conserve simultaneously. The *Fire and Emergency Services Act 1990* is the principle legislation that deals with lighting fires in the open in Queensland. The Act makes it illegal to light a fire without a 'Permit to Light Fire' issued by a fire warden. Local governments as land owners need to apply for a fire permit before undertaking hazard reduction burns.

The *Queensland Vegetation Management Act (1999)* regulates the clearing of vegetation. The State government have included tree clearing exemptions for bushfire management;

- Fire control lines – Clearing for a necessary fire management line to a maximum width of 10m.
- Firebreaks - Clearing to establish or maintain a necessary firebreak to protect infrastructure (other than fences, roads and tracks) to a maximum width of 20m or 1.5 times the height of the tallest adjacent tree, whichever is the greater.
- Hazard fuel load reduction – Clearing by fire to reduce hazardous fuel load under the *Fire and Emergency Services Act 1990*.

The another piece of legislation which relates to the management of bushfire hazard on public land is the *Queensland Land Act (1994)*. Many Council reserves are State land where Council has been appointed "trustee" under the *Queensland Land Act (1994)*. One of the conditions of the trustee is to properly and effectively manage reserve land (section 30). Reserves are to be managed in a way which is consistent with the purpose for which they dedicated.

The *Queensland Fire and Emergency Services Act 1990* is the instrument which governs the Rural Fire Brigades. The FES Act describes the roles and responsibilities for the rural fire brigade officers (section 82 to 85). The Fire Warden is given separate roles and powers under the FES to the rural fire brigades (Section 75). For more information of the roles of the rural fire service please refer to the appendix of this report.

2.6.2. Whitsunday Regional Council local laws

The Whitsunday Regional Council has developed a local law which includes the regulation of fires. Whitsunday Regional Council Local law number 3, Community and Environment states that:

15 Regulation of lighting and maintaining fires in the open

- (1) This section does not apply to the lighting or maintaining of a fire that is authorised under the *Fire and Rescue Service Act 1990*.11
- (2) The local government may, by subordinate local law, prohibit or restrict the lighting or maintaining of fires in the open in the whole, or designated parts, of the local government's area.

Example□

The subordinate local law might prohibit the lighting of fires, or a particular type of fire, in the open, unless 1 or more of the following conditions is met:

- the fire is contained in an approved incinerator;

- the fire is established in a specified way and specified precautions are taken to prevent the spread of fire;
- the fire is lit and extinguished within a specified time.

(3) A person must comply with a prohibition or restriction imposed under this section.

Maximum penalty for subsection (3) 50 penalty units.

(4) A person must not light or maintain a fire if the fire exposes property to the risk of damage or destruction by fire.

Maximum penalty for subsection (4) 50 penalty units.

The Council also regulates the dumping of green waste on public land. Council has the ability to issue a fine to residents who place green waste on council managed land.

2.6.3. National Policy

In 2010, the Natural Resource Management Ministerial Council developed Australia's Biodiversity Conservation Strategy 2010–2030. The Biodiversity Strategy recognises the important role fire has in the Australian landscape. One of the threats to Australia's biodiversity is changes in bushfire regimes (NRMCC, 2010).

All levels of government have a responsibility and role in bushfire management. The Forest Fire Management Group (FFMG, 2014) state that the three levels of government in Australia have responsibilities for the management of fire:

- The Australian Government is responsible for coordinating a national approach to both environmental and international policy related issues. The Australian Government is playing an increasingly important role in supporting the states in preparing for and responding to major emergencies.
- State and territory governments have primary responsibility for land and fire management, in recognition of the constitutional responsibility of the states for land use decisions, emergency management and the management of large areas of forests and rangelands.
- Local governments have responsibilities for land use planning which affects public and private fire management, and which can influence the protection of life and property, particularly in the zone where urban and more natural areas meet. Local government has a critical role in managing and supporting community recovery efforts after serious fire events, and has a primary bushfire response role in some jurisdictions.
- Private landowners and leaseholders – as land and fire managers of large tracts of forests and rangelands – are also crucial in managing land and fire.

In 2014, the Council of Australian Governments approved the National Bushfire Management Policy Statement (National Forest Fire Management Group, 2014). The National Policy identifies Local government and other landholders having an important role in bushfire management and planning. The National Bushfire Policy identifies four main strategic objectives and 14 bushfire management goals. The Policy Statement has four strategic objectives:

- Effectively Managing the Land with Fire.
- Involved and Capable Communities.
- Strong Land, Fire and Emergency Partnerships and Capability.
- Actively and Adaptively Managing Risk.

The national policy objectives will be delivered via the implementation of fourteen goals:

1. Maintain Appropriate Fire Regimes in Australia's Forests and Rangelands.
2. Balance the Environmental Impacts of Fire.
3. Promote Indigenous Australians' Use of Fire.
4. Community Engagement.
5. Public Awareness and Education.
6. Integrated and Coordinated Decision Making and Management.
7. Employment, Workforce Education and Training.

8. Bushfire Risk Mitigation.
9. Bushfire Response.
10. Safety in Fire Operations.
11. Bushfire Recovery.
12. International Responsibilities.
13. Risk Management.
14. Investing in and Managing Knowledge (FFMG, 2014)

In addition, the FFMG (2014) state that “much of Australia cannot, and should not, be fire-proofed, rather, we need to learn to live with fire and to manage it within the landscape, recognising that fire is inevitable and that many native ecosystems are adapted to and need fire”. One tool available to manage fire for multiple outcomes is planned fires (FFMG, 2014).

2.6.4. *Queensland Policy*

In July 2017, the Queensland State government released the revised Queensland State Planning Policy (SPP). The SPP lists 17 state interests that must be considered in every planning scheme across Queensland. These state interests are arranged under five broad themes:

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

According to the Queensland Government, “the integration of the SPP into local planning schemes ensures that the most important state planning interests are protected and managed in a way that is relevant to every area across Queensland” (DILGP, 2017).

In the State Planning Policy, a natural hazard is defined as “a naturally occurring event that may cause harm to people, damage to property and infrastructure, and impact our economy and the environment”. Taking appropriate account of the potential impacts of natural hazards through effective land use planning and development decisions can significantly reduce the likelihood and severity of impacts of certain natural hazards including flood, bushfire, landslide, storm tide inundation and coastal erosion (DILGP, 2017).

The Queensland government state that a “bushfire prone area is land that is potentially affected by significant bushfires, including vegetation likely to support a significant bushfire; adjacent land that could be subject to impacts from a significant bushfire (i.e. potential impact buffer) and is: (a) identified by a local government in a local planning instrument as a bushfire prone area, based on a localised bushfire study, prepared by a suitably qualified person; or (b) if the local government has not identified bushfire prone areas in a local planning instrument in accordance with (a) above, shown on the SPP IMS as a bushfire prone area” (DILGP, 2016).

A state-wide bushfire hazard mapping methodology for Queensland is used to define five potential bushfire hazard classes. The potential class is determined by combining three mapping inputs: 1) vegetation hazard class and a corresponding potential fuel load 2) slope 3) fire weather severity (based on Forest Fire Danger Index (FFDI) levels (DILGP, 2016).

2.6.5. Whitsunday Regional Council

Corporate plan

The Whitsunday Regional Council released its current Corporate Plan in 2014. The Council Corporate Plan sets the strategic direction of Council. The Council strategies which are relevant to bushfire planning include:

- 3.2 Our Natural environment is valued and sustainable.
 - 3.2.1 Develop and implement policies and strategies that protect and enhance the Whitsunday Region's natural environment.
 - 3.2.3 Support and facilitate a variety of community awareness initiatives and programs that promote the Whitsunday Region's natural environment.
 - 3.2.4 Partner with landholders to mitigate the effects of pests on the Whitsunday Region's natural environment.

Whitsunday Planning scheme

The Whitsunday Regional Council Planning Scheme was adopted on 28 June 2017 and commenced on 30 June 2017. The new planning scheme aims to facilitate development to accommodate future growth of up to 20,000 people and over 9,000 more jobs region wide by 2036 in a manner that is environmentally sustainable, boosts industry development and supports the rich lifestyle enjoyed by the Whitsunday community. It is the first planning scheme for the Whitsunday region since amalgamation between Bowen and Whitsunday Shires in 2009 and is a key step for delivering a successful, stronger and more resilient region into the future. The Whitsunday Planning scheme includes a bushfire hazard overlay. Future development needs to meet the development outcomes for the bushfire hazard planning codes.

2.7. Whitsunday bushfire management stakeholders

There are a number of organisations and groups involved in managing and controlling bushfires. The stakeholders in bushfire management within the Whitsunday Regional Council area are:

- Landholders
- Queensland Fire and Emergency Service (QFES)
- Rural Fires Brigades
- State Government – Department of Natural Resources and Mines (DNRM), Queensland Parks and Wildlife Service (QPWS)
- Local government

The Queensland Fire Emergency Service (QFES) have urban stations at Bowen, Airlie Beach, Collinsville and Proserpine. The role of QFES urban stations is to respond to primarily urban fires and emergencies. The role of the Queensland Rural Fire Brigades is to fight fire and undertake fire prevention (section 82 *FES Act 1990*). There are over 50 rural fire brigades in the Whitsunday Regional Council area (Figure 6).

The State Government manage Unallocated State Land. Unallocated State Land is land which is not freehold, leasehold or trusted to local government or another organisation. The State government have their own bushfire management program to manage bushfire hazard on Unallocated State Land. However, where Council land and State land occur next to each other, joint bushfire management and mitigation measures may be more practical.

2.8. Fire Management coordination

2.8.1. Stakeholder network

The bushfire management and planning structure and workflow between organisations is reflected in figure

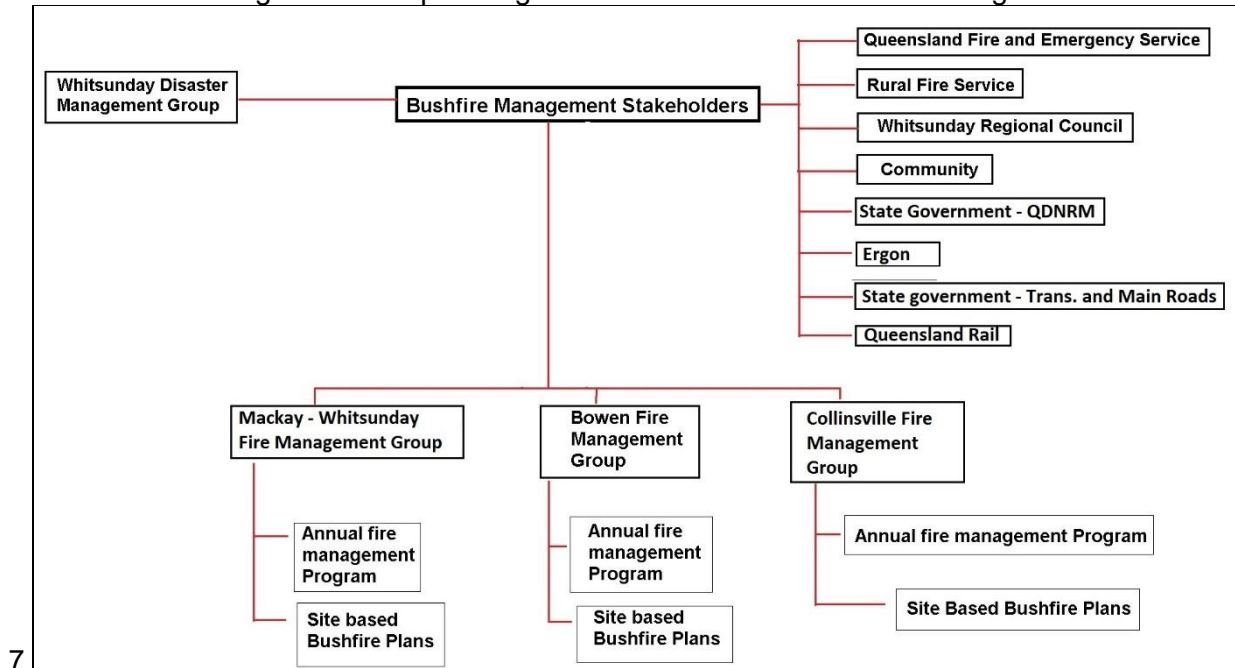


Figure 7. The bushfire management and planning framework.

2.8.2. Whitsunday fire levies

The Whitsunday Regional Council assists with the funding of rural fire brigades near urban areas. The Council raise a rural fire levy for the following brigades and areas:

- Gloucester - \$15.00 per year
- Conway - \$20.00 per year
- Cannon Valley - \$25.00 per year
- Bowen Delta - \$20.00 per year
- Heronvale - \$20.00 per year

The Council bases the levy amounts on the maintenance and operational costs of each rural fire brigade. In return, the rural fire brigades need to submit fire levy returns.

2.9. Council owned and trusted land

The Whitsunday Regional Council owns, manages or is trustee for approximately 36,000ha of land. There are 881 individual lots of land either owned or managed by the Whitsunday Regional Council which total 4,276ha (Table 11). The other 32,000ha includes road reserves and stock routes.

Table 11. Summary of the area of land owned or managed by the Council.

Owner	Area (ha)
Bowen Shire Council	1013
Whitsunday Shire Council	68
Whitsunday Shire Council as trustee	2012
Whitsunday Regional Council	682
Whitsunday Regional Council Trustee	501
Total	4,276ha

3. Priority setting for bushfire management

The Whitsunday Regional Council owns and manages a considerable number of properties. There are a number of State government owned parcels of land which occur next to Council land. It is very difficult for the council to provide a high level of bushfire management service to all 881 lots of land. Consequently, the Council will need to rely on a priority setting process to determine which areas it should concentrate its efforts and resources on to manage and reduce bushfire hazard and risk.

The landscape needs to be prioritised in terms of bushfire management and planning. Areas close to residential areas need a higher level of monitoring and fuel management than areas further away. The Victorian state government has developed a system of prioritising bushfire management activities (DSE, 2012).

The Victorian government have developed fire management zones as a means of prioritising land areas for bushfire management:

- APZ – Asset Protection zone - Areas close to residential areas – high priority for management.
- BMZ – Bushfire Moderation zone – aim to achieve asset protection and achieve some ecological outcomes.
- LMZ - Landscape management zone – planned burns are primarily undertaken for fuel reduction to maintain ecological processes.
- PBEZ - Planned burning exclusion zone – no fire permitted.

The Council will prioritise its resources to protect urban areas, community infrastructure and rural residential areas. The process of selecting the lots of land for priority bushfire management will involve:

- 1) Identify urban and residential areas.
- 2) Identify other public land which has important community infrastructure.
- 3) Identify council and other public land within and adjacent (within five kilometres) to urban and rural residential areas.
- 4) Determine the bushfire hazard for council owned and managed land within the urban, rural residential and community asset areas. Bushfire hazard will be determined using the Queensland Fire and Rescue Service hazard maps and the Queensland bushfire hazard rating tool contained in the State Planning Policy 1/03.
- 5) The urban, rural residential areas and land with important community infrastructure with a bushfire hazard rating of medium or high will be categorised as high priority land for bushfire management and mitigation measures.
- 6) The bushfire risk for the high priority parcels of land will be determined. The NSW Rural Fire Service risk assessment tools will be used to assess bushfire risk (NSW Rural Fire Service, 2008). The Victorian Government fuel load calculator and fuel load risk assessment process will be used to determine and assess fuel loads (Hines *et al.*, 2010).

The parcels of land selected from the above process will be listed and mitigation measures developed to manage the bushfire hazard and risk.

4. Bushfire Management Plan

4.1. Goals and objectives

The goals and objectives of this bushfire management plan are listed in table 12.

Table 12. The goals and objectives of this Bushfire Management Plan.

No.	Theme	Goals	Objectives
1	Bushfire Planning	1.1. To develop property plans and procedures to protect life and property as a priority then ensure the bushfire management practises maximise biodiversity values.	1.1.a. Develop site specific plans for high bushfire hazard and high risk areas on Council managed land. The plans should be consistent with State government bushfire guidelines.
		1.2. To ensure all stakeholders support a common bushfire management direction.	1.2.a. Ensure community stakeholders in high bushfire hazard and high-risk areas are involved in bushfire planning meetings.
		1.3. To develop and maintain good relationships between the stakeholders.	1.3.a. Ensure or encourage stakeholder involvement in bushfire planning meetings each year.
2	Prevention	2.1. To build and maintain capacity within the Rural Fire Brigade network.	2.1.a. Ensure rural fire brigade volunteers who conduct planned hazard reduction burns on behalf of council have the recommended levels of training.
		2.2. Undertake planned hazard reduction burns where appropriate.	2.2.a. Develop planned hazard reduction burn plans in consultation with stakeholders prior to the burns.
3	Preparedness	3.1. Ensure fire control lines are maintained on medium and high priority lots.	3.1.a. Map fire control lines and ensure they are maintained to sufficient standards.
		3.2. Ensure Rural Fire Brigades have appropriate resources for bushfire management and mitigation.	3.2.a. Council raise a rural fire levy and allocate to rural fire brigades. Ensure QFES provide resources to rural fire brigade where appropriate.
		3.3. Ensure Rural Fire Brigades are trained to a sufficient level through Queensland Fire and Emergency Services.	3.3.a. Request a copy of the training program from QFES on an annual basis.
		3.4. Ensure Council staff who are responsible for bushfire management receive training.	3.4.a. Council staff responsible for bushfire management and planning have completed bushfire management training.
4	Fuel Management	4.1. Fuel assessments are conducted for each high-risk block.	4.1.a. Council and QFES conduct a fuel assessment of high risk blocks annually and this information is used to prioritise hazard reduction burns.
5	Response	5.1. Ensure Rural Fire Brigades are aware of their role in bushfire responses.	5.1.a. Ensure there is correspondence issued to each rural fire brigade which lists the council managed lots that they are responsible for on an annual basis.
6	Recovery	6.1. Ensure the Whitsunday Disaster Management committee are aware of the need for bushfire recovery planning.	6.1.a. Develop a bushfire recovery plan.
7	Monitoring and evaluation	7.1. Review the bushfire management plan every three years.	7.1.a. Develop an annual bushfire management report in June each year and report this to Council.

4.2. General roles and responsibilities

The general roles and responsibilities for bushfire management, planning and mitigation on council managed land are summarised in table 13.

Table 13. The main tasks for each stakeholder.

Task	Council	QFES	Rural Fire Brigades	Urban units	QDNRM	Community
Legal control of the fire	√ (land owner)					√ (land owner)
Conduct hazard reduction burns			√			
Training new rural fire members		√				
Applying for permits	√					√
Supervising the hazard reduction burn		√	√			
Informing the community	√	√	√			
Monitoring fuel loads	√	√	√			
Operating the fire hazard sign (where available)			√			
Developing and updating the WRC Bushfire Plan	√	√	√	√	√	
Reporting hazard reduction burns on council land	√	√	√			
Regulating and control of illegal green waste dumping	√					√
Respond to rural fires			√	(√)		

4.3. Priority properties for bushfire management

The Council has used the Queensland Fire Service bushfire hazard maps and site assessments to determine the high priority properties for bushfire management and mitigation measures. A number of the properties are owned by the State Government. The management and mitigation of bushfire hazard on the State owned parcels of land will require the Council and the State government to work together in managing these lots. The land which has been categorised as being high priority public land requiring bushfire management and mitigation measures are listed in tables 14-16.

Table 14. The list of Council land in Bowen which are listed as high priority land for bushfire management.

Suburb	Lot on Plan	Tenure	Description	Lot area (Ha)	Bushfire hazard rating	Distance to urban centre	Distance to rural residential area	Bushfire Management Plan developed
Bowen	14SP212227 16B66103	WRC Trustee	Leichhardt street to Tywald street – Hospital hill	13	M	0km	-	Yes
	205SP194014	WRC Trustee	Rose bay		M	0km	-	Yes
	205SP194014	WRC Trustee	End of Banyon St		M	0km	-	No
	205SP194014	WRC Trustee	Pandanus street		M	0km	-	No
	205SP194014	WRC Trustee	Casuarina Street – Rose Bay		M	0km	-	Yes
	33USL44769	Unallocated State Land	End of Avicenna street		M	0km	-	Yes
	33USL44769	Unallocated State Land	End of Lotus Court		M	0km	-	Yes
	205SP194014	WRC Trustee	End of Poinciana Ave		M	0km	-	Yes
	182HR2065	WRC Trustee	Soldiers Rd (behind houses 122-1-5		M	0km	-	No
		Unallocated State Land	Morrel St (rar of 4-22)		M	0km	-	No
	Lot 190 on SP159339	Unallocated State Land	Flagstaff hill		M	2KM	<1km	No

Table 15. The list of Council land in Proserpine – Airlie Beach which are listed as high priority for bushfire management.

Suburb	Lot on Plan	Tenure	Description	Lot area (Ha)	Bushfire hazard rating	Distance to urban centre	Distance to rural residential area	Bushfire Management Plan developed
Cape Gloucester	Lot 1 on AP10080	WRC Trustee	Nelly bay hinterland	570	H-M	-	5km	Yes
	Lot 1 on AP10080	WRC Trustee	Hydeaway bay-dingo beach 5 acre lots		M-H	5km	0km	Yes
	Lot 1 on AP10080	WRC Trustee	Dingo Beach waste transfer area		M-H	5-10km	5km	Yes
C'vale	Lot 1 on SP111110	WRC Trustee	Land behind the TAFE	8	M	0km	-	yes

Wilson beach	Lot 320 on SP111704	WRC Trustee	Near waste transfer station	236	M	-	2km	No
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Table 16. The list of Council land in Collinsville which is listed as high priority for bushfire management.

Suburb	Lot on Plan	Tenure	Description	Lot area (Ha)	Bushfire hazard rating	Distance to urban centre	Distance to rural residential area	Bushfire Management Plan developed
Collinsville	81CP903172	WRC Trustee	Water tower land – north of town	6.7	M	0.5km	0ha	No
Collinsville	1AP2845	Unallocated State Land	USL – North of town	16	M	0.5km	0ha	No
Collinsville	1AP13613	Unallocated State Land	USL – Garrick street hill	12	M	0.5km	0ha	No
Collinsville	88SP106415	WRC Trustee	Old town landfill	33	M	0.5km	0ha	No
Collinsville	24DK190	Unallocated State Land	USL – Garrick street hill	4.7	M	0.5km	0ha	No
Collinsville	16C74042	WRC Trustee	Walker street	3.2	M	0.5km	0ha	No
Collinsville	69DK243	WRC Trustee	Corduroy creek rd	66	M	0.5km	0ha	No
Scottsville	1S7424/ 2S7426	WRC Trustee	Fifth avenue	5	M	0.5km	0ha	No

4.4. Annual bushfire management program

The Council has developed an annual bushfire management program to mitigate bushfire on high priority public land. The bushfire management and mitigation measures will require the assistance of the Queensland Fire Emergency Service (QFES) , Rural Fire Brigades and the State government. The list of bushfire mitigation works are summarised in table 17.

Table 17. Summary of Council annual bushfire management works.

Suburb	Lot Description	Lot No.	Rural Fire Brigade	Target fuel reduction frequency	Length of fire breaks	2018-19	2019-20	2020-21	2021-22
Bowen	Hospital Hill	14SP212227 16B66103	Bowen Urban	1 every 3 years	Approx. 1.5km	Fire breaks slashed 2 x year *	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year
	Flagstaff Hill	Lot 190 on SP159339	Bowen Urban	1 every 3 years	Approx. 1.5km	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year
	Rose Bay reserve	205SP194014 33USL44769	Bowen urban	1 every 3 years	Approx. 1.5km	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year
Suburb	Lot Description	Lot No.	Rural Fire Brigade	Target fuel reduction frequency	Length of fire breaks	2018-19	2019-20	2020-21	2021-22
	Brisk bay green waste area	-	Heronvale Rural	Every year	-	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year
C'Vale	Land behind TAFE	Lot 1 on SP111110	Airlie Urban	1 every 5 years ?	Approx. 1.5km	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year
Cape Gloucester	Nelly Bay	Lot 1 on AP10080	Gloucester Rural	See plan	Approx. 5 km	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year
	Dingo Beach waste station	Lot 1 on AP10080	Gloucester Rural	See plan	0.5km	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year
	Hydeaway bay	Lot 1 on AP10080	Gloucester Rural	See plan	Approx. 5 km	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year

Collinsville	Water tower	81CP903172	Collinsville Urban + Rural	1 every 3 years	0.5km	Fire breaks slashed 2 x year Upgrade fire breaks where required.	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year
	USL – town north	1AP2845	Collinsville Urban + Rural	1 every 3 years	0.5km	Fire breaks slashed 2 x year Upgrade fire breaks where required.	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year
	USL – Garrick Street	1AP13613	Collinsville Urban + Rural	1 every 3 years	0.5km	Fire breaks slashed 2 x year Upgrade fire breaks where required.	Fire breaks slashed 2 x year Back burning by Rural Fire Brigade	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year Back burning by Rural Fire Brigade
	Old landfill	88SP106415	Collinsville Urban + Rural	1 every 3 years	0.5km	Fire breaks slashed 2 x year Upgrade fire breaks where required.	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year
	Garrick Street hill	24DK190	Collinsville Urban + Rural	1 every 3 years	0.5km	Fire breaks slashed 2 x year Upgrade fire breaks where required.	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year
Suburb	Lot Description	Lot No.	Rural Fire Brigade	Target fuel reduction frequency	Length of fire breaks	2018-19	2019-20	2020-21	2021-22
	Walker Street	16C74042	Collinsville Urban + Rural	1 every 3 years	0.5km	Fire breaks slashed 2 x year Upgrade fire breaks where required.	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year
	Corduoy Creek Rd	69DK243	Collinsville Urban + Rural	1 every 3 years	0.5km	Fire breaks slashed 2 x year Upgrade fire breaks where required.	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year
	Fifth Avenue	1S7424/ 2S7426	Collinsville Urban + Rural	1 every 3 years	0.5km	Fire breaks slashed 2 x year Upgrade fire breaks where required.	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year	Fire breaks slashed 2 x year

* Note: fire breaks to be cleared in Jun/July and where necessary in October.

** Note: Hazard reduction burns can only be conducted after fire breaks have been cut and cleared and when climatic conditions are favourable and where a fire permit has been issued.

The establishment and maintenance of fire breaks will require the use of graders, slashers and chemical spraying equipment. The use of graders is important to establish fire breaks. Graders may need to be used to re-establish fire breaks after a large wet season due to erosion. The use of slashers can be used to control the grass and other vegetation regrowth on the fire breaks. The frequency of using slashers will be influenced by the extent and longevity of the wet season. The use of chemicals to control regrowth on the fire breaks can be used, however, the loss of all vegetation on the breaks may increase soil erosion on steeper slopes.

The estimated cost of providing grader, slashing and chemical spraying to the high priority properties is shown in table 18.

Table 18. Estimated cost of the bushfire program.

Suburb	Lot Description	Maintaining fire breaks – grading (1)	Maintaining fire breaks – slashing (2)	Chemical control of re-growth on fire breaks	Total
Bowen	Hospital Hill	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
	Flagstaff Hill	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
	Rose Bay reserve	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
	Brisk bay green waste area	1 km = 2 hours = \$300	1km = 2 hours = \$160 x twice a year = \$320/yr	Once a year 2 x \$180 = \$360	
Sub-total		\$2100	\$2480	\$1260	\$5840
Cannonvale	Land behind TAFE	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
Sub-total		\$600	\$720	\$360	\$1680
Cape Gloucester	Nelly Bay	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
	Dingo Beach waste station	1 km = 2 hours = \$300	1km = 2 hours = \$160 x twice a year = \$320/yr	Once a year 2 x \$180 = \$360	
	Hydeaway bay	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
Sub-total		\$1500	\$1760	\$900	\$4160
Suburb	Lot Description	Maintaining fire breaks – grading (1)	Maintaining fire breaks – slashing (2)	Chemical control of re-growth on fire breaks	Total
Collinsville	81CP903172	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
	1AP2845	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
	1AP13613	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
	88SP106415	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
	24DK190	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
	16C74042	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
	69DK243	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
	1S7424/ 2S7426	2 km = 4 hours = \$600	2km = 4 hours = \$320 x twice a year = \$640/yr	Once a year 4 x \$90 = \$360	
Sub-total		\$4800	\$5760	\$2880	\$13440
Training	\$5,000				
Total cost	\$5,000	\$9,000	\$10,720	\$5,400	\$30120

Notes –

- 1) Grading fire breaks- \$150/hr for a grader – coverage 0.5 km/hr.
- 2) Slashing fire breaks - \$80/hr for 6foot slasher –coverage 0.5 km/hr / two passes.
- 3) Chemical treatment of regrowth on firebreak = \$90/hr = 0.5km /hr

4.5. Bushfire management on stock routes and roadsides

The Whitsunday Regional Council is responsible for the management of roadside vegetation and stock routes. The Council has an established roadside slashing program designed to manage the height of the vegetation primarily for visibility purposes. The other benefit of the roadside slashing program is to reduce fuel loads in the road corridor. Roadsides can become a source of fire due to traffic and littering. The reduction of fuel loads in the road corridor will assist in reducing the bushfire hazard and reducing the risk of fire occurring. Where road corridor vegetation is not slashed, the Council will need to rely on the adjacent

landholders to conduct back burning operations on their property and incorporate the road corridor. The council will grant approval to landholders to conduct hazard reduction burns in the road corridor providing that a fire permit is issued for the activity and an approved traffic plan.

Stock routes have traditionally been used to move live-stock through the landscape. The management of stock routes are determined under the *Queensland Biosecurity Act 2014*. Under the Biosecurity Act, local governments have a role in the management of weeds and vegetation within stock routes. The Whitsunday Regional Council will need to rely on landholders who use the stock route for cattle grazing and movement to manage the bushfire hazard and risk. Landholders adjacent to stock routes will be encouraged to conduct hazard reduction burns on stock route areas adjacent to their properties in accordance with fire permit conditions.

4.6. Bushfire hazard reduction activity procedures

There are a number of activities available to the Council to better manage bushfire hazard and risk. Some of the main bushfire mitigation measures include:

- developing well maintained fire breaks,
- undertaking effective hazard reduction burns, and,
- minimising actions which can increase the risk of bushfire.

4.6.1. Bushfire breaks

The following points will be used to guide bushfire break activities:

- Bushfire breaks are linear paths across the land where the vegetation has been reduced or cleared. Bushfire breaks should be maintained so that a 4wd or fire truck can drive along the path to access the block of land.
- The fire breaks should ideally be developed using a dozer or grader to create a 5m wide driveable path devoid of vegetation. The positioning of bushfire breaks should avoid where possible slopes greater than 10% and erosion prone land.
- The bushfire breaks should be slashed when the vegetation is more than 0.5m tall.
- The grass along the fire break should be chemically controlled where the slope is minimal and the land has a low to moderately low erosion hazard.
- The Council should inspect the bushfire breaks for high priority blocks of land every two months to ensure a fire truck can use the path, there are no erosion features which would become an obstacle to vehicles, and vegetation is sparse and would not help facilitate a fire.
- The Council should inform the nearest Queensland Fire and Rescue office of completed maintenance work on the bushfire breaks on high priority properties.

4.6.2. Undertaking effective hazard reduction burns

The following points will be used to guide hazard reduction burn activities:

- Hazard reduction burns or back burning operations involves the lighting of fires under relatively controlled conditions to create a fire which will reduce the fuel load in a designated area of the block of land.
- Hazard reduction burns can be lit in one or a number of locations.
- Hazard reduction burns will only be lit when the weather conditions are favourable and there is a low risk of damage to nearby infrastructure.
- In some situations only a portion of the block will be burnt to achieve a mosaic burn over a number of years.
- The hazard reduction burns will not be coordinated by the Whitsunday Regional Council. These controlled burns will be coordinated by the Queensland Fire and Rescue staff and may involve trained rural fire brigade officers.

- The QFES or the rural fire brigade will need to inform Council of pending hazard reduction burn operations at least 2 weeks prior to the activity.
- The Council will undertake a letter drop of nearby residents to inform them of the proposed hazard reduction burns and the proposed date.

4.6.3. Other actions which can minimise the risk of bushfire

The risk of bushfires occurring on public land is increased by the use of vehicles, access to public bushland and the lighting of unapproved fires. The Council administers a Local Law which assists in regulating activities such as fires on public land, riding motor bikes on public land, and accumulation of green waste on public land. The Council will need to enforce the Local law to reduce bushfire hazard and risk. To reduce bushfire risk on public land, the Council will need to:

- Improve the regulation and compliance of fire lighting on public land.
- Improve the regulation and compliance of illegal green waste dumping on public land.
- Improve the regulation and compliance of motor vehicle usage on public bushland.
- Assist in promoting the need for residents requiring a permit to light fires in rural and rural residential areas.

4.7. Training and capacity building

To implement the Bushfire Plan council will need to increase its capacity to implement bushfire mitigation measures. The council will need to ensure that the bushfire mitigation and management activities are programmed into work schedules, ensure equipment are available and staff trained in these activities. The Council is likely to have access to contractors with graders and dozers for the development and maintenance of fire breaks. Council currently have staff using chemical spray rigs which could be utilised in maintaining fire breaks.

Council may need to increase its capacity in managing bushfire hazard and risk. Selected council staff may need training in firefighting operations so that Council can implement strategies which would lead to reduced unplanned bushfires in the I-Zone, and increase council's ability to assist the state government officers in joint back burning operations. It is envisaged that if a small number of council staff are trained to assist with bushfire management activities and back burning operations, this would assist in building capacity within council and further develop a bushfire management partnership with the state government. In addition, Council should monitor the training provided to rural fire brigades in the region to ensure the rural crews have the skills and experience to manage hazard reduction burns on public land. The issue of rural fire brigade training could be an item on the agenda of the annual fire group meetings.

4.8. Summary of actions

The Whitsunday Regional Council Bushfire Management Plan will require the implementation of a number of actions. The actions associated with the implementation of this Plan are summarised in table 19.

Table 19. The main actions required to implement this Bushfire Plan.

No.	Theme	Actions
1	Bushfire Planning	1.1.a. Develop site specific plans for high bushfire hazard and high risk areas on Council managed land. The Plans should be consistent with State government and regional bushfire management guidelines.
		1.2.a. Ensure community stakeholders in high bushfire hazard and high-risk areas are involved in bushfire planning meetings.
		1.3.a. Encourage stakeholder involvement in bushfire planning meetings each year.
2	Prevention	2.1.a. Ensure QFES conduct training of rural fire brigade volunteers who conduct planned hazard reduction burns on behalf of council.
		2.2.b. Develop planned hazard reduction burn plans in consultation with stakeholders.
		2.2.c. Implement bushfire control line slashing and grading.

3	Preparedness	3.1.a. Map fire control lines and ensure they are maintained to recognised standards.
		3.2.a. Council raise a rural fire levy and allocate to rural fire brigades.
		3.3.a. Request a copy of the training program from QFES on an annual basis.
		3.4.a. Ensure Council staff have required levels of bushfire management training.
4	Fuel Management	4.1.a. Council and QFES conduct a fuel assessment of high risk blocks annually and this information is used to prioritise hazard reduction burns.
		4.2.b. Undertake hazard reduction burns on priority public lots.
5	Response	5.1.a. Ensure there is correspondence issued to each rural fire brigade which lists the council managed lots that they are responsible for on an annual basis.
6	Recovery	6.1.a. Develop a bushfire recovery plan.
7	Monitoring and evaluation	7.1.a. Develop an annual bushfire management report in June each year.

4.9. Climate change

The Whitsunday region is expected to be impacted by human induced climate change. The regional climate change reports predict increasing temperatures and evaporation over the next few decades. Climate variability between seasons will still strongly influence bushfire hazard and bushfire conditions.

Bushfire hazard in the Whitsunday region is not expected to be influenced by human-induced climate change over the duration of this bushfire management plan. The climate within the annual climate cycle will still have a strong influence over bushfire hazard. When new climate change information becomes available it should be reviewed for possible inclusion into future versions of this Bushfire Management Plan.

5. Consultation

The Whitsunday Regional Council released a draft of the Bushfire Management Plan in April 2018 for public comment. The public consultation period on the draft Bushfire Plan was from the 28th of April to the 1st of June 2018. The Council sent the draft report to the following organisations for comment;

- Queensland Department of Environment and Resource Management (DERM)
- Queensland Parks and Wildlife Service
- Queensland Fire Emergency Service – Mackay, Townsville, Bowen, Proserpine, Collinsville and Airlie Beach.
- Reef Catchments Natural Resource Management group
- NQ Dry Tropics Natural Resource Management Group
- Fauna Rescue Whitsunday.

The results of the community consultation process have been reported to the Council. The submissions from stakeholders and the public have been incorporated into the final version of this report.

6. Review and evaluation

The Whitsunday Regional Council Bushfire Management Program will be reviewed by the council, state government and Queensland Fire Service in an annual meeting in February – March each year.

7. References

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8. Appendix

8.1. Glossary

The following glossary is predominantly sourced from *Queensland Department of National Parks, Recreation, Sport and Racing, 2012*.

Term Definition

- **Access Point** - Point of safe entry and exit onto a reserve area, of sufficient width and level surface to allow fire fighting and management vehicles entry into the reserve.
- **AFAC Australian Fire Authorities Council** - This national body has been established to coordinate research, training and education in fire throughout Australia.
- **Aspect** - Aspect of a landscape is the direction that the face or slope of land faces when aligned to the magnetic compass. E.g., a slope facing west has a westerly aspect. Westerly and northerly aspects are usually the driest and hence more fire prone than easterly and southerly aspects.
- **Char height** - The height to which former green leaves still suspended on plants that are turned black by the flame of the fire. NB: This cannot be measured on the stems of plants as fire 'climbs' the bark
- **Crown scorch** - Browning of the needles or leaves in the crown of a tree or shrub caused by heat from a fire.
- **Dwell time** - Dwell time is the time for a flame or fire to burn at a specific point in a fuel matrix.
- **Fire danger index** - A relative number and rating denoting an evaluation of rate of spread, or suppression difficulty for specific combinations of fuel moisture and wind speed.
- **Fire frequency** - The frequency of successive fires for a vegetation community in the same point of the landscape (refer to fire interval).
- **Fire intensity** - The amount of energy released per unit length of fire front, in units of kilowatts per metre of the fireline (also known as the Byram fire-line intensity).
- **Fire line** - Constructed or treated lines/trails (sometimes referred to as fire trails or control lines) or environmental features that can be used in the management of a fire. Permanent firelines should (usually) have a primary purpose other than that of a control line (e.g. access track to a campground). Firelines are NOT fire breaks. Although the term 'fireline' is not without its shortcomings it should be used in preference to 'firebreak' to avoid the perception that a fire will stop at a break.
- **Fire Management Zone (FMZ)** - A designated area within or contiguous with the planning area which requires specific management prescriptions as identified in the FMP or other management planning documents. E.g., Conservation protection zones pertain to an area of reserve that has significant flora, fauna or habitats which are intolerant to fire.
- **Fire Management Block (FMB)** - A discrete area identified in a Fire Management Plan with a discernible operational boundary on which a specific planned burn is planned.
- **Fine Fuels** - Dead, dry or otherwise combustible material of a diameter up to 6 mm. (E.g., twigs, leaves, grass).
- **Firebreak** - A firebreak is a constructed or natural feature lacking the Vegetation or fuel necessary to carry a ground fire, and that reduces the rate of spread and intensity of any fire that may occur in an area of standing Vegetation.
- **Fire frequency** - Fire frequency is the measurement of the number of years between successive fires that burn through a specified area.
- **Fire intensity** - Fire intensity is the measurement of the heat generated by a fire over a given distance. Intensity is measured in kilowatts per metre kW/m.
- **Fire Management Plan (FMP)** - A document outlining the management of fire hazards within a specific area of standing Vegetation. It details the objectives for management of the area and the nature, including

the application of planned burning and timing of specific management actions to be used to meet the defined objectives.

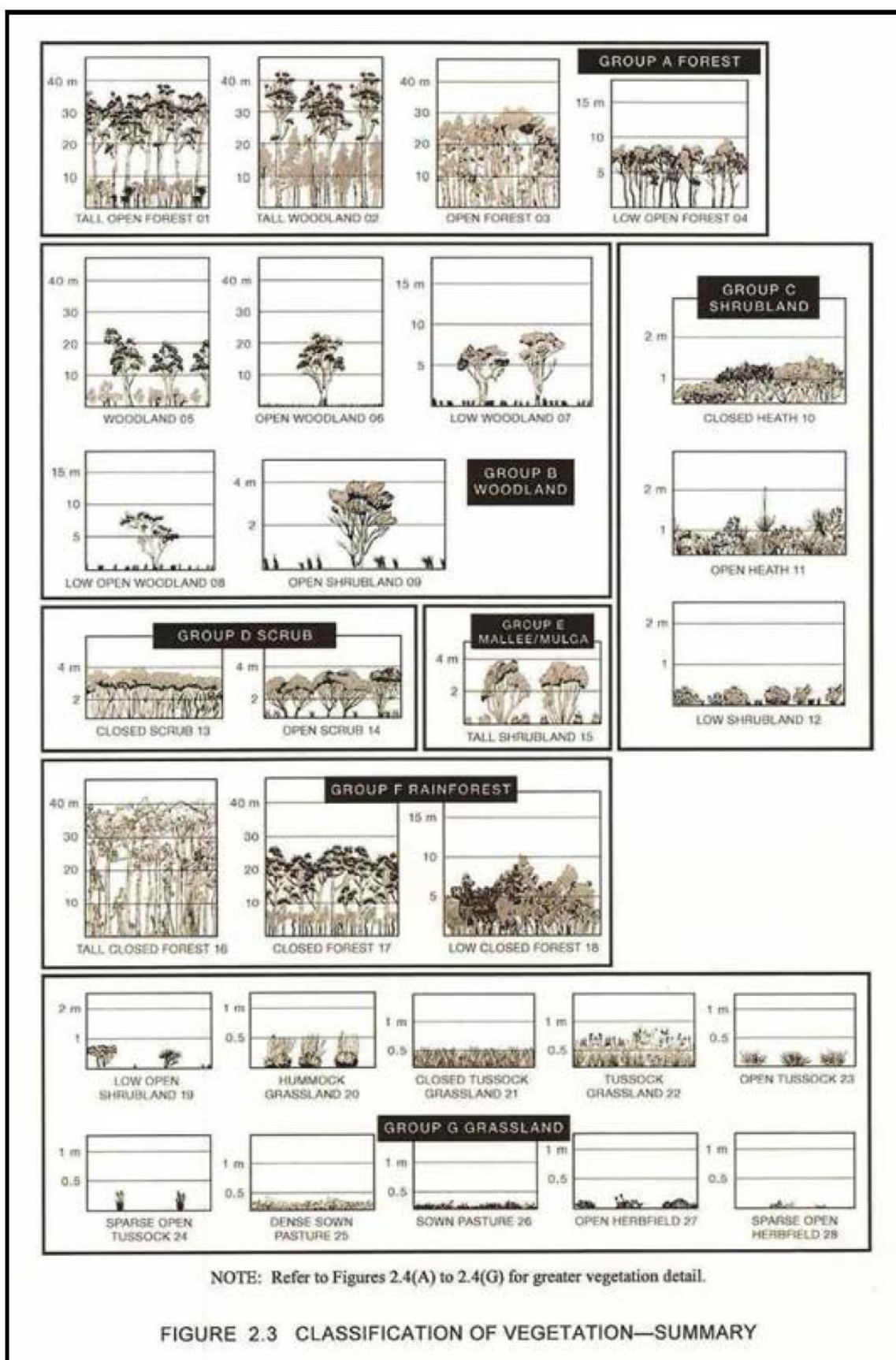
- **Fire prone** - Fire prone is an assessment of an area of Vegetation that has the potential to burn under suitable conditions.
- **Fire risk** - The potential for a fire event to impact on infrastructure, cultural, historical or ecological assets within or contiguous with a bushland area.
- **Fire trail** - A track, path or trail capable of being used as a point to conduct fire prevention or suppression activities. Fire trails are primarily for use for vehicles such as four wheel drives.
- **Foliage Projected Cover (FPC)** - Measure of canopy projection for a given vegetative community or area given as a percentage of the total area.
- **Fuel Free Zone (FFZ)** - A Fuel Free Zone is an area of a firebreak, which contains virtually no fuel. This area usually consists of the firebreak proper and provides a fuel free zone against a property boundary of a built asset.
- **Fuel Load** - Estimated volume of combustible fuels available in a defined area of Vegetation type expressed as tonnes per hectare (t/ha).
- **Fuel matrix** - Fuel matrix is a description of the types and locations of fuels within an area of Vegetation. E.g., a fuel matrix may consist of ground fuel made up of leaves and sticks as well as suspended fuels in shrubs and bark in trees.
- **Fuel Reduced Zone (FRZ)** - An area where available fine fuel or standing vegetation has been removed or reduced to a height less than 100 mm.
- **Hazard** - A hazard is fuel complexes defined by volume, type, condition, arrangement and location that determine both the ease and probability of ignition, and fire suppression difficulty.
- **Inter Burn Period** - The minimum or otherwise recommended time stated in years, between successive application of planned burns or occurrence of wildfire in an area.
- **Ladder Fuels** - Arrangement of combustible material or Vegetation structure providing potential for carrying fire vertically into the vegetation canopy. (see "suspended fuels")
- **Management Plan** - A document relating to a specific area, outlining the variety of values and issues contained in that area and which describes the management objectives and actions to enable ongoing management of that area. Specific plans for fire management, weed management, visitor management etc. relate to single issues and form part of an Integrated Management Plan for a specific area.
- **Mosaic burn** - An approach which aims to create spatial and temporal variation in fire regimes.
- **Planned burn** - A fire which has been ignited by a person authorised under a QFRA "permit to burn" in an area of standing vegetation. The fire should conform to specific timing, extent and intensity as prescribed in a Fire Management Plan, and is under the control of the authorised person.
- **QFRA** - Queensland Fire & Rescue Authority, including the Rural Fire Service and the Urban Division (Formerly the Queensland Fire Service)
- **Rate of spread** - The relative forward movement of a fire through an area of standing vegetation. Rate of spread is usually based on the measurement of the size of the fire perimeter or the increase in area of the fire front.
- **Remnant Vegetation** - Refers to areas of bushland or other vegetation types that have been separated from larger bushland areas within the city.
- **Standing Vegetation** - Describes living and dead vegetation above the ground, including grasslands, heaths, wetlands, and open woodland to closed forest communities.
- **Stick Raking** - Physical removal of dead Vegetation and coarse forest litter.
- **Suspended Fuels** - Elements of fine fuel elevated from the normally compressed ground layer fuels, and thereby drier and liable to create wind-borne "embers" (e.g. bark and leaves caught in branches, dead standing vegetation, flammable live vegetation).
- **Wildfire** - Any unplanned or uncontrolled fire occurring in any area of standing vegetation.

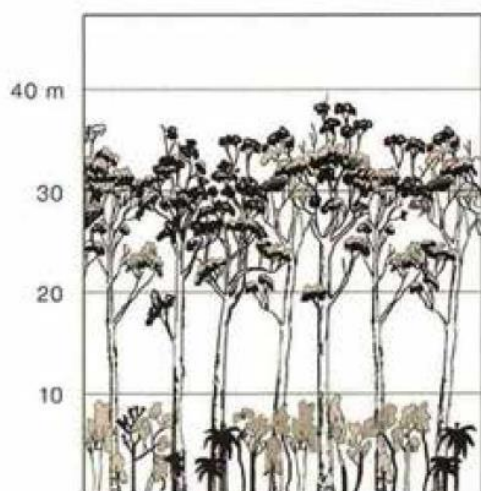
8.2. Determination of bushfire attack level: extract of AS3959.2009

Fire Danger Index – 50 (extract from AS 3959-2009)

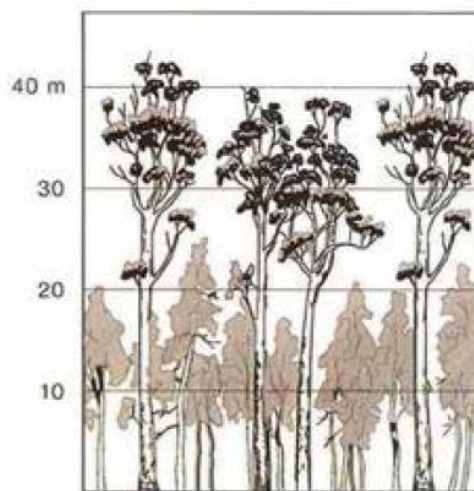
TABLE 2.4.4 DETERMINATION OF BUSHFIRE ATTACK LEVEL (BAL)—FDI 50 (1090 K)					
Vegetation classification	Bushfire Attack Levels (BALs)				
	BAL—FZ	BAL—40	BAL—29	BAL—19	BAL—12.5
	Distance (m) of the site from the predominant vegetation class				
	All upslopes and flat land (0 degrees)				
A. Forest	<12	12–<16	16–<23	23–<32	32–<100
B. Woodland	<7	7–<10	10–<15	15–<22	22–<100
C. Shrubland	<7	7–<9	9–<13	13–<19	19–<100
D. Scrub	<10	10–<13	13–<19	19–<27	27–<100
E. Mallee/Mulga	<6	6–<8	8–<12	12–<17	17–<100
F. Rainforest	<5	5–<6	6–<9	9–<14	14–<100
G. Tussock Moorland	<7	7–<9	9–<14	14–<20	20–<100
Downslope >0 to 5 degrees					
A. Forest	<14	14–<19	19–<27	27–<38	38–<100
B. Woodland	<9	9–<12	12–<18	18–<26	26–<100
C. Shrubland	<7	7–<10	10–<15	15–<22	22–<100
D. Scrub	<11	11–<15	15–<22	22–<31	31–<100
E. Mallee/Mulga	<7	7–<9	9–<13	13–<20	20–<100
F. Rainforest	<6	6–<8	8–<12	12–<17	17–<100
G. Tussock Moorland	<8	8–<10	10–<16	16–<23	23–<100
Downslope >5 to 10 degrees					
A. Forest	<18	18–<24	24–<34	34–<46	46–<100
B. Woodland	<11	11–<15	15–<23	23–<32	32–<100
C. Shrubland	<8	8–<11	11–<17	17–<25	25–<100
D. Scrub	<12	12–<17	17–<24	24–<35	35–<100
E. Mallee/Mulga	<7	7–<10	10–<15	15–<23	23–<100
F. Rainforest	<7	7–<10	10–<15	15–<22	22–<100
G. Tussock Moorland	<9	9–<12	12–<18	18–<26	26–<100
Downslope >10 to 15 degrees					
A. Forest	<22	22–<30	30–<41	41–<56	56–<100
B. Woodland	<14	14–<19	19–<28	28–<40	40–<100
C. Shrubland	<9	9–<13	13–<19	19–<28	28–<100
D. Scrub	<14	14–<19	19–<28	28–<39	39–<100
E. Mallee/Mulga	<8	8–<11	11–<18	18–<26	26–<100
F. Rainforest	<9	9–<13	13–<19	19–<28	28–<100
G. Tussock Moorland	<10	10–<13	13–<20	20–<29	29–<100
Downslope >15 to 20 degrees					
A. Forest	<28	28–<37	37–<51	51–<67	67–<100
B. Woodland	<18	18–<25	25–<36	36–<48	48–<100
C. Shrubland	<10	10–<15	15–<22	22–<31	31–<100
D. Scrub	<15	15–<21	21–<31	31–<43	43–<100
E. Mallee/Mulga	<9	9–<13	13–<20	20–<29	29–<100
F. Rainforest	<12	12–<17	17–<25	25–<35	35–<100
G. Tussock Moorland	<11	11–<15	15–<23	23–<33	33–<100

Vegetation Characteristics (extracts from AS 3959-2009)

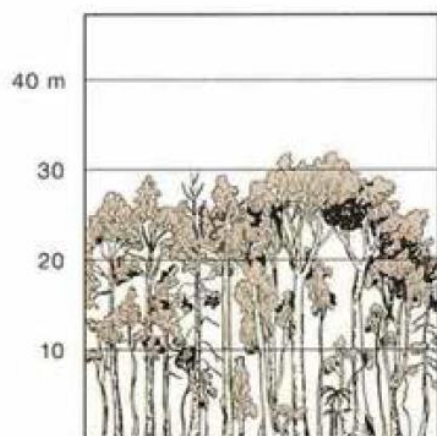




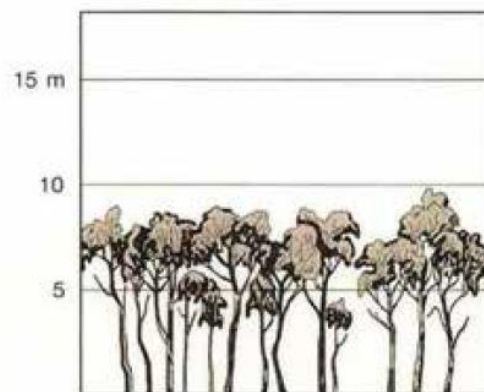
TALL OPEN FOREST A-01



TALL WOODLAND A-02



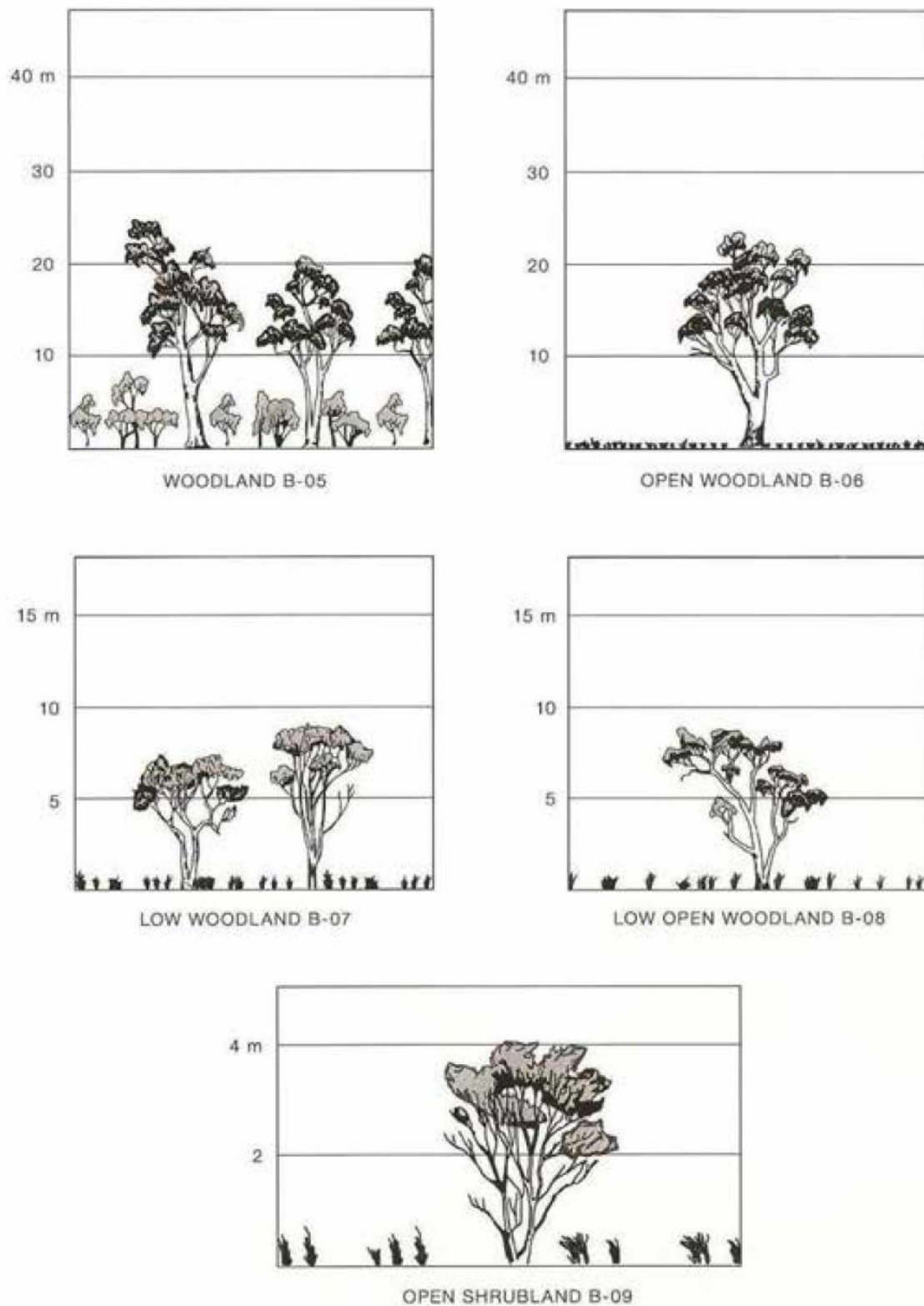
OPEN FOREST A-03



LOW OPEN FOREST A-04

NOTE: See Table 2.3.

FIGURE 2.4(A) CLASSIFICATION OF VEGETATION—FOREST

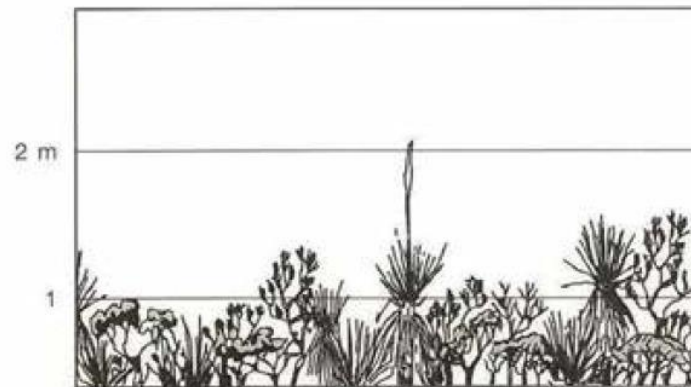


NOTE: See Table 2.3.

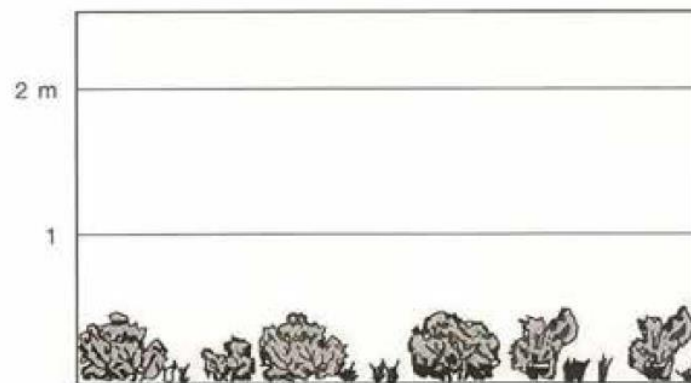
FIGURE 2.4(B) CLASSIFICATION OF VEGETATION—WOODLAND



CLOSED HEATH C-10



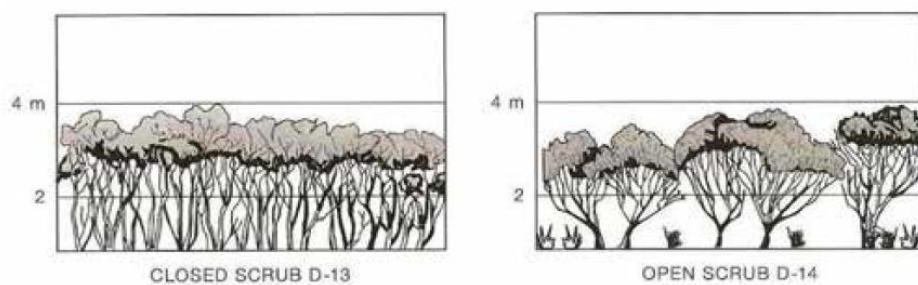
OPEN HEATH C-11



LOW SHRUBLAND C-12

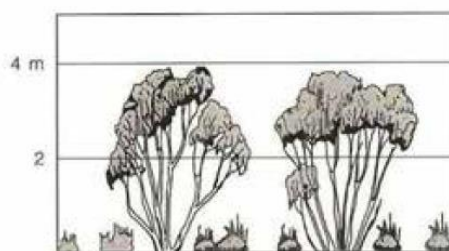
NOTE: See Table 2.3.

FIGURE 2.4(C) CLASSIFICATION OF VEGETATION—SHRUBLAND



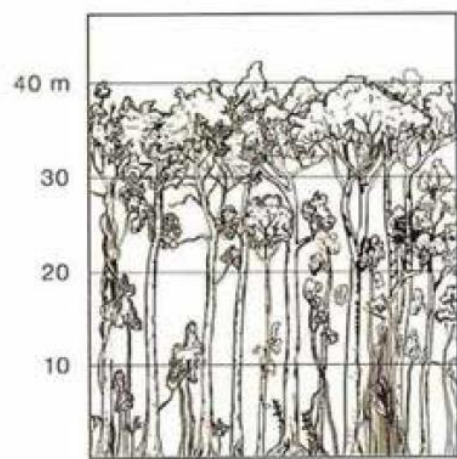
NOTE: See Table 2.3.

FIGURE 2.4(D) CLASSIFICATION OF VEGETATION—SCRUB

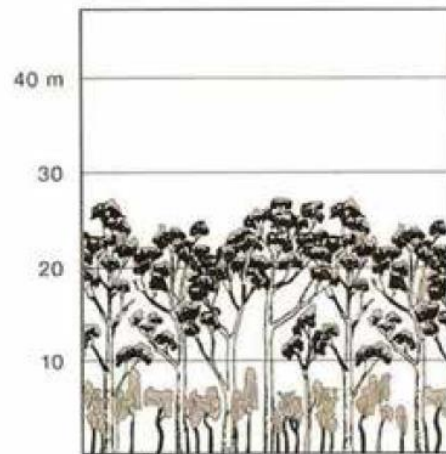


NOTE: See Table 2.3.

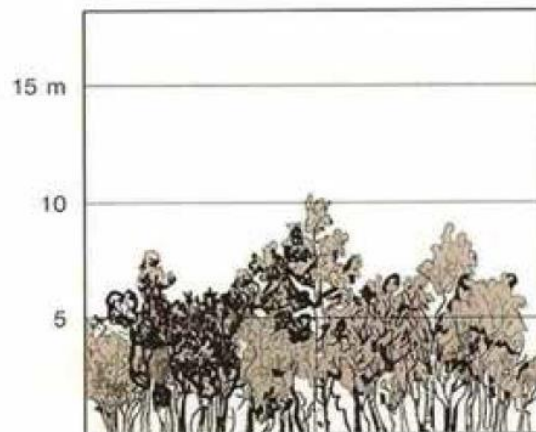
FIGURE 2.4(E) CLASSIFICATION OF VEGETATION—MALLEE/MULGA



TALL CLOSED FOREST F-16



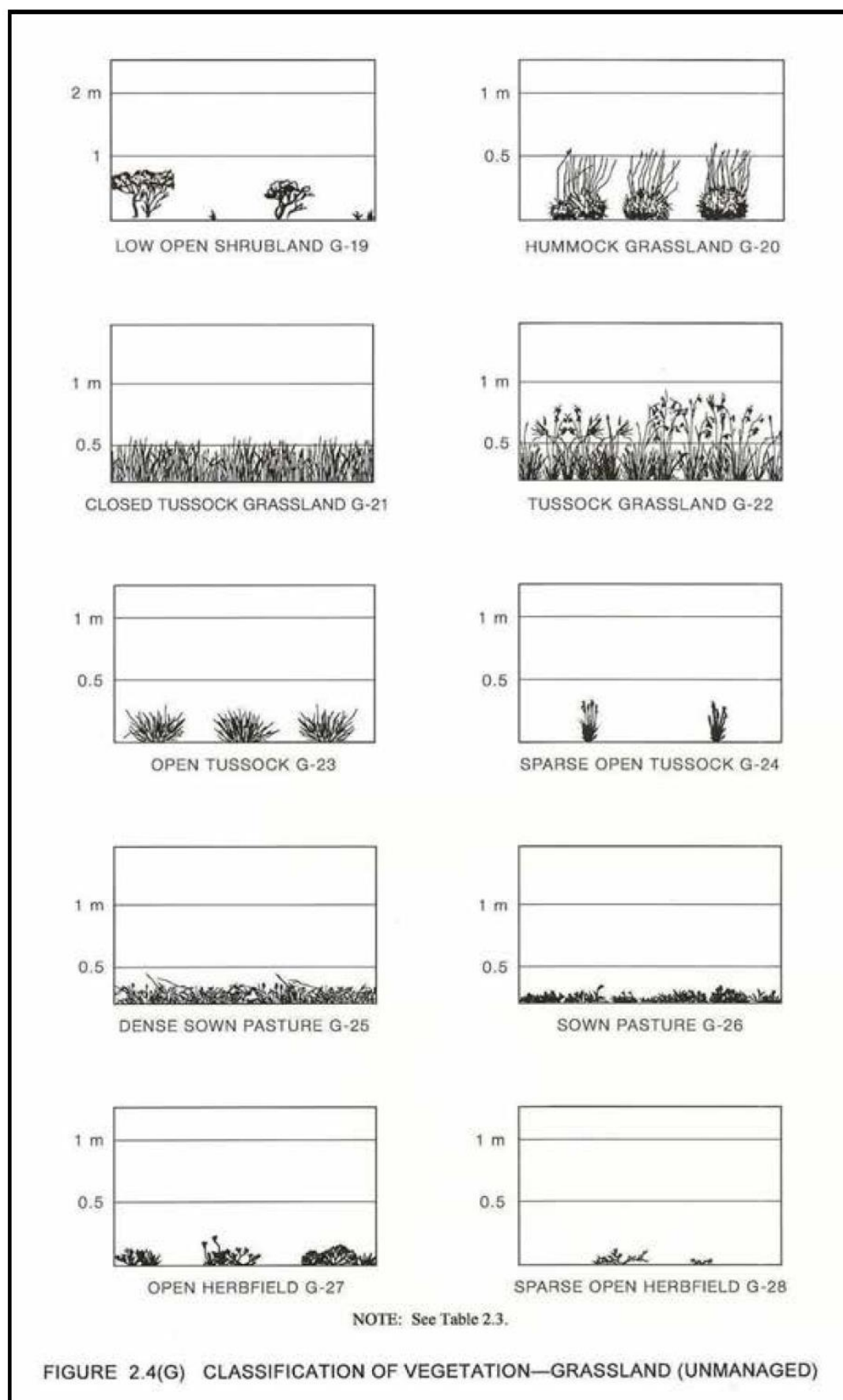
CLOSED FOREST F-17



LOW CLOSED FOREST F-18

NOTE: See Table 2.3.

FIGURE 2.4(F) CLASSIFICATION OF VEGETATION—RAINFOREST



8.3. Fire trail design guidelines

Performance Criteria	Acceptable solutions
The intent may be achieved where: the width and design of the fire trails enables safe and ready access for firefighting vehicles	- a minimum carriageway width of four metres with an additional one metre wide strip on each side of the trail (clear of bushes and long grass) is provided. - the trail is a maximum grade of 15 degrees if sealed and not more than 10 degrees if unsealed. - a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches is provided. - the crossfall of the trail is not more than 10 degrees. - the trail has the capacity for passing by: - reversing bays using the access to properties to reverse fire tankers, which are six metres wide and eight metres deep to any gates, with an inner minimum turning radius of six metres and outer minimum radius of 12 metres; and/or - a passing bay every 200 metres, 20 metres long by three metres wide, making a minimum trafficable width of seven metres at the passing bay. <i>Note: Some short constrictions in the access may be accepted where they are not less than the minimum (3.5m) and extend for no more than 30m and where obstruction cannot be reasonably avoided or removed.</i>
fire trails are trafficable under all weather conditions. Where the fire trail joins a public road, access shall be controlled to prevent use by non authorised persons.	- the fire trail is accessible to firefighters and maintained in a serviceable condition by the owner of the land. - appropriate drainage and erosion controls are provided. - the fire trail system is connected to the property access road and/or to the through road system at frequent intervals of 200 metres or less. - fire trails do not traverse a wetlands or other land potentially subject to periodic inundation (other than a flood or storm surge). - gates for fire trails are provided and locked with a key/lock system authorized by the local RFS.
fire trails designed to prevent weed infestation, soil erosion and other land degradation	- fire trail design does not adversely impact on natural hydrological flows. - fire trail design acts as an effective barrier to the spread of weeds and nutrients. - fire trail construction does not expose acid-sulphate soils.

(Source: NSW Rural Fire Service 2006)

Firebreaks

The firebreaks identified and described in these guidelines have been based on existing firebreak types currently in use throughout southeast Queensland. The following guidelines incorporate 'best environmental management practice' in the maintenance and construction of firebreaks over a variety of landscapes. Note: FFZ is a Fuel Free Zone; FRZ is a Fuel Reduced Zone.

The total sizes of the FFZ and FRZ should, where possible, ensure they are compliant with the setbacks recommended in the State Planning Policy for Mitigating the Adverse Impacts of Flood, Bushfire and Landslide (SPP1/03) particularly where the vegetation is deemed to be "Hazardous Vegetation" as defined under the SPP1/03 i.e. High or Medium hazardous vegetation.

Firebreak Types - Summary table

Level of Protection & Firebreak Type No.	Slope	FFZ (m)	FRZ (m)	Vegetation	Access	Constraints	Potential Situation
Maximum use in areas of high risk to property. 1	$< 15^0$	30	15	Open forest in high fire risk areas adjacent to built assets or significant environmental assets.	- Suitable for large and small fire appliances, dependant on cross slope. - Fire appliance to traverse along the entire length of break and to turn around easily. - Access available from both ends. - Two-way access along break.	- Not suitable for erodible soils or steep slopes e.g. $> 12^0$ - Minimise erosion with water inverts & side drains. - Plan for reduced visual impact. - Removal of all fine and medium fuels. - May provide additional access to areas of environmental significance.	A type 1 firebreak would be required in a large bushland park ($>40ha$) where the adjacent assets are in close proximity to the park boundary.
High use in areas of high risk to property.	$10^0 > < 15^0$	20	10	Open forest in high to moderate fire risk areas adjacent to built assets or significant environmental assets.	- Suitable for large and small fire appliances, dependant on cross slope. - Fire appliance to access entire length.	- Suitable for most soils except those susceptible to erosion. - Minimise erosion with water inverts & side	A type 2 firebreak would be required in a medium to large bushland park ($<40ha > 10ha$)
Level of Protection & Firebreak Type No.	Slope	FFZ (m)	FRZ (m)	Vegetation	Access	Constraints	Potential Situation
2					Two-way access along break.	- drains. - Plan for reduced visual impact.	where the protection of property is less than a type 1 situation.
Moderate use in areas of moderate risk to property. 3	$5^0 > < 10^0$	10	5	Open forest & woodland in fire prone areas	- Suitable for all fire appliances. - Two-way access along break.	- Suitable for all soil types. - Minimise erosion with water inverts.	A type 3 firebreak would be required for medium ecological reserves (10ha) where the risk to property is relatively high.
Low moderate use in areas of low risk to property. 4	$< 5^0$	6	0	Woodlands and grasslands in areas of low fire proneness. Can be used for internal firebreaks around fire management blocks.	- Suitable for small fire appliances. - If used as fire management block boundary may only be suitable as a walking track. - One-way access along break.	- Suitable for all soil types. - Minimise erosion with water inverts.	A type 4 firebreak is for use in all ecological reserves where the risk to property is low or the size of the bushland park is relatively small ($<10ha$).
Minimum use in areas of very low risk to property. 5	$< 2^0$	4	0	Woodlands and grasslands in small ecological reserves. Walking tracks in larger ecological reserves areas can be classified as type 5 firebreaks	- Restricted access for small appliances onto and along break. - Main access through private properties - Mostly used for pedestrian access.	Suitable for all soil types	A type 5 firebreak is for use around small bushland areas or corridors as well as internal firebreaks in larger ecological reserves.

8.4. Objectives for bushfire hazard reduction burning

Source: NSW Rural Fire Service
www.rfs.nsw.gov.au

A successful low intensity hazard reduction burn will reduce fuel load so that it creates a safe defensible area around an asset. It should also minimise the impact from the burn on the environment.

In carrying out a burn, you need to consider:

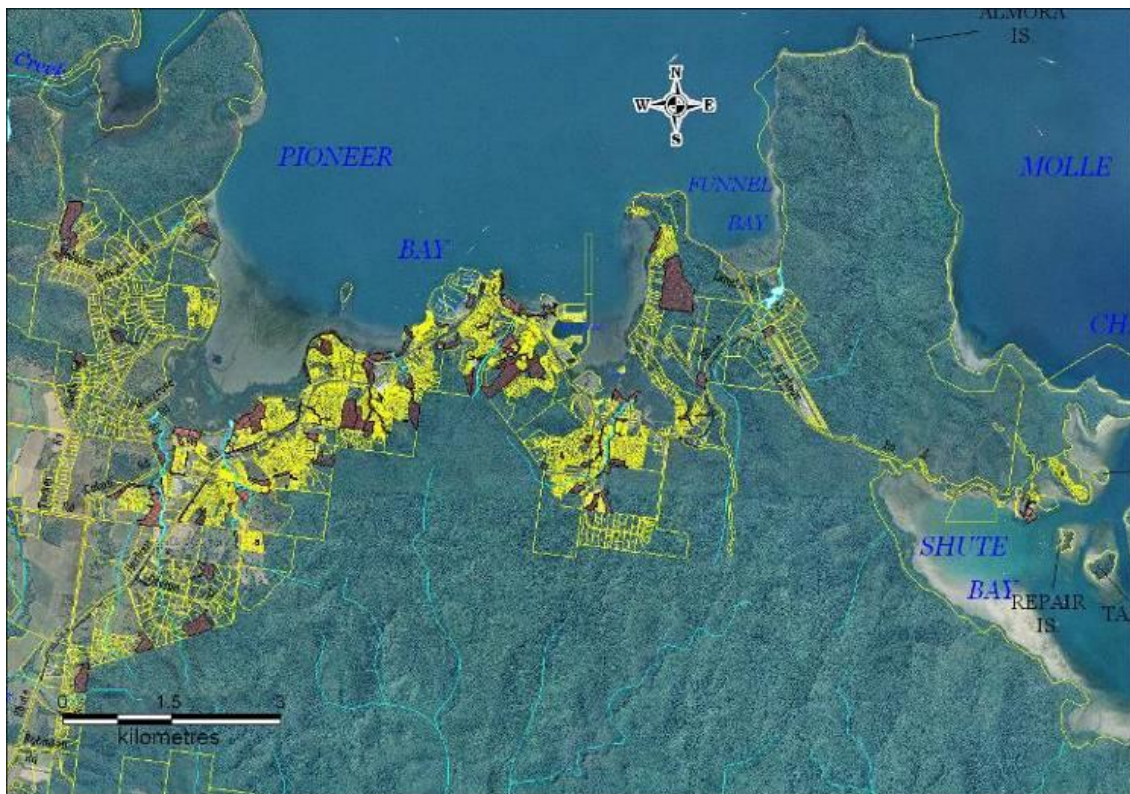
- 1) The fuel load and structure
- 2) The effects on the environment and the community
- 3) The specific zone objectives
- 4) If there are adequate fire breaks and control lines
- 5) The season and weather conditions
- 6) The topography and fire behaviour
- 7) What lighting patterns to use
- 8) Conducting a test burn
- 9) What safety measures may be needed
- 10) Mopping up afterwards
- 11) If you need to report the results

8.5. Check list for hazard reduction burns

The following is a checklist of tasks and activities that should be followed prior to hazard reduction burns:

No.	Task	√
1	Fuel load assessment conducted	
2	Bushfire fire hazard sufficient to warrant a hazard reduction burn	
3	Fire breaks and control lines are in good condition	
4	Burn plan developed – identifying where the burn will occur, timing and personnel availability	
5	Ensure adequate trained personnel are on hand for planned burn	
6	Fire permit gained for proposed burn plan	
7	Proposed hazard reduction burn is approved by QFES and Council	
8	Community awareness plan is developed and activated prior to burn	
9	Bushfire stakeholders advised of hazard reduction burn timing	
10	Machinery and trucks are in good working order. Water available.	
11	Contingency plan developed in case fire escapes the target area	
12	Hazard reduction burn is undertaken in accordance with QFES guidelines	
13	Fire control personnel ensure fire is out before leaving fire control area.	
14	A brief account of the hazard reduction burn submitted to QFES and Council.	

8.6. Maps



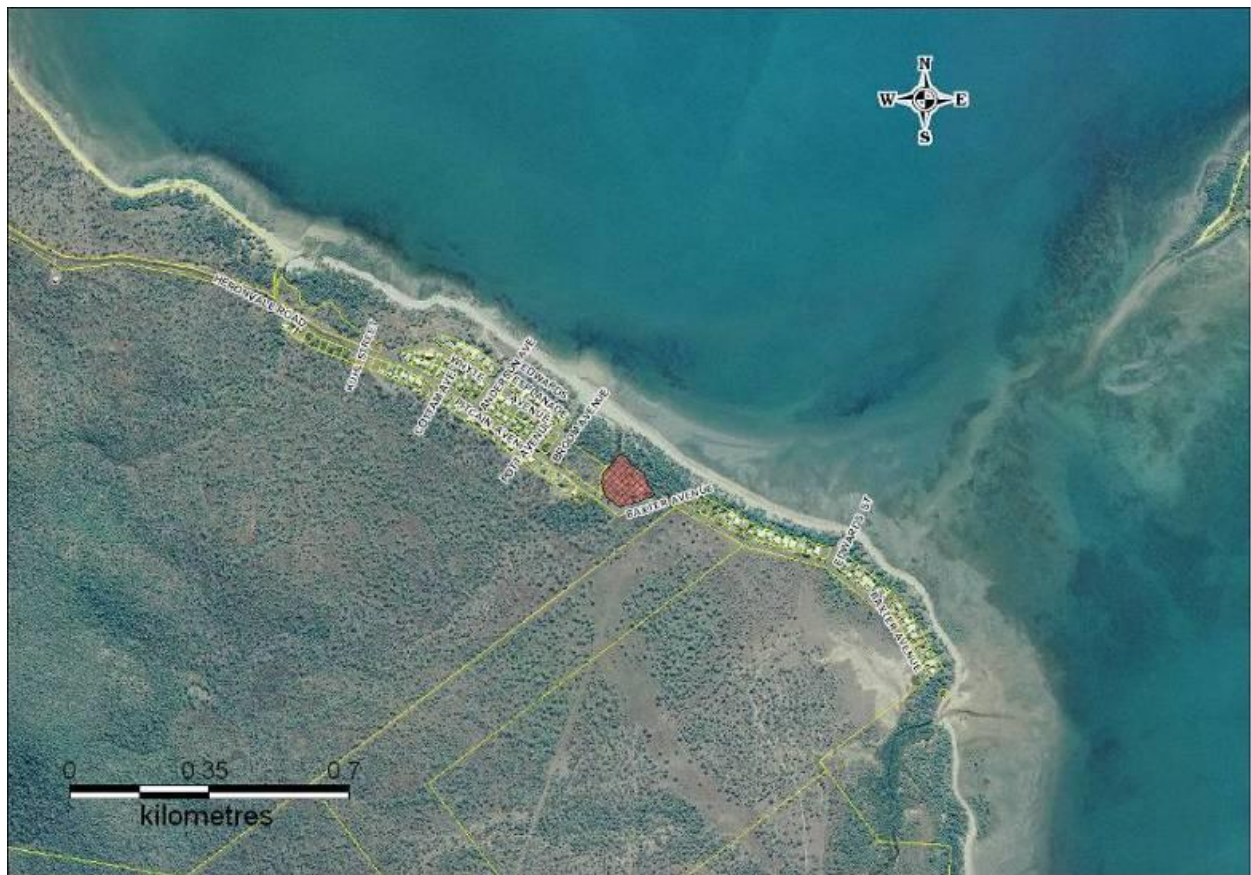
Map 1. Council land – Airlie beach and Cannonvale.



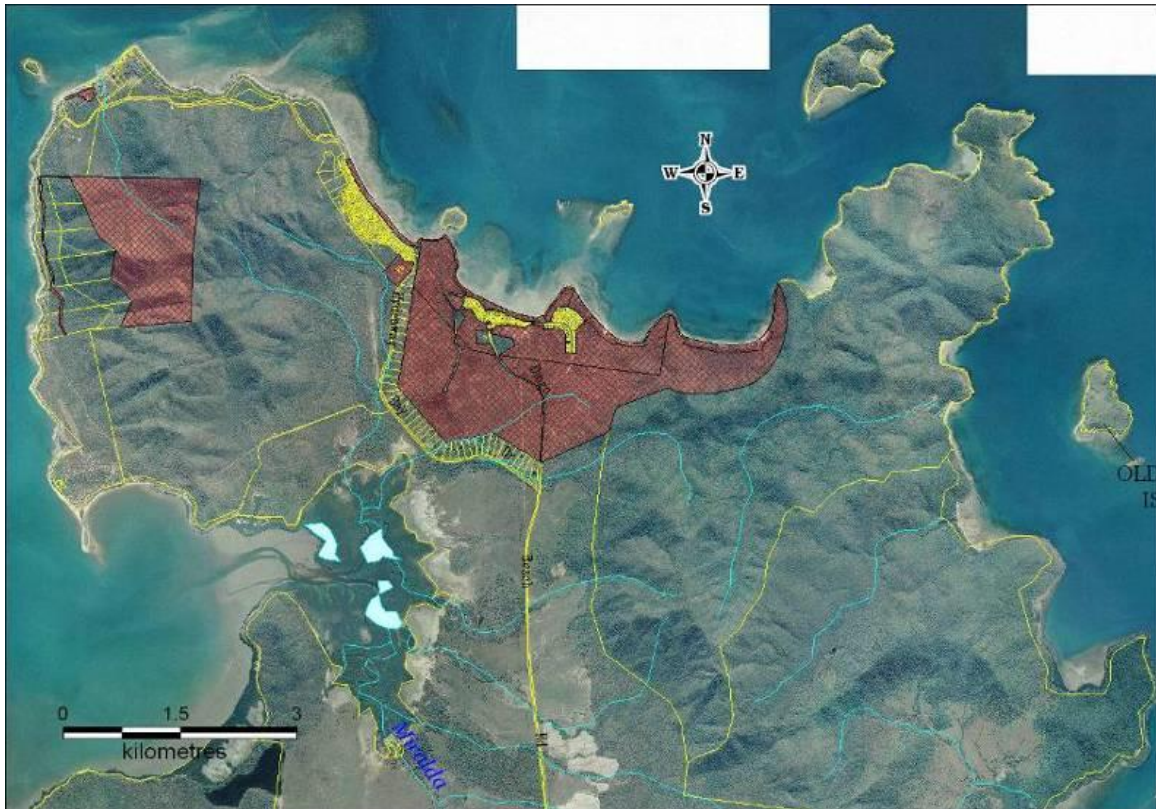
Map 2. Council land – Collinsville.



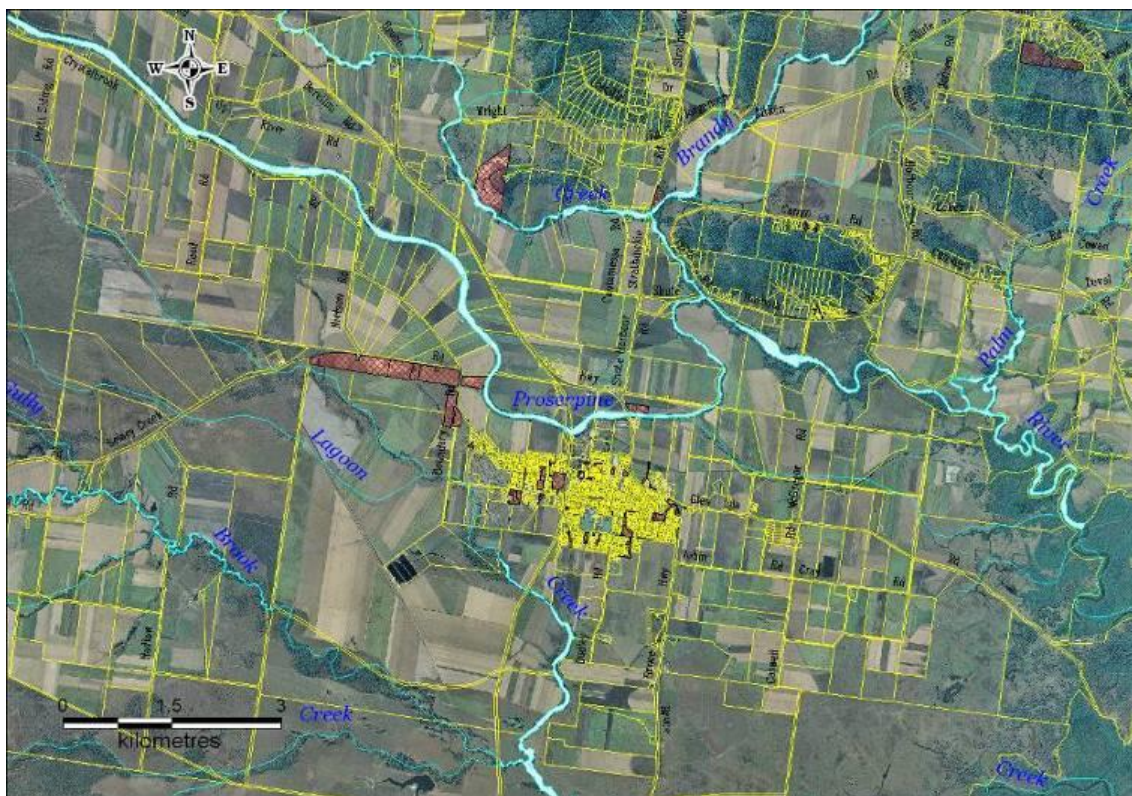
Map 3. Council land –Bowen.



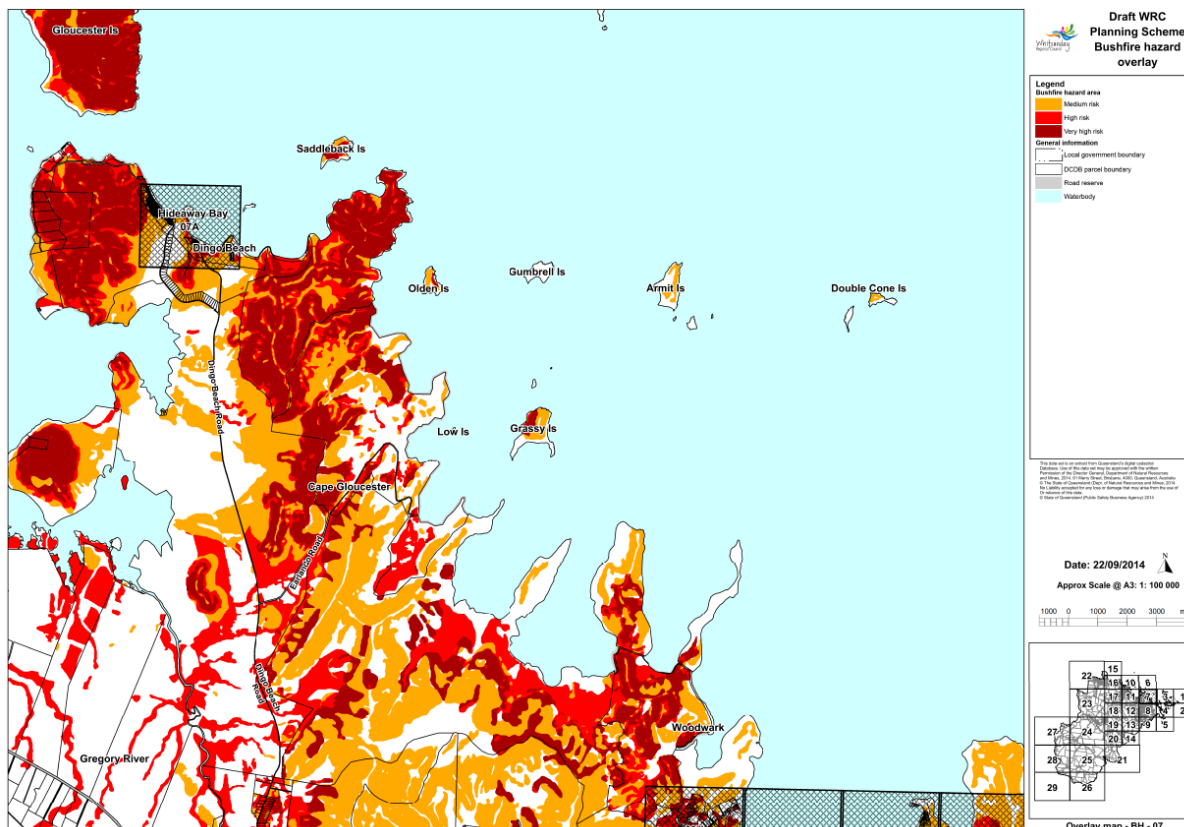
Map 4. Council land - Heronvale



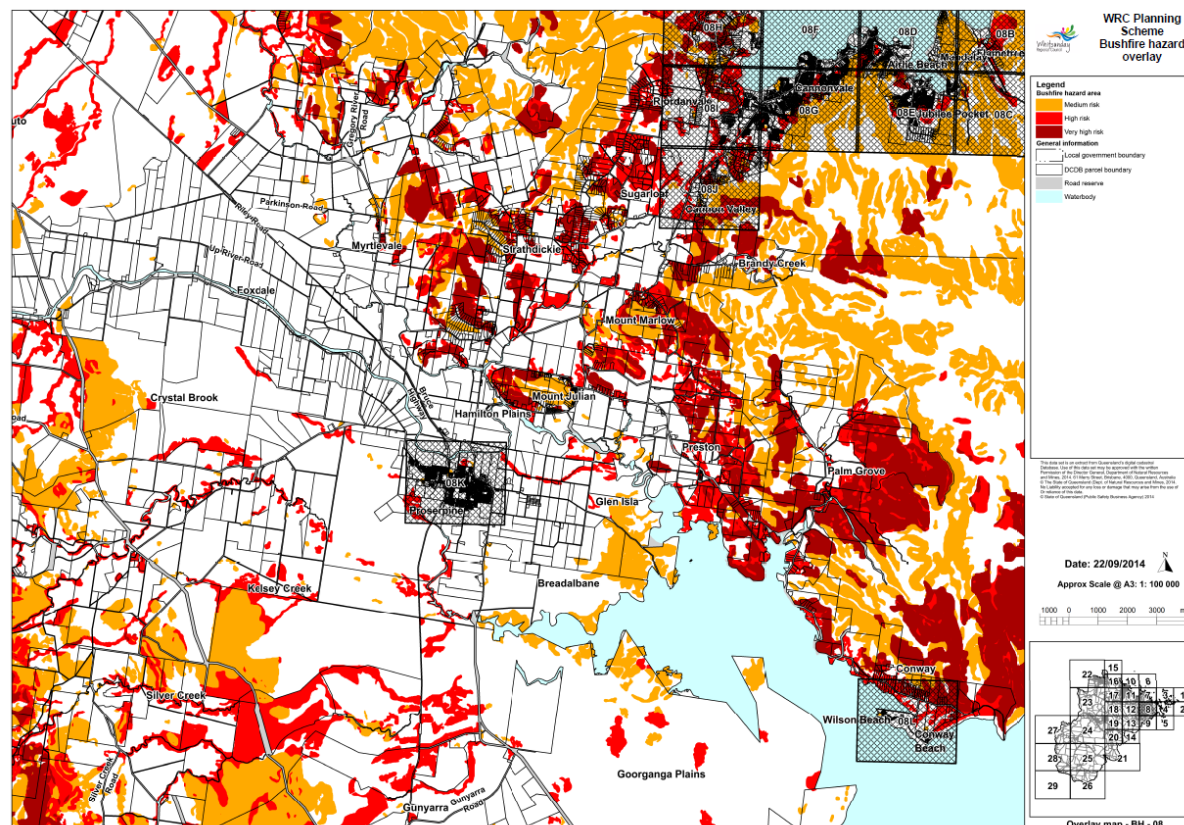
Map 5. Council land – Cape Gloucester.



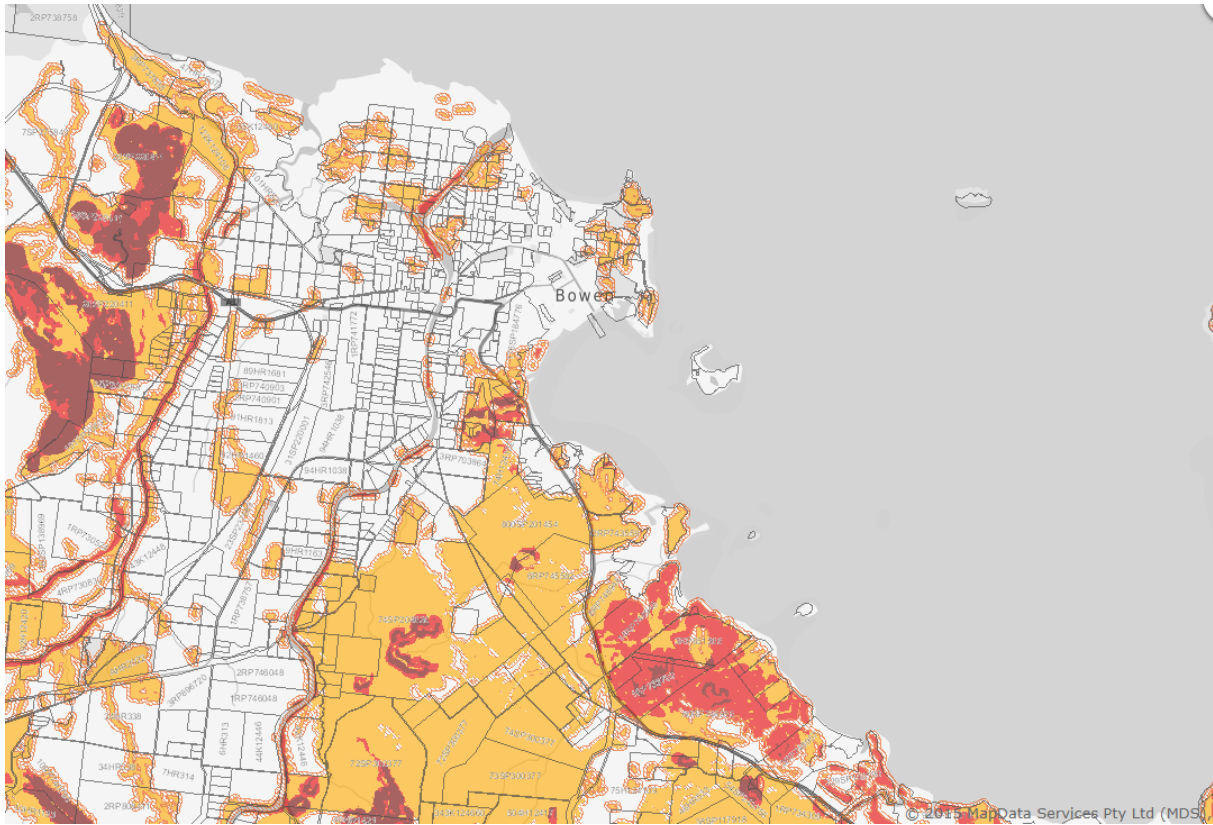
Map 6. Council land - Proserpine



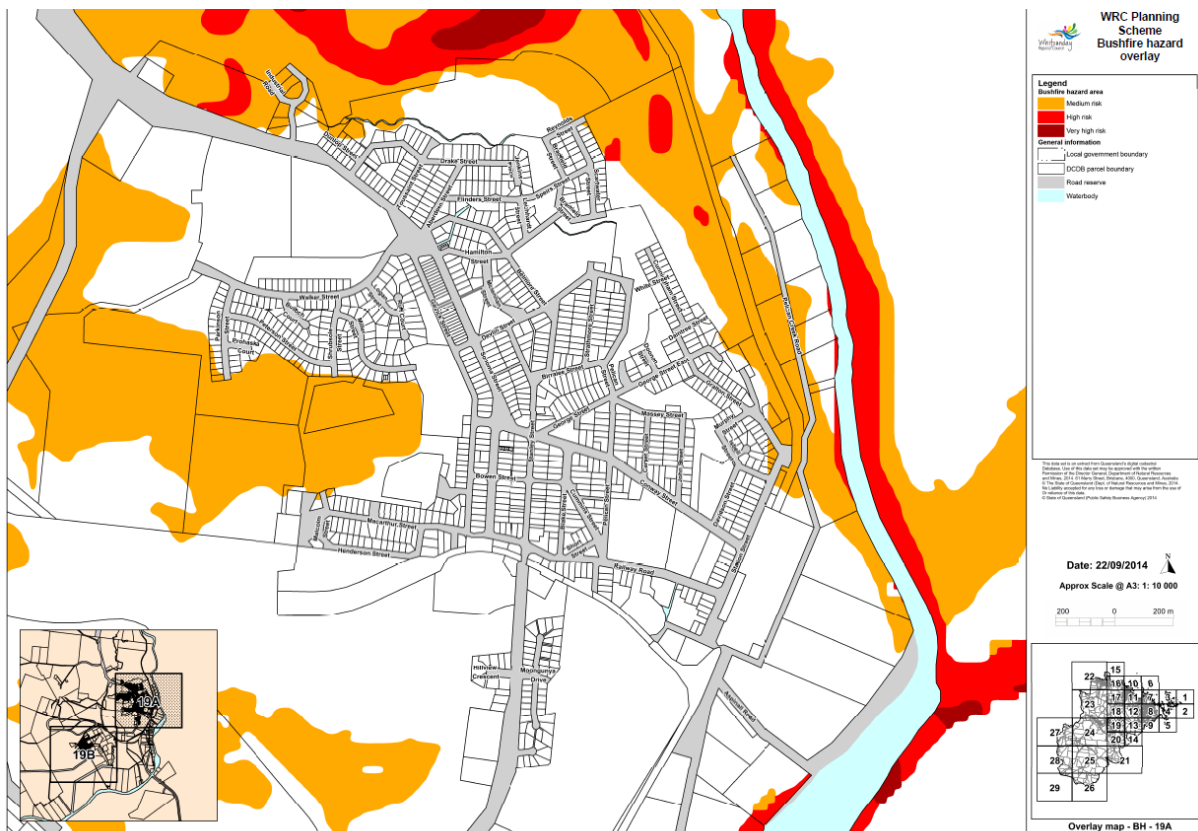
Map 7. Bushfire hazard map – Cape Gloucester



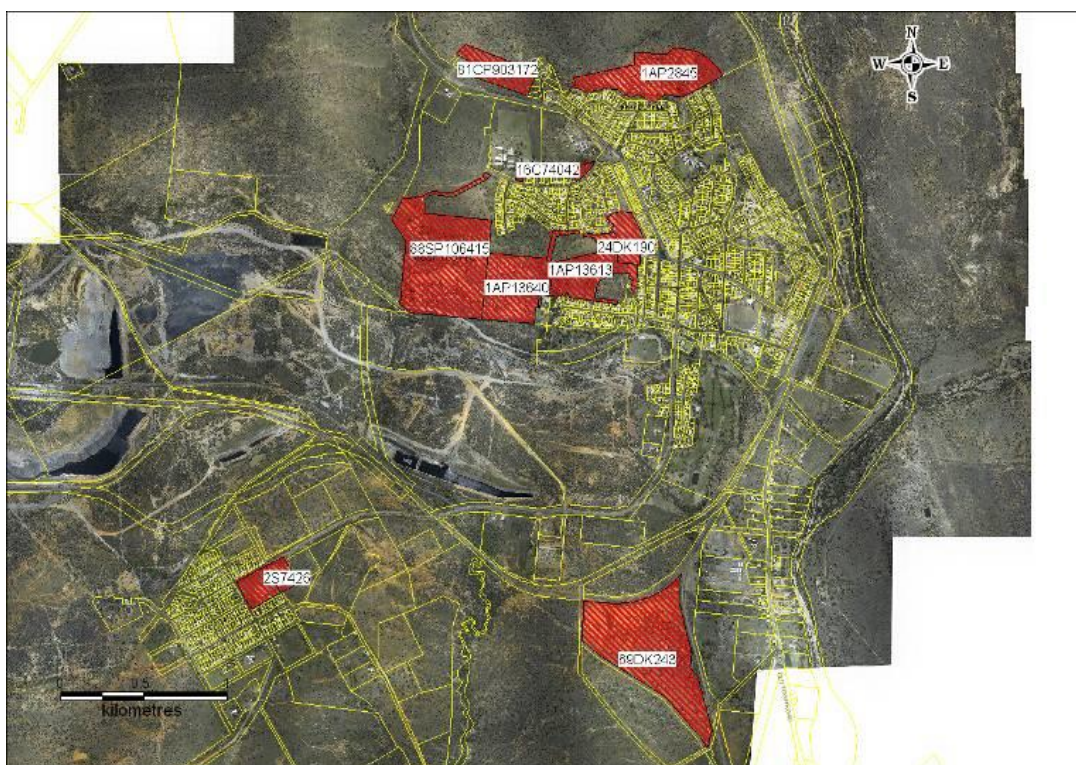
Map 8. Bushfire hazard map – Proserpine to Airlie Beach.



Map 9. Bushfire hazard map – Bowen



Map 10. Bushfire hazard map – Collinsville.



Map 11. High priority bushfire management blocks in Collinsville and Scottsville.

8.7. Contacts

Organisation	Contact person	Phone Number
DERM		Ph:(07)49996815 Fax:(07)49573747 Mob:0428675580
Whitsunday Regional Council		49450237
Queensland Fire Service - Bowen		47861811
Queensland Fire Service – Airlie beach		49466442
Queensland Fire Service - Proserpine		49451566

8.8. Queensland Rural Service

<https://www.ruralfire.qld.gov.au/>

The Rural Fire Service (RFS) has a wide range of roles. The following is a brief summary of the main positions:

- **Brigade Officer** - A Brigade officer leads the fire brigade in all operational aspects.
- **Chairperson** - A Chairperson manages the rural fire brigade, ensuring that the brigade is being run effectively and objectives are being attained.
- **Crew Leader** - A Crew Leader leads the firefighters. They are usually experienced firefighters who have been trained to watch out for signs of danger.
- **Firefighter** - A Firefighter helps protect their community's people and assets from the destructive force of fire.
- **First Officer** - A First Officer leads the brigade in all operational aspects.

- Team Leader - Primary Producer Brigade - A Team Leader provides direction and leadership during brigade operations in the absence of the First Officer or other officers (Team Leader positions only apply to Primary Producer Brigades).
- Treasurer - A Treasurer supports their rural fire brigade by taking responsibility for ensuring that the brigade's finances are managed appropriately.
- Secretary - A Secretary supports their rural fire brigade by taking responsibility for ensuring that the administration of the brigade is managed appropriately.
- Senior Firefighter - A Senior Firefighter helps protect their community's people and assets from the destructive force of fire.
- Volunteer Community Educator - A Volunteer Community Educator promotes and delivers community safety and bushfire preparedness education packages in the community both autonomously and in conjunction with Urban, Auxiliary and Rural fire officers. [Click here for more information on the Volunteer Community Educator role.](#)
- Volunteer Community Educator Area Coordinator - The Area Coordinator coordinates, monitors and assists in the presentation of education programs to communities. They provide ongoing support and training to VCEs and collect feedback and data from the presentations to provide to the Bushfire Safety Officer (BSO) Brigade Training and Support Officer (BTSO).