Noosa Bushland Reserve

Strategic Fire Management Plan 2021

www.noosa.qld.gov.au

General Enquiries:
By telephone: (07) 5329 6500
By email: mail@noosa.qld.gov.au
Fax: (07) 5329 6501
Street Address: 9 Pelican Street, TEWANTIN
Postal address: PO Box 141, TEWANTIN QLD 4565

Endorsed by Noosa Council June 2021

Table of Contents

1. Introduction

Noosa Shire has a great diversity of landscapes consisting of coastal vegetation, wetlands, open forest and rainforest. Much of the vegetation we see today was originally shaped by indigenous cultural burning practices. Some vegetation types such as heath requires burning to maintain biodiversity, while other vegetation types such as rainforest can be destroyed by bushfire.

Through climate change, bushfire seasons are becoming longer and more intense. Climate change presents greater risks to life, property, essential infrastructure and biodiversity. Although Council's bushland reserve estate is relatively small (less than 4% of the shire), compared with the area of private land and national park, the Noosa Bushland Reserve Strategic Fire Management Plan 2021 will help inform actions to build greater community resilience with bushfire, while protecting the natural values of the bushland reserve network.

Like other landowners, Noosa Council has certain obligations in relation to fire management. This extends to controlling fire on bushland reserve and maintaining the natural values of the reserve consistent with its management intent. Protecting ecosystems, vegetation and habitats and building community resilience are key objectives in the Noosa Environment Strategy 2019. The aim of the Noosa Bushland Reserve Strategic Fire Management Plan 2021 is to help protect life and property while maintaining biodiversity values on bushland reserves. It is a 5 year plan that provides principles of bushland reserve fire management and identifies responsibilities, hazards and risks, and an action plan to mitigate those risks based on reserve priorities.

2. The bushland reserve network

The Noosa Bushland Reserve Strategic Fire Management Plan 2021 covers Council's bushland reserve network only. Within Noosa Shire there are 178 bushland reserves covering an area of 3,469ha, which is a relatively small area of land in comparison with the area of private land and national park. However, given that many of the reserves are located next to urban and rural settlements, they present significance challenges for land managers in respect to fire management. Figure 1 below shows the proportion of bushland reserve in comparison with private land and State land including national park.

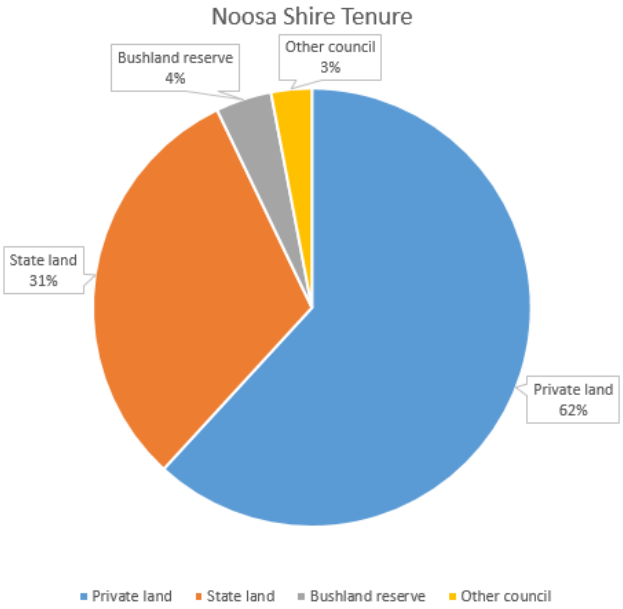
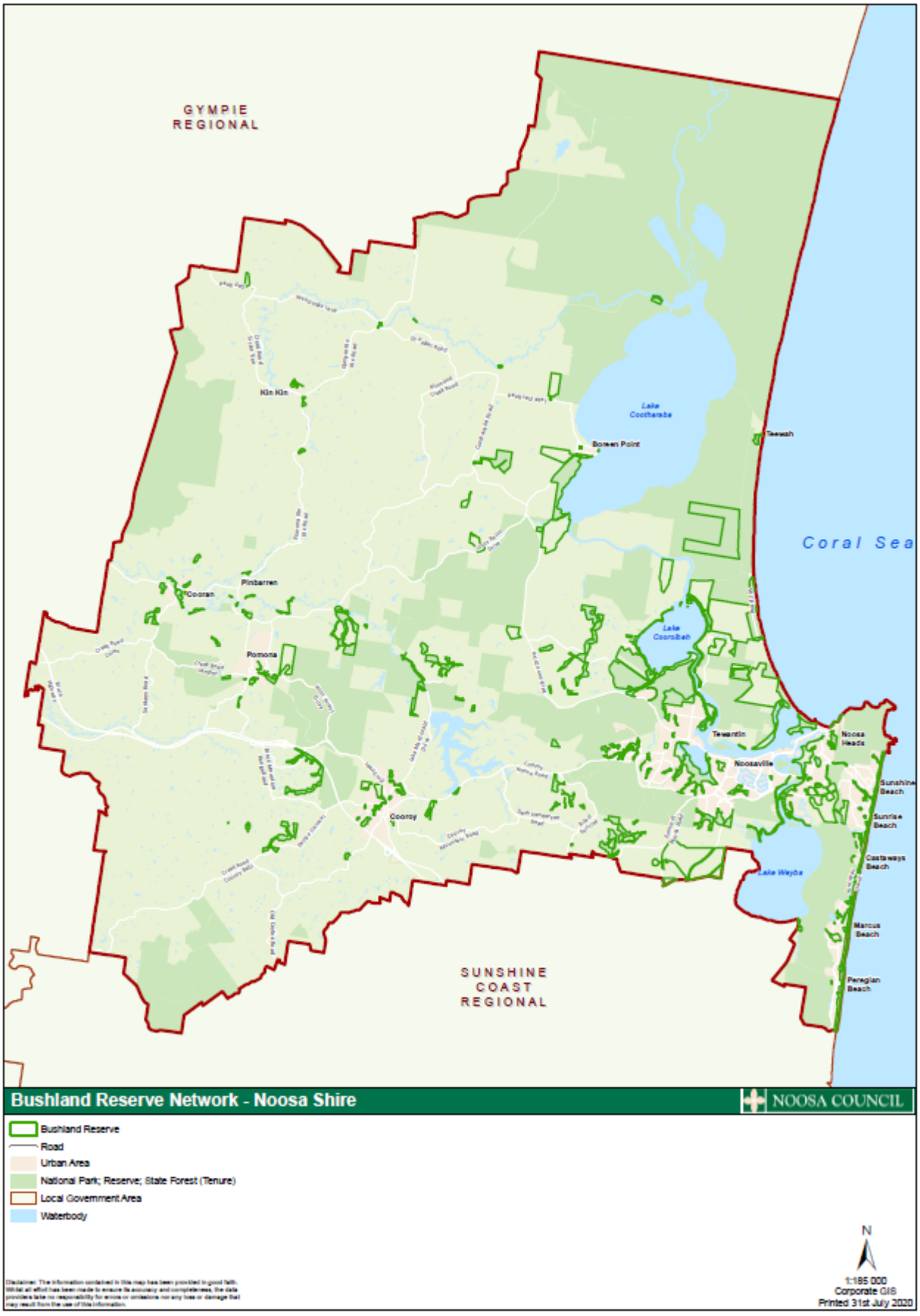


Figure 1. Proportion of land management. Council Bushland Reserve represents less than 4% of the shire.

Council Bushland Reserves vary in size from 750m2 to 325ha and are shown in the map below.



Map 1. Noosa Council Bushland Reserve Network

Noosa Bushland Reserve 'Snapshot'
Noosa Shire was designated a Biosphere Reserve in 2007. Bushland Reserves are an important part of the Core Biosphere Zone which largely consists of National Park.
Contain 413.44 hectares of 'Endangered' and 1,345.66 hectares "Of Concern" Regional Ecosystem vegetation types
Protects 100.25 hectares of Sub-tropical lowland rainforest 63.3 hectares of Coastal Saltmarsh. Both are listed as Threatened Ecological Communities under Commonwealth legislation
Provides habitat for a range of threatened species including *Boronia keysii*, Noosa Shire's floral emblem and the Ground Parrot, which is dependent on ecological burns to survive.

Table 1. The Noosa Shire Bushland Reserve Network is an important part of the Core Biosphere Zone.

3. Principles of bushland reserve fire management

The Noosa Bushland Reserve Strategic Fire Management Plan is based on a number of principles:

Principle 1: Council will take a risk management approach with bushland reserve fire management

Principle 2: Reserves will be managed to mitigate risks to staff, park visitors, infrastructure and immediate neighbours

Principle 3: Fire will be used to maintain vegetation structure and protect/enhance biodiversity and threatened species

Principle 4: Council and government agencies will work cooperatively to identify and mitigate bushfire risk

Principle 5: In consultation with Traditional Owners, cultural burn practices will be employed where possible

Principle 6: Council will continue to monitor the impacts of a changing climate and adapt land management practices to suit

4. Bushfire risk

Risk is the probability of an event happening that can cause a certain level of loss. The Noosa Bushland Reserve Strategic Fire Management Plan takes a risk management approach in identifying priorities using Council's Risk Assessment Calculator.

NOOSA COUNCIL — Assess the likelihood and consequences from the hazards or risks

Likelihood	Consequences: Insignificant No injury, 0 - low $ loss	Minor First Aid Injury, low - medium $ loss	Moderate Medical Treatment medium -high $ loss	Major Serious injuries, major $ loss	Catastrophic Death, huge $ loss
Almost Certain Is expected to occur at most times	H - 40	H - 48	E - 72	E - 84	E - 100
Likely will probably occur at most times	M - 24	H - 44	H - 56	E - 80	E - 96
Possible might occur at some time	L - 12	M - 28	H - 52	E - 76	E - 92
Unlikely could occur at some time	L - 8	L - 20	M - 36	H - 64	E - 88
Rare may occur in rare circumstances	L - 4	L – 16	M - 32	H - 60	H - 68

Score	Action
E 72 - 100	Act on these risks immediately
H 40 - 68	Act on these risks as soon as possible
M 24 - 36	Act on these risks within routine business schedules
L 4 - 20	These risks may not require immediate attention

Figure 2. Council's risk assessment calculator is used to assess bushfire risk on Council reserve

A risk assessment has been undertaken for two categories:

Risks **on reserve** to:

- Staff
- Volunteers
- Visitors
- Biodiversity

Risks **to immediate neighbours**

- Life and property

Table 2 is an example of a risk assessment for a bushland reserve. The risk assessment is applied to all individual reserves to determine priorities across the network.

Hazard	Likelihood	Consequence	Risk rating L-Low M-Medium H-High E-Extreme	Current controls	Proposed mitigation	New risk rating
On-reserve						
Bushfire hazard to staff and contractors in remote areas	Possible	Moderate	M-52	Monitoring of Fire Danger Index and notifications to staff	Park closures during severe, extreme or catastrophic fire weather	M-28
Bushfire hazard to volunteers	Possible	Minor	M-28	Monitoring of Fire Danger Index and information to volunteers	Park closures during severe, extreme or catastrophic fire weather	L-8
Bushfire hazard to visitors	Unlikely	Minor	L-20	Monitoring of Fire Danger Index and information to visitors	Park closures during severe, extreme or catastrophic fire weather	L-4
Loss of biodiversity through inappropriate fire frequencies/ intensity	Possible	Moderate	H-52	Planned burns, fire trails and fuel reduction zones	Introduce ecological burning program and develop fire trails/FRZ to meet standards	M-28
Off-reserve within 100m buffer						
Bushfire hazard to neighbour life and property	Possible	Major	E-76	Planned burns, fire trails, fuel reduction zones, neighbour education	Introduce hazard reduction burning program and develop fire trails/FRZ to meet standards	M-28
Total risk rating			**228**			**96**

Table 2. An example of bushland reserve bushfire risk assessment and the proposed risk mitigation measures. Note these scores have not had weightings applied.

5. Determining reserve priorities

It is not practical to initiate fire management actions for all 178 reserves at once. The Noosa Bushland Reserve Strategic Fire Management Plan 2021 prioritises all reserves within the network through a risk assessment process. Each Bushland Reserve consists of individual FMUs. FMU's are also assessed to determine the final priorities for operational works such as planned burns and fire trail works. This process is shown diagrammatically below.

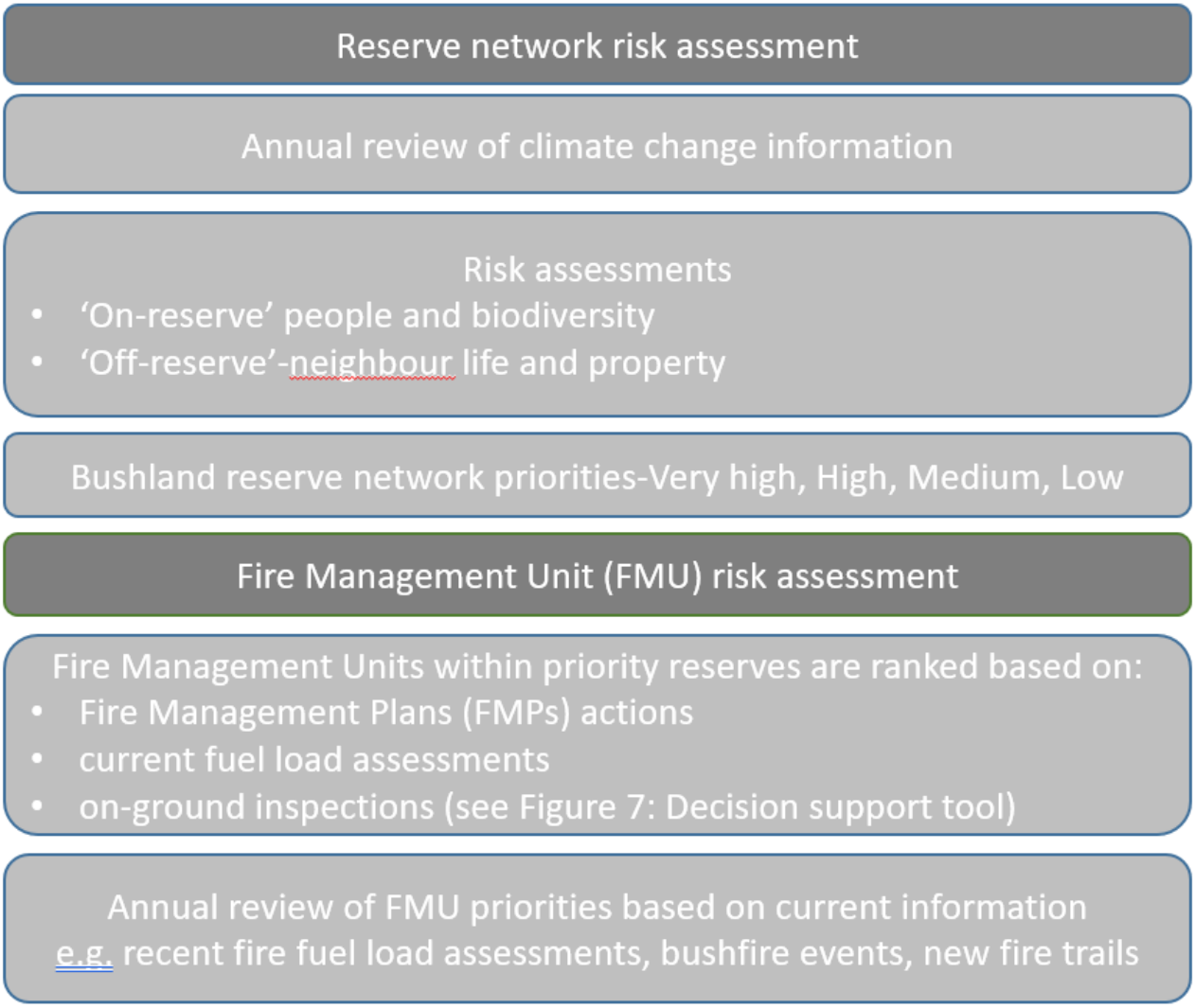


Figure 3. Methodology for prioritising reserves and FMUs for fire mitigation actions

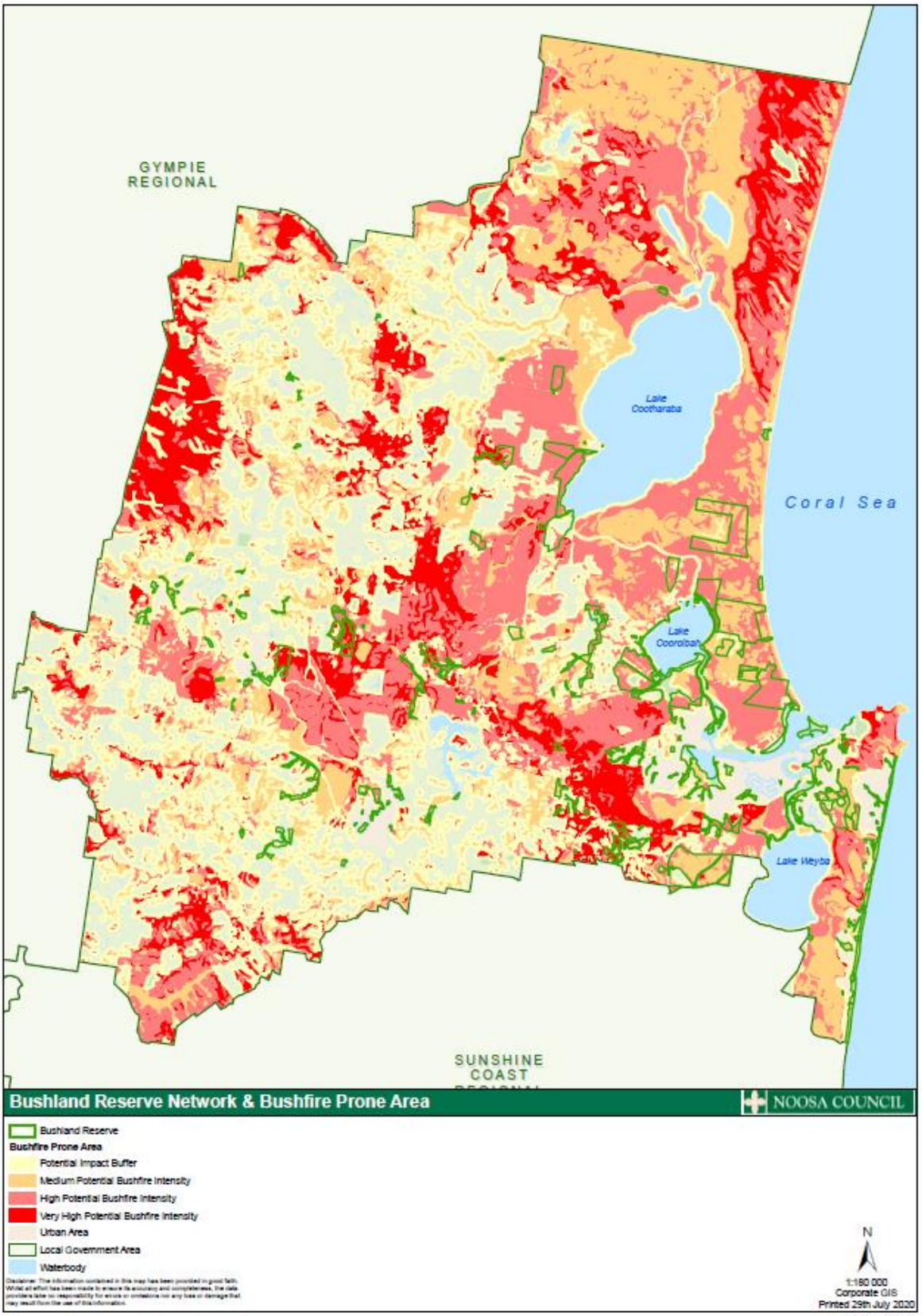
5.1 Reserve network risk assessments

As discussed, risk assessments are completed for each of the reserves using the following categories:

'On-reserve' risk assessment-people

This risk assessment uses the State Planning Policy (SPP) Potential Bushfire Intensity mapping which identifies bushfire prone areas across the Queensland (see Map 2). The CSIRO developed the methodology for the fire hazard mapping based on vegetation type fuel load (see Table 3), slope and fire weather severity. The mapping identifies areas of medium, high and very fire hazard, which means that fire can be difficult to control in these areas under severe weather conditions. Low hazard areas are considered low bushfire risk and not included in the SPP mapping. Bushland reserves with

the highest BPI's are given the highest priority for mitigating risk to staff, volunteers and visitors. Tree fall during and after fires can be an issue and is considered in the risk assessment process.



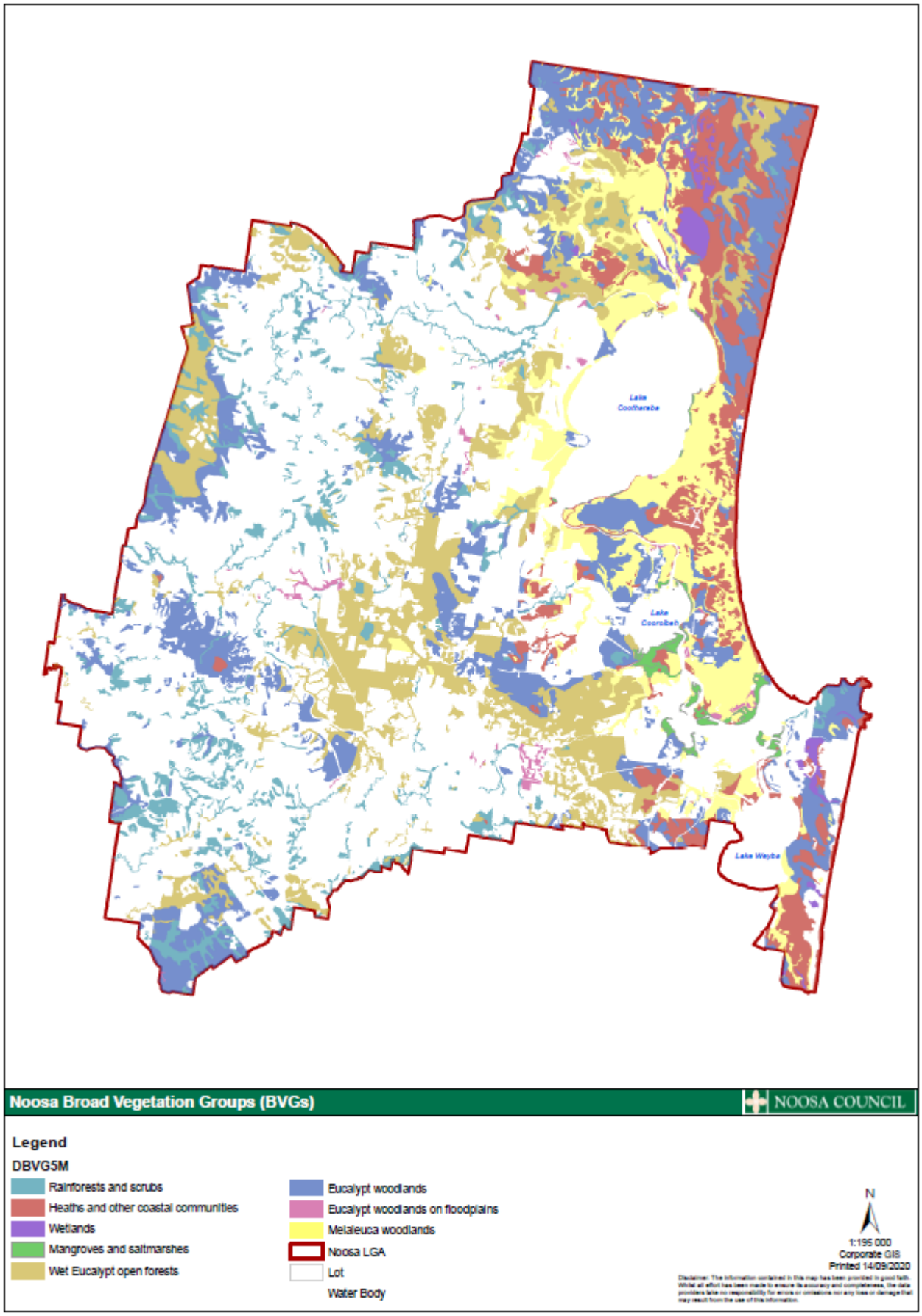
Map 2. Noosa Bushland Reserves in relation to State Potential Bushfire Intensity (PBI) mapping. PBI is calculated from vegetation fuel load, slope and fire weather severity. The majority of Council's Bushland Reserves are mapped as having potentially medium, high to very high bushfire intensity during extreme fire events.

Vegetation Hazard Class	*Vegetation Hazard Class description*	*Potential Fuel Load (tonnes/ha)*
1	Melaleuca communities	33
2	Open forests / woodlands - shrubby	30
3	Tall open forests	28
4	Heath communities	27
5	Exotic and hardwood plantations	26
6	Cypress and Casuarina communities	20
7	Open forests / woodlands - grassy	19
8	Acacia communities	10
9	Coastal, fringing and dune communities	8
10	Riparian and fringing communities	8
11	Native grasslands, sedgelands and balds	5
12	Mixture of rural classes - mainly grassland	5
13	Cropping and horticulture	5
14	Dry vine forest and vine thickets	5
15	Hoop Plantations	5
16	Mixture of urban classes	3
17	Rainforest	1
18	Mangroves and saltmarshes	1
19	Sparse ground cover	1
20	Water bodies	0

Table 3. Average vegetation fuel loads. Melaleuca paperbark forest and Eucalypt forest are considered having potentially the highest fuel loads. This can change depending on recent fire history. Calculation of current fuel loads can only be done through on ground assessment.
Source: CSIRO 2014; A new methodology for State-wide mapping of bushfire prone areas.

‘On-reserve’ risk assessment-biodiversity

Depending on the vegetation type, too frequent burning will encourage vegetation to become fire dependant. Too infrequent burning can result in the loss of certain species that require fire for germination and dispersal. Some vegetation types such as rainforest can be destroyed by fire. The Qld Regional Ecosystem mapping for Broad Vegetation Groups (see Map 3) informs Tolerable Fire Frequencies (TFI) for vegetation. For example fire dependent communities such as heath and fire sensitive communities such as rainforest are vulnerable to different fire frequencies outside of TFIs and are given a high priority for mitigation actions.



Map 3. Noosa Broad Vegetation Groups (BVGs). The type of vegetation informs Tolerable Fire Intervals (TFIs).

The QLD Fire and Biodiversity Consortium provide a fact sheet on fire regimes for broad vegetation groups. This is shown below.

Recommended fire regime guidelines for broad vegetation groups within SEQ. Please note this is not a definitive list, but rather representative of the most common broad vegetation types within SEQ. Information has been adapted from "*Planned Burn Guidelines - Southeast Queensland Bioregion of Queensland*" produced by the QPWS and the REDD.

Tall open forest with a canopy typically dominated by flooded gum, tallowwood, Sydney blue gum, brush box and turpentine. The understorey is often dominated by rainforest species, but also includes grassy or shrubby remnants. Communities are found in wetter parts of SEQ, on elevated slopes, ranges and gullies, often surrounding rainforest and/or with vine understorey.	**Frequency:** Minimum 20 years for tall open forest dominated by *Lophostemon confertus* or *Eucalyptus grandis*, or for forest with vine forest or mixed rainforest understorey. For tall open *E. saligna* forest, vary intervals between 3 - 6 years for grassy understorey and 7 - 25 years for shrubby understorey. **Extent:** For *E. saligna* 40-60%. **Season:** Late Summer to Autumn. **Intensity:** Moderate to high. **NB:** Planned burning is necessary to maintain tall open *E. saligna* forest with a grassy or shrubby understorey. If you wish to maintain a rainforest understorey or sub-canopy, fire is not recommended.
Open forests and woodlands with the canopy generally dominated by eucalypts, angophoras and bloodwoods. The understorey may be grassy, shrubby or mixed. Communities are found on coastal lowlands, alluvial plains and inland hills and mountain ranges.	**Frequency:** Vary intervals between 3 - 6 years for grassy understorey and 7 - 25 years for shrubby understorey. **Extent:** 40 - 80%. **Season:** January to August (with good soil moisture). **Intensity:** Low to moderate.
Grassland (i.e. treeless and shrubless) areas dominated by tussock grasses (e.g. *Poa labillardieri*), restricted to the Bunya Mountains and known as "*grassy balds*".	**Frequency:** Vary intervals between 2 - 3 years where woody weeds are an issue, longer intervals for a healthy system free from forest encroachment. **Extent:** Avoid burning more than 50% in any one year. **Season:** Spring to Autumn following good rain. **Intensity:** Low to high.
Wet and dry coastal heath, including sedgelands, wallum banksia and low mallee woodlands.	**Frequency:** Vary intervals between 7 – 20 years, with an emphasis on 8 – 12 years for dry coastal heath. **Extent:** 40 - 80% (40-60% for dry coastal heath). **Season:** January to August. **Intensity:** Moderate.
Montane heath - heathland located on rocky mountain peaks, exposed ridges and plateaus on poor soils.	**Frequency:** Depends on the relationship with surrounding vegetation, but intervals of 15 – 50 years are recommended. **Extent:** Burn in association with surrounding vegetation. **Season:** Late wet season (i.e. February) to early dry season (i.e. August). **Intensity:** Low to moderate.
Melaleuca (paperbark) communities, including melaleuca swamps, melaleuca woodlands and open forest dominated by *Melaleuca quinquenervia* (Swamp Paperbark).	**Frequency:** Vary between 6 - 20 years for mixed grass/shrub understorey; 8 - 12 years for heath understorey and 12 - 20 years for sedge/fern understorey. **Extent:** 25-70% in association with surrounding vegetation. **Season:** January to July following rain. **Intensity:** Low to moderate.
Coastal fringing forest of Swamp She-oak (*Casuarina glauca*).	**Frequency:** Vary intervals between 6 – 7 years **Extent:** Avoid burning more than 50% in any one year. **Season:** January to August, ideally in association with surrounding vegetation. **Intensity:** Low.
Riparian (creekside) vegetation (including blue gum, river oak and weeping bottlebrush) and foredune communities (including casuarina and spinifex grasses).	Do not burn - fire sensitive. Burn out *from* the edge to surrounding vegetation where necessary to minimise fire incursion.
Mangrove and saltmarsh	Mangroves do not require fire and generally do not burn. Saltmarshes are potentially flammable, do not require fire and should not be deliberately burnt. Burn out *from* the edge to surrounding vegetation where necessary to minimise fire incursion.
Rainforest, dry vine forest and brigalow	Do not burn - fire sensitive. Burn out *from* the edge to surrounding vegetation where necessary to minimise fire incursion.

Table 4. QLD Fire and Biodiversity Consortium recommended ecological burn frequencies, or Tolerable Fire Intervals (TFIs). 'Extent' refers to the percentage of vegetation burnt/ha when undertaking a mosaic burn.

‘Off-reserve’ neighbour risk assessment-life and property

This risk assessment uses the State Bushfire Interface Zone mapping. This mapping is based on the intensity of a vegetation fire within a 100 meters of assets such as buildings. Buildings with the highest Bushfire Interface rating (e.g. nursing home buildings) are given the highest risk rating.

Map 4. An example of Bushfire Interface Zone mapping. The green areas are the 100m Bushfire Interface Zone in relation to vegetation and buildings (shown as dots). (Source: Qld Gov.)

	Building function			
Bushfire Hazard	**Category D** Industrial, commercial, agricultural	**Category C** Residential buildings and facilities	**Category B** Essential service and hazardous facilities	**Category A** Vulnerable person buildings
1 VH	D-1	C-1	B-1	A-1
2 H	D-2	C-2	B-2	A-2
3 M	D-3	C-3	B-3	A-3

Table 5. Risk assessment of buildings within the 100m Bushfire Interface Zone (Source: Qld Gov.)

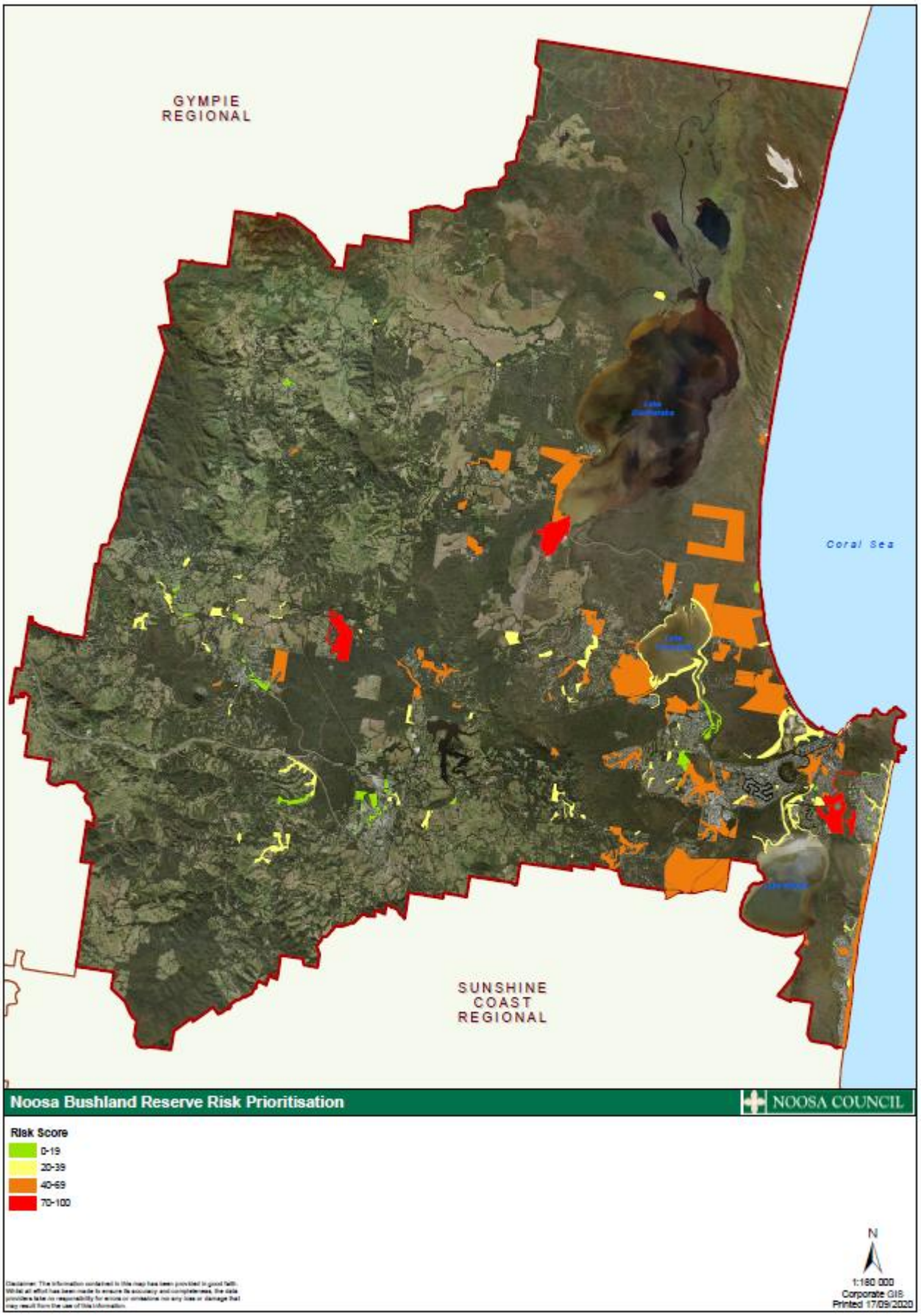
5.2 Reserve groupings

Once assessments of the 'on-reserve' and 'neighbour' risk categories are completed for all reserves they are grouped into Priorities of Very high, High, Medium or Low priority to further inform management actions. Final management actions will be subject to existing individual Fire Management Plans and on-ground inspections for each the reserves.

Examples are shown below in Table 6.

Priority	General criteria	Examples
1 Very high Risk rating 70-100 4 reserves	Very high BPI, very high biodiversity score, very high risk interface with development	Symplocus Environmental Reserve
2 High Risk rating 40-69 56 reserves	High BPI, high biodiversity score, high risk interface with development	Alyxia nature Refuge
2 Medium Risk rating 20-39 75 reserves	Medium BPI, medium biodiversity score, moderate risk interface with development	Frogmouth Lane Bushland Reserve
3 Low Risk rating 0-19 35 reserves	Medium BPI, low biodiversity score, low risk interface with development	Six Mile Creek Bushland Reserve

Table 6. An example of grouping Bushland Reserve into groups to help determine management priorities. This is shown graphically below.

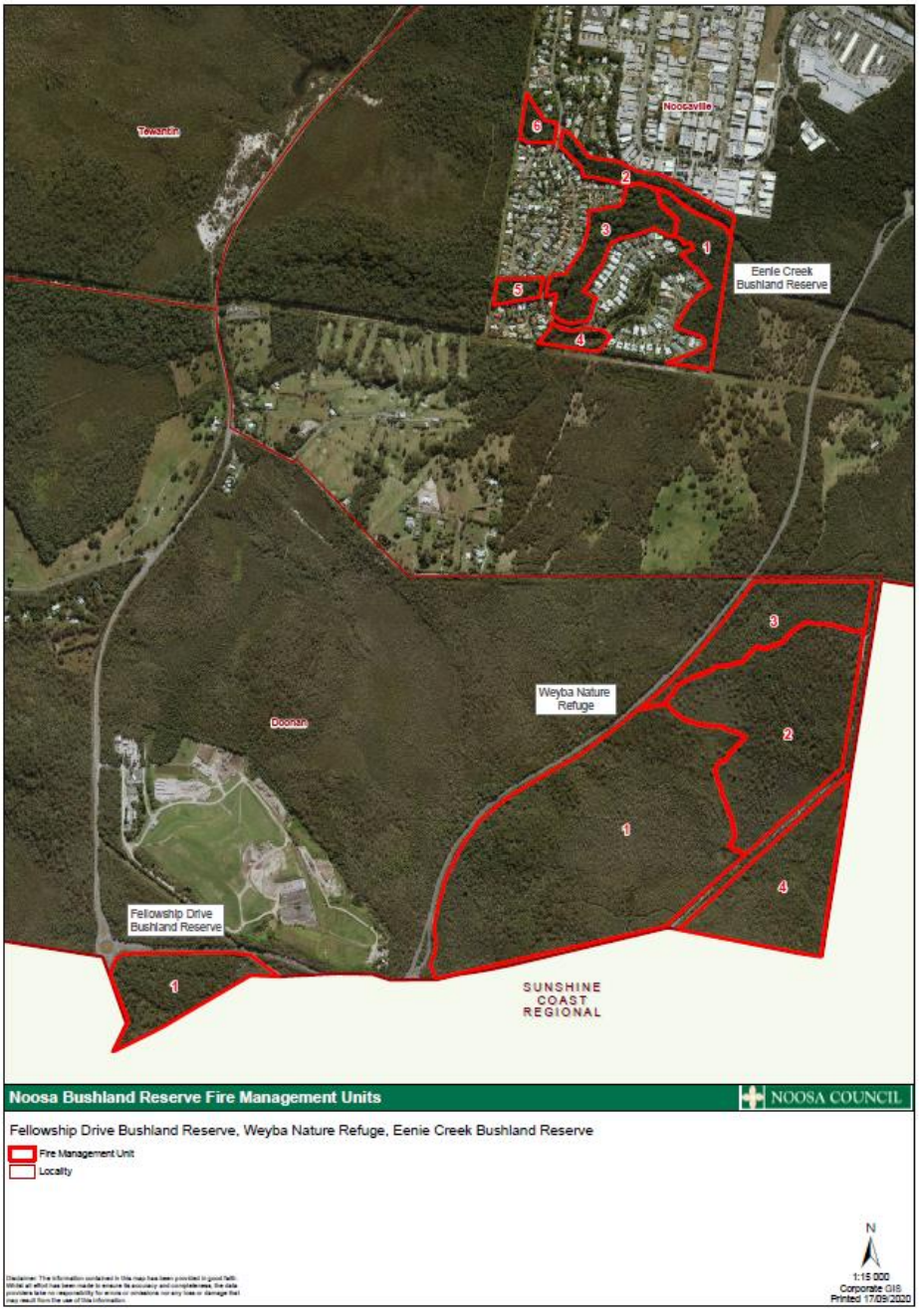


Map 5. 2020 Shire risk assessment of the Bushland Reserve Network. The assessment covered risks to life, property and biodiversity. Red and orange reserves rated the highest bushfire risk.

5.3 Fire Management Unit (FMUs)

Each priority bushland reserve has one or several individual Fire Management Units (FMUs) within its boundaries. FMUs allow portions of a reserve to be burnt at any one time, rather than the entire reserve, to help maintain biodiversity. FMU boundaries are defined by the topography of the site, presence of existing fire trails and natural fire breaks such as waterways, and distinct vegetation types that require different fire regimes. Priorities for works on individual FMUs can be informed by existing Fire Management Plans (FMPs), recent fire fuel load assessments or other on ground assessments. FMUs along common boundaries with private landowners will be a higher priority.

The finalised listing of priority reserves and Fire Management Units (FMUs) is updated on an annual basis. This listing informs the Council's 5-Year Operational Plan and works program including fire trail maintenance, fuel reduction zones (FMZ) and planned burns.



Map 6. An example of individual Bushland Reserve Fire Management Units (FMUs)

6. Risk mitigation measures

6.1 Asset Protection Zones

Asset Protection Zones are designed to mitigate risk immediately next to reserve neighbours but still achieve biodiversity outcomes across the extent of the reserve. Asset Protection Zones may consist of one or both of the following, depending on site conditions:

- Fire access trails (also known as Fuel Free Zones) immediately next to neighbouring assets
- Fuel Reduced Zone (FRZ) where vegetation understory and ground cover is reduced either mechanically or through frequent burning

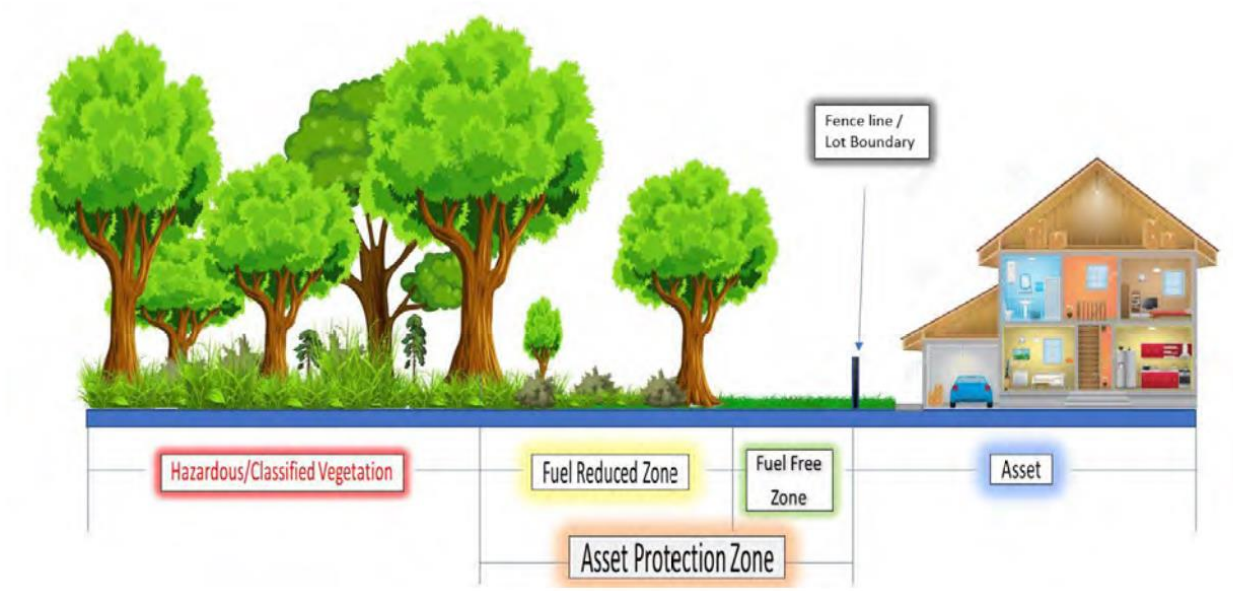


Figure 4. Illustration of an Asset Protection Zone (Source: 10 Rivers Environment Consultancy)

Fire Access Trails and Fuel Reduced Zones are discussed further below.

6.1.1 Fire access trails

Fire access trails within Council managed Bushland Reserves facilitate access for fire appliances for the purposes of undertaking planned burns or controlling small fires. Although the fire trails are slashed or mown and are considered ‘fuel free’, in severe and above rated wildfire conditions fire trails seldom provide a barrier to a fire front as fires can ‘spot’ hundreds of metres ahead. Fire trails are not normally accessed with vehicles if a large fire front is approaching.

The width of the fire trail depends on the Bushfire Interface Zone risk assessment undertaken along reserve boundaries and the requirements for access by different size fire vehicles. Fire trails in higher risk areas will receive more frequent maintenance mowing/slashing than lower priority areas.

6.1.2 Fuel Reduced Zones (FRZ)

Fuel Reduced Zones (FRZ) may be located next to fire trails where greater protection to neighbouring properties is required. FRZ reduce vegetative fuel by clearing the understory and ground cover, but not the taller trees. This reduces the chance of a fire carrying from the ground into the tree canopy.

In some cases FRZ are used as an alternative to fire trails. FRZ’s can be used in areas that re steeply sloping and a fire trail would cause significant erosion and are not practical for fire vehicles to access.

6.2 Fire trails and FRZ Standards

The nature of a fire trail and fuel reduction zone depends on two main factors:

- Neighbouring assets: The nature of the neighbouring assets within 100m will determine the width of a fire trail and/or FRZ. The higher the risk, the greater the width of the fire trail to allow large fire appliances
- Slope: The primary purpose of a fire trail is to allow access for fire appliance vehicles. If the slope of the land is greater than 20 degrees or there is highly unstable soil, then this will restrict access for vehicles.

A single reserve can have multiple types of fire trails and FRZ's depending on changes in slope and the types of neighbouring buildings. Table 8 provides a general guideline for fire trails/FRZ for reserves with High to Very High bushfire risk.

Bushfire Interface Zone risk assessment	**FMU Assessment**	**Asset Protection Zone (APZ)**		**Fire unit access**	**Maintenance requirements**
		Fire access trail width	**Fuel Reduction Zone (FRZ) width**		
Category A Vulnerable persons and buildings (e.g. nursing homes)					
1	<20 degrees Narrow vegetation corridor	15m 3m	5m N/A	Large fire appliance can access and turn around on trail. N/A control line only	Fire trails every 3 months FRZ every 3 years Slashing/mowing every 3 months
2	>20 degree slope and/or highly erodible soil.	N/A	20m	N/A	FRZ every 3 years
Category B Essential service and hazardous facilities (e.g. utilities)					
3	<20 degrees Narrow vegetation corridor	10m 3m	5m N/A	Large fire appliance can access and undertake 3 point turn on trail. N/A control line only	Fire trails every 3 months FRZ every 3 years Slashing/mowing every 3 months
4	>20 degree slope and/or highly erodible soil.	N/A	15m	N/A	FRZ every 3 years
Category C Residential buildings and facilities					
5	<20 degrees	4m	N/A	Medium and small fire appliances can have	Fire trails every 4 months

Bushfire Interface Zone risk assessment	FMU Assessment	Asset Protection Zone (APZ)		Fire unit access	Maintenance requirements
		Fire access trail width	Fuel Reduction Zone (FRZ) width		
	Narrow vegetation corridor	3m	N/A	one way access. N/A control line only	Slashing/mowing every 3 months
6	>20 degree slope and/or highly erodible soil.	N/A	10m	N/A	FRZ every 4 years
Category D Industrial, commercial, agricultural					
7	<20 degrees Narrow vegetation corridor	3m 3m	N/A N/A	Small fire appliance can have one way access. N/A control line only	Fire trails every 5 months Slashing/mowing every 5 months
8	>20 degree slope and/or highly erodible soil.	N/A	6m	N/A	FRZ every 5 years

Table 8. Guidelines for fire trails/FRZ for bushland reserves with High to Very High bushfire risk.

Fire trails/FRZ that do not meet these standards in relation to their priority grouping will roll into the fire trail operational works program.

6.3 New fire trails and FRZs

As per Table 8 the width of the fire trail/FRZ depends on topography, requirements for fire appliance access and the vulnerability of neighbouring buildings. Where topography is not conducive of locating a fire trail on a bushland reserve, neighbours are encouraged to maintain fire trails on their land.

Prior to the development of new fire trials/FRZ, the potential impacts of works will need to be undertaken by Council staff. The following matters will need to be considered when establishing new fire trails:

- Potential erosion
- Impacts on environmentally significant vegetation and habitat such as Matters of National and State Significance (i.e. threatened species and habitat)
- Possible cultural heritage sites
- Fire trails need to be well formed, drained, gated and signed
- New trails can escalate other issues such as illegal access, camping and rubbish disposal.

Council receives requests from a number of sources concerning fire management. Figure 5 below provides a decision tool for requests concerning new fire trails, FRZ's and/or burns for bushland reserves.

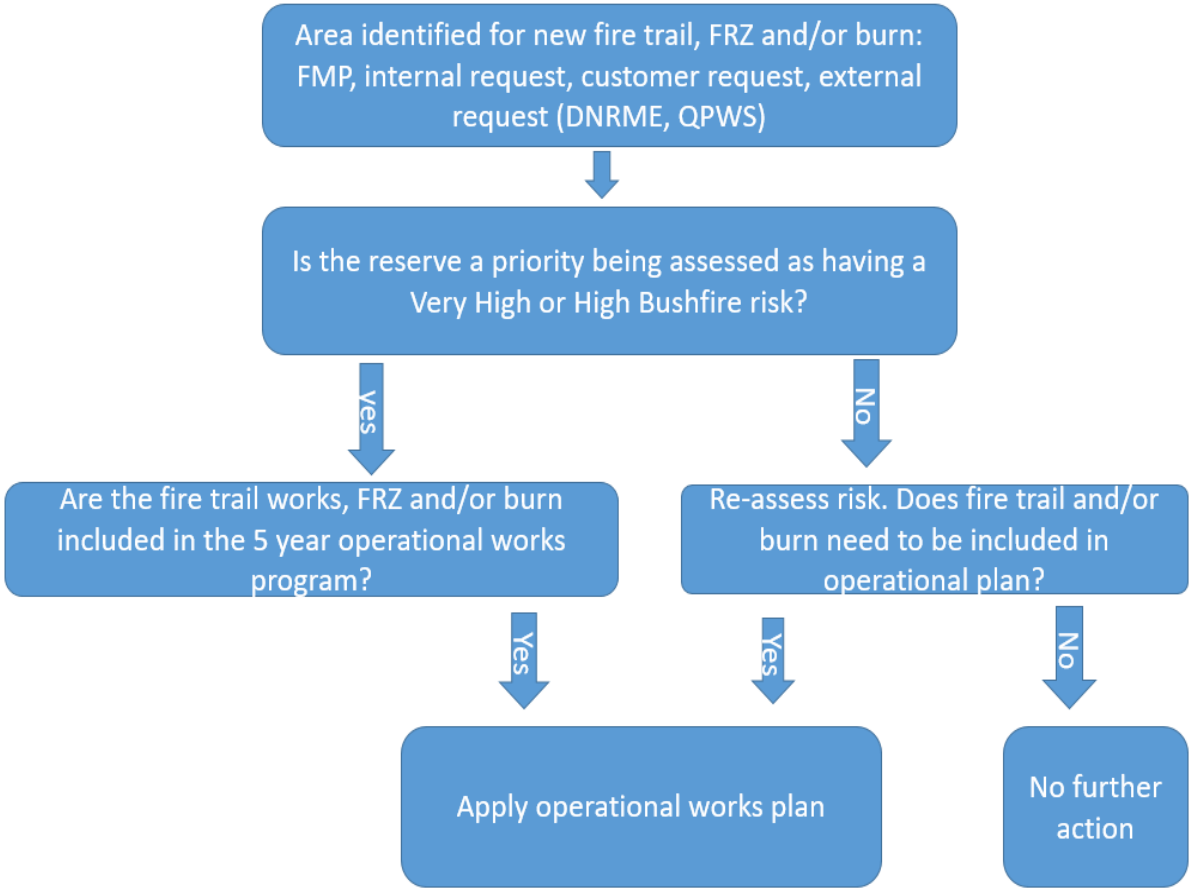


Figure 5. Decision tool for staff concerning requests for new fire trials, FRZ's or burns.

Priorities for new fire trails/FRZ are included in Council's 5 year operational works program and shown graphically below.

6.4 Planned burns

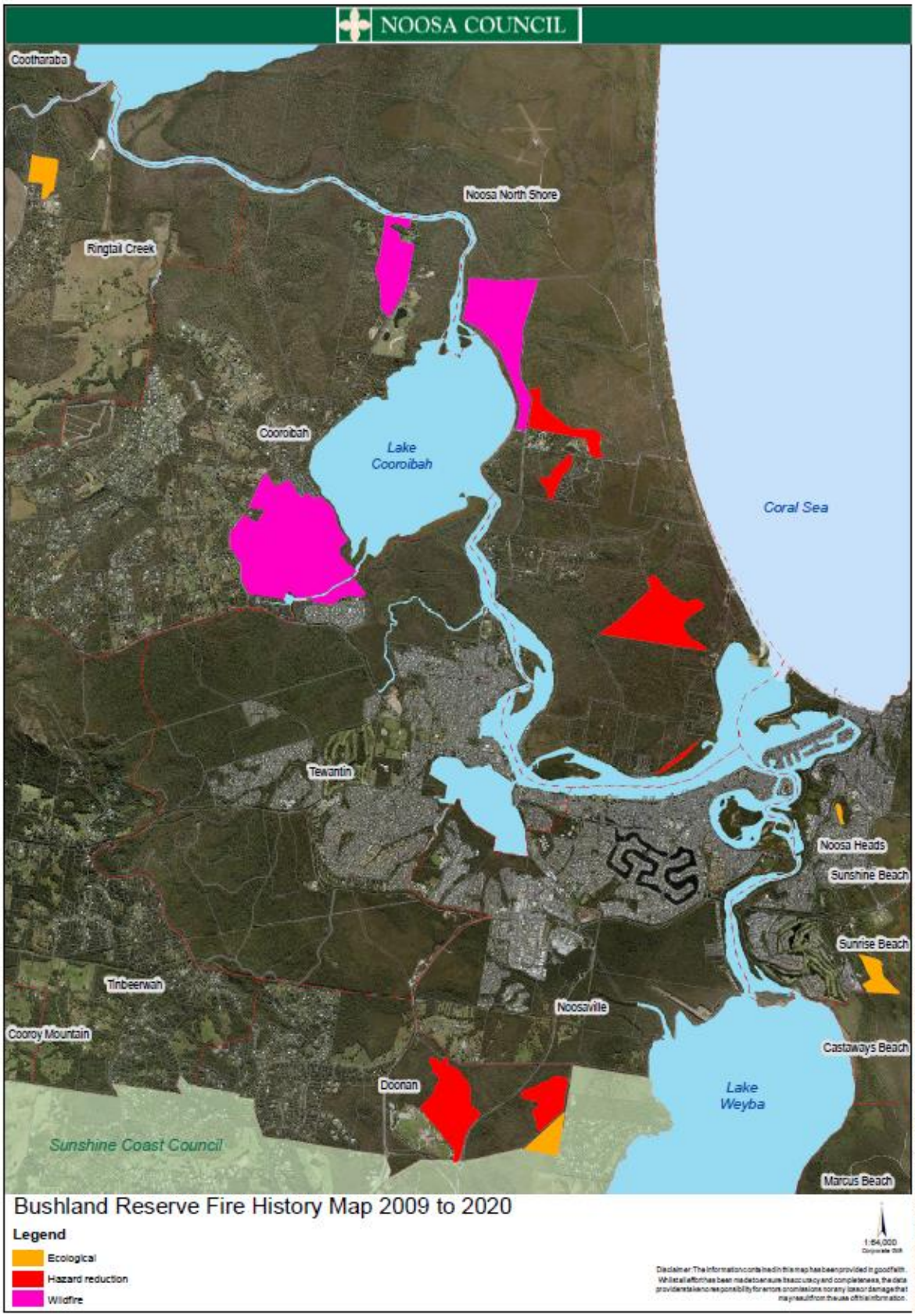
Planned burns are used to mitigate risk to life, property and/or biodiversity. While vegetation that has been subject to a planned burn may still carry a fire during extreme bushfire events, the chance of control and containment of the fire is improved. Depending on the vegetation type and location, generally a mosaic of burnt vegetation is preferred to provide refugia for native animals and to maintain a diversity of vegetative age structure. For ease of control Council aims to burn during the cooler months of autumn and winter. Council currently engages contractors to undertake planned burns.

The following documents can assist to inform future planned burning programs:

- QPWS Planned Burn Guidelines for the Southeast Queensland Bioregion of Queensland (2013)
- QPWS Planned Burn Guidelines: How to Assess if Your Burn is Ready to Go
- QLD Fire and Biodiversity Consortium – Fire Management Operational Manual (2002).
- National Guidelines for Prescribed Burning Operations

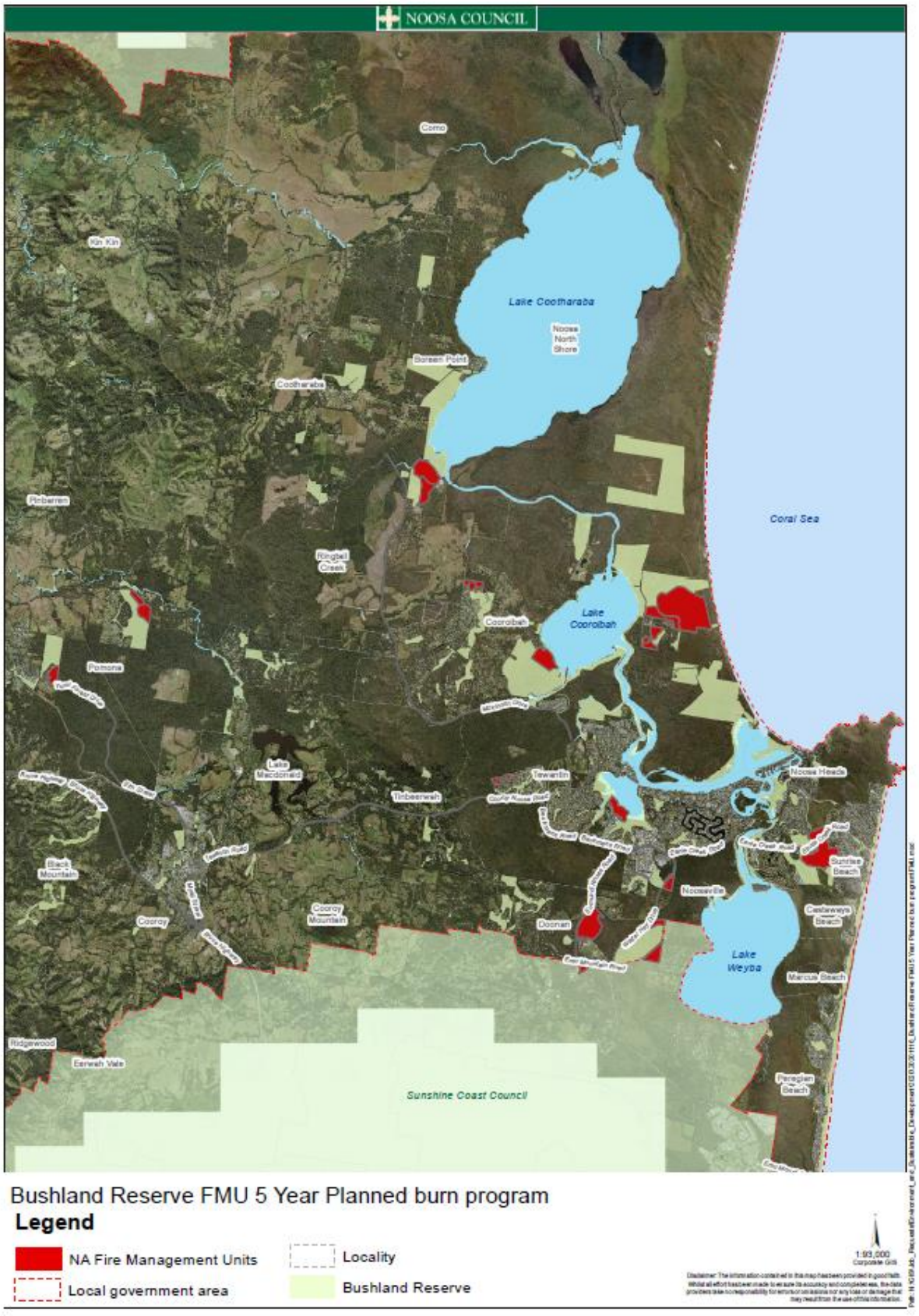
Personal involved with delivering a planned burn follow an operational checklist for assessing risk including measures to avoid risks to threatened species and cultural heritage assets.

Planning for ecological burning requires comprehensive fire history mapping as shown below.



Map 7. Historic records of ecological, hazard reduction and wildfire on Council's bushland reserve network. Fire history records are recorded and mapped to inform Council's forward planned burn program.

The map below shows the Fire Management Units (FMUs) identified for future planned burns across the bushland reserve network in Council's 5-Year Operational Plan.



Map 8. Council's 5-Year Operational Plan program. The actual delivery of planned burns will be subject to weather conditions at the time.

6.5 Community engagement

A number of key stakeholders have a vested interest in Noosa's Bushland Reserves and are advised prior to any fire trail expansion or burn operations.

- Reserve neighbours
- Bushwalkers
- Fitness groups
- Environment groups
- Bushcare Groups
- Emergency services
- Utility companies such as Energex and Unity Water and Telstra

Noosa Council is a member of the Area Fire Management Group (AFMG). Group meetings provide an opportunity to coordinate fire management activities jointly with QPWS, QFES, DNRM, HQP and private landholders.

6.6 Disaster management

The Noosa Bushland Reserve Strategic Fire Management Plan helps inform multi-agency programs such as the Queensland Government 'Operation Cool Burn' which is conducted prior to fire season. Stakeholders include QFES, National Parks, DNRME, SEQ Water, HQP, DAF and Council. Council officers are part of the Area Fire Management Group (AFMG) where shire wide priorities are reviewed on a regular basis. QFES has a 'Prepare, Act, Survive' guide (https://www.ruralfire.qld.gov.au/BushFire_Safety/Pages/default.aspx) for residents living near bushland. Council will be able to update its website and Facebook pages prior to fire season.

The Noosa Bushland Reserve Strategic Fire Management Plan risk assessment process has identified 11 bushland reserves where it is impractical to manage fire within the boundaries of the bushland reserve estate only. The extent of vegetation across public and private land warrants a multi-agency fire management approach. Council is working with QFES, QPWS, DNRM and private landholders to develop multi-agency plans for collaborative fire management.

7. Fire Management Planning

7.1 Fire Management Action Plan

The following Action Plan supports the Noosa Environment Strategy 2019 in 2 key areas:

Theme 1 Biodiversity
Strategy 1.1: Protect and enhance existing ecosystems, vegetation networks and habitats

Theme 2 Climate change adaptation and resilience
Strategy 4.1 Increase community resilience and capacity to adapt to climate change

Action	Indicator	Responsibility	Timeframe	Cost
Develop procedures for staff to respond to severe, extreme, catastrophic fire weather including increased fire trail inspections and reserve and trail closures for high to very high priority reserves	Staff implement procedures during severe and above fire weather	Council Environmental Services and Disaster Management Branch	20/21 and ongoing each year	In-house
Develop a Community Engagement Plan with actions to include the development of: -Interactive mapping that the public can access to view Council's 5-year fire management operational plan for individual reserves. -Statements of Management Intent for priority reserves with fire management information -formal processes for engaging with community groups particularly around wildlife response -measures to avoid bushfire such as no camping or dumping of rubbish	The development of a Community Engagement Plan, Interactive mapping and Statements of Management Intent for priority reserves are completed	Council Environmental Services, Disaster Management Branch, QFES	21/22	In-house
Revise reserve priorities and Fire Management Unit (FMU) priorities based on risk mitigation activities and updated climate	Risk is mitigated as per FMP and bushland reserves protect and enhance biodiversity values	Council Environmental Services	Ongoing each year prior to budget process	In-house

Action	Indicator	Responsibility	Timeframe	Cost
change information particularly in relation to threatened species				
Implement bushfire mitigation works including planned burns, fire trail/FRZ maintenance. Increase capacity for fire management as per the 5-Year Operational Plan based on a business case to be presented to Council.	Risk is mitigated as per FMP and bushland reserves protect and enhance biodiversity values	Council Environmental Services	Planned burns autumn-winter Fire trails/FRZ prior to wet season	Additional capital and operational costs over and above current budget allocations will be subject to a business case for consideration by Council TBA
Engage with key stakeholders such as QFES, QPWS and Traditional Owners on fire management	Attend Area Fire Management Groups (AFMG) as required to inform Operation Cool Burn. Engage with Traditional owners on cultural burning practices where appropriate	Council Environmental Services	As per AFMG meeting schedule Engagement as required	In-house
Develop multi-agency fire management plans for key high risk localities (11 identified in total)	3 multi-agency plans are developed each year and risk is mitigated for these locations. Note: 4 locations have been identified as an initial priority. These are Noosa North Shore, Tewantin, Pomona and Noosa.	Disaster Management Branch	Annual	$65,000 in 2021 engage consultant
Investigate State and Federal funding opportunities to help improve the resilience of private buildings located next to Bushland Reserves	Funding is delivered to improve the resilience of building stock	Council Environment Serves and Disaster Management Branch	Ongoing	Subject to availability of State and Federal funding

7.2 5-Year Fire Management Operational Plan

The Noosa Bushland Reserve Strategic Fire Management Plan 2021, through its bushfire risk assessment process, identifies 60 reserves with very high to high risk ratings. For a complete listing of the High and Very High priority reserves see Appendix 8.1. These reserves are targeted for operational works to mitigate bushfire risk and are identified in a 5-year Operational Plan.

The final listing of high priority bushland reserves and FMUs are kept on a separate spreadsheet to this Plan to allow annual updates. An example is shown below:

Reserve name	Reserve risk rating Red-Very high (70-100) Brown-High (40-69) Yellow-Medium (20-39) Green-Low (0-19)	Priority Fire Management Units (FMUs). Identified in reserve Fire Management Plan (FMP) or through on-site inspection	Risk mitigation • Planned burn • Fire trail • Fuel reduction zone • closures	New risk rating calculation after risk mitigation treatment	Timing of works (fn/yr)
Symplocus Environment Reserve	76.8	FMU 3 FMU 2	FMU 3 planned burn FMU 2 planned burn Close reserve during severe and above FDI	53.2	Year 1 Year 5
Weyba Nature Refuge	41.6	FMU 4	FMU 4 planned burn FMU 3 & 1 Close reserve during severe and above FDI	19.6	Year 2 Year 5
Sundial Bushland Reserve	31.2	FMU 1	FMU 1 planned burn	19.6	ongoing
Cooroy Creek Bushland Reserve	18.4	No planned action	No planned action	18.4	N/A

Table 7. An example of the reserve risk assessment informs management actions.

To deliver the 5-Year Operational Plan the following is required:

- On average, 7 planned burns per year
- An additional 2 kms of fire trails
- 1.7km of fire trail widening
- An additional 6 kms of Fuel Reduction Zones (FRZ)

There are a number of challenges for Council to deliver on this plan, in particular Council has limited internal fire management capacity. The challenges are:

- Planned burns are currently contracted out, but contractors are not always available when conditions are ideal. Under current arrangements it is likely that only a small number of burns can be delivered each year.
- Even though Council manages 178 Bushland Reserves, Council staff are unable to respond, or assist other agencies, with a bushfire event on Council managed land.

A business case is being developed to support this Plan and will be presented to Council for consideration.

8. Appendix

8.1 Priority reserves for fire management

Symplocos Environmental Reserve & Nature Refuge
Girraween Nature Refuge
Cooloothin Creek Nature Refuge
Cooloothin Creek Bushland Reserve
Wooroi Creek Bushland Reserve
Cooroibah Conservation Park and Environmental Reserve
Arthur Harold Nature Refuge
Yunaman Bushland Reserve
Lake Cootharaba Bushland Reserve
Lake Doonella Bushland Reserve
Yurol Nature Refuge
Harlow Bushland Reserve
Satinay Bushland Reserve
Forest Acres Bushland Network
Beach Road Nature Refuge
Eenie Creek Bushland Reserve - Walter Hay Drive
Weyba Nature Refuge
Castaways Beach Foreshore Reserve
Bill Huxley Nature Refuge
Eenie Creek Bushland Reserve
Livistona Bushland Reserve
North Shore Environmental Reserve
Six Mile Creek Bushland Reserve - Forest Acres
Marcus Beach Foreshore Reserve
Peregian Beach Foreshore Reserve North
Peregian Beach Foreshore Reserve South
Palm Grove Bushland Reserve
Moonbeam Bushland Reserve
Nylana Bushland Reserve
Noosa Northrise Future Bushland
Lowry Bushland Reserve
Johns Landing Nature Refuge
Tinbeerwah Road Bushland Reserve
Lake Cootharaba Bushland Reserve West
Lomandra Place Bushland Reserve
Tecoma Close Natural Amenity Reserve
Fourways - Noosa Banks Riparian Reserve
Lakeside Bushland Reserve
Teewah Bushland Reserve
Peregian Creek Reserve
Weyba Creek Bushland Reserve North

Cooroora Mountain Bushland Reserve
Heritage Park Bushland Reserve
Penda Scrub Nature Refuge
Pinaroo Park Bushland Reserve
Alyxia Nature Refuge
Fellowship Drive Bushland Reserve
Noosa Landfill Bushland Reserve
Edington Drive Environmental Reserve
Wallace Park Bushland Reserve
Flagship Natural Amenity Reserve
Quarry Track Bushland Reserve
Alex Dan Bushland Reserve
Kin Kin Arboretum Park
Carriage Way Bushland Reserve West
Murdering Creek Bushland Reserve
Clearview Drive Bushland Reserve
Boronia Bushland Reserve
Illoura Bushland Reserve East
Illoura Bushland Reserve West

Priorities reserves ranked in order based on the risk assessment (60 reserves in total)

8.2 Fire adaptive vegetation communities

Fire adaptive vegetation communities are those communities within which fire is a natural part of the ecosystem and a number of species within these vegetation communities are dependent on a fire frequency for their reproductive requirements.

The table below provides a list of Broad vegetation groups (BVG) which can be described as fire adaptive or fire dependant for their natural ecological processes.

Fire Adapted BVG's		Area (ha)
8a	Wet tall open forest dominated by species such as *Eucalyptus grandis* (flooded gum) or *E. saligna, E. resinifera* (red mahogany), *Lophostemon confertus* (brush box), *Syncarpia glomulifera* (turpentine), *E. laevopinea* (silvertop stringybark). Contains a well developed understorey of rainforest components, including ferns and palms, or the understorey may be dominated by sclerophyll shrubs. (land zones 12, 8, 10, 11, 3, 5, 9, 2) (SEQ, WET, BRB, CQC, [NET])	333.2
8b	Moist open forests to tall open forests mostly dominated by *Eucalyptus pilularis* (blackbutt) on coastal sands, sub-coastal sandstones and basalt ranges. Also includes tall open forests dominated by *E. montivaga, E. obliqua* (messmate stringybark) and *E. campanulata* (New England ash). (land zones 12, 9, 11, 2, 5, 8) (SEQ, [CQC])	76.66
9a	Moist eucalypt open forests to woodlands dominated by a variety of species including *Eucalyptus siderophloia* (red ironbark), *E. propinqua* (small-fruited grey gum), *E. acmenoides* (narrow-leaved white stringybark), *E. microcorys* (tallowwood), *E. carnea* (broad-leaved white mahogany), *E. tindaliae* (Queensland white stringybark), *Corymbia intermedia* (pink bloodwood), *Lophostemon confertus* (brush box). (land zones 11, 12, 9-10, 5, 8) (SEQ)	22.05
9f	Woodlands dominated by *Corymbia spp*. e.g.: *C. intermedia* (pink bloodwood), *C. tessellaris* (Moreton Bay ash) and/or *Eucalyptus spp*. such as *E. tereticornis* (blue gum), frequently with *Banksia spp., Acacia spp.* and *Callitris columellaris* (Bribie Island pine) on coastal dunes and beach ridges. (land zone 2) (SEQ)	95.04
9g	Moist to dry woodlands to open forest dominated by stringybarks or mahoganies such as *Eucalyptus tindaliae* (Queensland white stringybark), *E. latisinensis* (white mahogany), *E. acmenoides* (narrow-leaved white stringybark); or *E. racemosa* (scribbly gum) or *E. seeana* or *E. tereticornis* (blue gum) and *Corymbia intermedia* (pink bloodwood). (land zone 5, 12, 9-10, 2, 11, [8, 3]) (SEQ)	377.44
9h	Dry woodlands dominated by species such as *Eucalyptus acmenoides* (narrow-leaved white stringybark) (or *E. portuensis*), *E. tereticornis* (blue gum), *Angophora leiocarpa* (rusty gum), *Corymbia trachyphloia* (yellow bloodwood) or *C. intermedia* (pink bloodwood), and often ironbarks including *E. crebra* (narrow-leaved red ironbark) or *E. fibrosa* (dusky-leaved ironbark). A heathy shrub layer is frequently present. On undulating to hilly terrain. (land zones 12, 9-10, 11, [8, 5]) (SEQ, BRB)	5.2
10b	Moist open forests to woodlands dominated by *Corymbia citriodora* (spotted gum). (land zones 12, 11, 9, 5, 8) (SEQ, CQC, EIU, WET)	10.3
12a	Dry woodlands to open woodlands dominated by ironbarks such as *Eucalyptus decorticans* (gum-topped ironbark), *E. fibrosa* subsp. *nubila* (blue-leaved ironbark), or *E. crebra* (narrow-leaved red ironbark) and/or bloodwoods such as *Corymbia trachyphloia* (yellow bloodwood), *C. leichhardtii* (rustyjacket), *C. watsoniana* (Watson's yellow bloodwood), *C. lamprophylla, C. peltata* (yellowjacket). Occasionally *E. thozetiana*	1.73

Fire Adapted BVG's		Area (ha)
	(mountain yapunyah), *E. cloeziana* (Gympie messmate) or *E. mediocris* are dominant. Mostly on sub-coastal/inland hills with shallow soils. (land zones 10, 7, 9 [11]) (BRB, DEU, SEQ, GUP)	
16c	Woodlands and open woodlands dominated by *Eucalyptus coolabah* (coolabah) or *E. microtheca* (coolabah) or *E. largiflorens* (black box) or *E. tereticornis* (blue gum) or *E. chlorophylla* on floodplains. Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded. (land zone 3) (All bioregions except WET, principally GUP, BRB, MUL, SEQ)	12.24
22a	Open forests and woodlands dominated by *Melaleuca quinquenervia* (swamp paperbark) in seasonally inundated lowland coastal areas and swamps. (land zones 3, 2, 1, [11]) (SEQ, WET, CQC, CYP, [BRB])	822.99
28a	Complex of open shrubland to closed shrubland, grassland, low woodland and open forest, on strand and foredunes. Includes pure stands of *Casuarina equisetifolia* (coastal sheoak). (land zones 2, 1) (GUP, SEQ, BRB, CYP, [WET, CQC])	127.97
29a	Open heaths and dwarf open heaths on coastal dunefields, sandplains and headlands. (land zones 5, 2, 3, 7, 10, [12, 11]) (CYP, SEQ, [WET])	328.65
34c	Palustrine wetlands. Freshwater swamps on coastal floodplains dominated by sedges and grasses such as *Oryza spp., Eleocharis spp*. (spikerush) or *Baloskion spp*. (cord rush) / *Leptocarpus tenax* / *Gahnia sieberiana* (sword grass) / *Lepironia spp*. (land zones 3, 2, 1) (CYP, GUP, BRB, SEQ, WET, [CQC])	36.15
TOTAL	88.5% of Vegetation	2,249.62

8.3 Fire sensitive vegetation communities

Fire sensitive are considered to be those vegetation communities which are sensitive to fire and may withstand significant impacts from the occasional fire along their perimeter or, in a catastrophic landscape fire, be significantly impacted upon by such a fire. The period for reinstatement of a pre-fire community with a similar biodiversity status may be many years depending on the recruitment of both flora and fauna species back into an area which once contains a fire-sensitive community.

The table below contains a list of fire-sensitive vegetation communities that have been described within Noosa LGA.

Non- fire Adapted BVG		**Area (ha)**
2a	Complex evergreen mesophyll-notophyll vine forest frequently with *Araucaria cunninghamii* (hoop pine) from foothills to ranges. (land zones 11, 12, 8) (WET, SEQ, CQC) (Tracey 1982 2a)	8.1
4a	Notophyll and mesophyll vine forest with feather or fan palms in alluvia and in swampy situations on ranges or within coastal san masses. (land zones 3, 11, 12, 2) (SEQ, WET, CQC, CYP) (Tracey 1982 2b,3b, 3c)	1.04
4b	Evergreen to semi-deciduous mesophyll to notophyll vine forest, frequently with *Archontophoenix spp*. (palms) fringing streams. (land zones 3, [10]) (CYP, SEQ, WET, CQC, GUP) (Tracey 1982 1c)	62.79
5a	Araucarian notophyll/microphyll and microphyll vine forests of southern coastal bioregions. (land zones 8, 11, 5, 9) (SEQ)	38.84
35a	Closed forests and low closed forests dominated by mangroves. (land zone 1) (CYP, GUP, BRB, SEQ, WET, CQC)	153.11
35b	Bare saltpans ± areas of *Tecticornia spp*. (samphire) sparse forbland and/or *Xerochloa imberbis* or *Sporobolus virginicus* (sand couch) tussock grassland. (land zone 1, [3]) (GUP, BRB, CYP, SEQ, CQC, [WET])	28.08
TOTAL	11.5% of Vegetation Types	292.02

8.4 Fire Management Plan template for reserves

Cooroibah Conservation Park

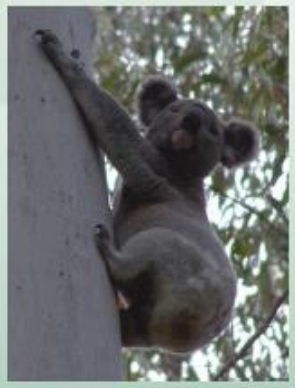
Fire management plan

Cooroibah Conservation Park (197ha) is located on the shores of Lake Cooroibah, part of the Noosa River catchment. Vegetation within the park includes endangered Scribbly Gum *(Eucalyptus racemosa)* and unique coastal rainforest. Wildlife such as kangaroos and koalas live in the Conservation Park.

The purpose of the Cooroibah Conservation Park Fire Management Plan is to mitigate the risk of bushfire to life and property, while retaining the significant biodiversity values conserved in the park.

Fire and biodiversity

Some vegetation requires fire to maintain biodiversity, while other vegetation such as rainforest will be destroyed by fire. The purpose of the Cooroibah fire management plan is to retain biodiversity values through planned burns, while protecting vegetation sensitive to fire.



Koalas have been recorded in Cooroibah Conservation Park

Fire management actions

Like other landowners, Noosa Council undertakes fire management on land under their control. This includes the development of fire trails and fuel reduction zones, and planned burns. Park neighbours are encouraged to mitigate the risk of bushfire on their land.

NOOSA COUNCIL
ABN 97 999 214 121

PO Box 141
TEWANTIN QLD 4565

P. (07) 5329 6500
F. (07) 5329 6501

mail@noosa.qld.gov.au
www.noosa.qld.gov.au

Map 1. Cooroibah Conservation Park.
Red lines-fire trail boundaries, Green shaded-fire exclusion, Red shaded-planned burns within next five years.
Note that the actual timing of planned burns is subject to suitable weather conditions.

Timetable

Fire management unit	Year 1	Year 2	Year 3	Year 4	Year 5
1	Widen internal fire trails				
2					
3					Planned burn
4					
5					
6					

NOOSA COUNCIL
ABN: 97 959 214 121
PO Box 141
TEWANTIN QLD 4565
P. (07) 5329 6500
F. (07) 5329 6501
mail@noosa.qld.gov.au
www.noosa.qld.gov.au

8.5 Community liaison letter template

NOOSA COUNCIL

Officer Name: Michael Lyons
Officer Email: mail@noosa.qld.gov.au
Phone No: 07 5329 6500
ECM Ref:
CRM No:

5th March 2020

Dear Resident/Property owner,

Planned Burn – Wooroi Creek Bushland Reserve

As part of Noosa Shire Council's fire management program, Wooroi Creek Bushland Reserve has been identified as requiring a planned burn (see below map).

It is not intended to burn the entire 55 hectares of the reserve. The aim of this burn is to reduce the volume of forest fuels and to create a mosaic pattern of burnt and unburnt areas within the reserve. This will help reduce the intensity of any subsequent wildfires and provide favourable conditions for natural forest regeneration.

Prior to burning, a permit to light the fire will be issued by the local fire warden. Suitable weather conditions such as moisture, humidity, wind speed and direction will dictate an appropriate day and time for the burn to take place.

NOOSA COUNCIL ABN: 97 969 214 121
PO Box 141 TEWANTIN QLD 4565
P. (07) 5329 6500 F. (07) 5329 6501
mail@noosa.qld.gov.au www.noosa.qld.gov.au

NOOSA COUNCIL

Given these variables, and for your convenience, Council wishes to advise local neighbours of the intention to conduct this exercise on the first suitable day in the comings months

Please view Council's Facebook page for notification of this day. The burn will be undertaken by an experienced contractor on behalf of Council

As a result of this exercise, residents are reminded to take the following precautions:

- Vehicles must slow down, keep windows up and turn headlights on when driving around a smoke affected area.
- Sightseers must keep away for their own safety.
- People with respiratory (or other health) problems should take reliever medicine for smoke inhalation and seek medical advice.
- Keep doors and windows closed to prevent smoke from entering homes.
- Ensure pets have a protected area.

If you would like further information please don't hesitate to contact customer service on 5329 6500.

Yours sincerely

Michael Lyons
Noosa Shire Council
Environment and Sustainable Development
Technical Officer- Natural Areas

NOOSA COUNCIL
ABN: 97 969 214 121
PO Box 141
TEWANTIN QLD 4565
P. (07) 5329 6500
F. (07) 5329 6501
mail@noosa.qld.gov.au
www.noosa.qld.gov.au

8.6 Useful websites

QFES 'Prepare, Act, Survive' guide
https://www.ruralfire.qld.gov.au/BushFire_Safety/Pages/default.aspx
https://www.qfes.qld.gov.au/community-safety/downloadlibrary/Documents/GetReadyGuide-E.pdf

QPWS Planned burn guidelines
https://parks.des.qld.gov.au/__data/assets/pdf_file/0018/150291/pbg-seq-1.pdf
https://parks.des.qld.gov.au/__data/assets/pdf_file/0025/152566/pbg-assess-a5.pdf
https://parks.des.qld.gov.au/__data/assets/pdf_file/0019/153082/pbg-assess-pocket.pdf

Qld Fire and Biodiversity Consortium http://www.fireandbiodiversity.org.au/

8.7 Acronyms

BR	Bushland Reserves
DNRM	Qld Department of Natural Resources & Mines
FDI	Fire Danger Index
FMU	Fire Management Unit
FRZ	Fuel reduction Zone
LDMG	Local Disaster Management Group
NCA	Nature Conservation Act 1992
NP	National Park
PPEs	Personal Protective Equipment
PSBA	State Public Safety Business Agency
QFES	Qld Fire & Emergency Services
QNPSP	Qld National Parks, Sports and Racing
RFMG	Regional Fire Management Group
SEQFBC	South-east Qld Fire and Biodiversity Consortium
SPP	State Planning Policy
TMR	Qld Department of Transport and Main Roads
USL	Unallocated State Land