BUSHFIRE MANAGEMENT PLAN



Lot 31 on RP88336

24 – 28 Cairns Street, Loganholme

Client Reference: 014.04.23

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1.0 Introduction

This Bushfire Management Plan (BMP) is prepared in support of a development application to Logan City Council (LCC) for the construction of two Warehouse Buildings on Lot 31 on RP88336 (the "Subject Lot").

Logan City Council (LCC) bushfire hazard overlay mapping classifies the Subject Lot and adjacent Lots to the west, north and east as "bushfire prone area" (BPA). The hazard mapping is based on Queensland Government State Planning Policy (December 2013, latest version July 2017) accompanied by *A new methodology for State-wide mapping of bushfire prone areas in Queensland* (CSIRO 2014).

The designation by Council of land being "bushfire prone" has the following implications for the proposed development:

1. It requires the production of a BMP which complies with the Planning Scheme (in this case Part 8.2.3 (Bushfire Overlay Code) of the Logan City Plan 2015).

2. The BMP must demonstrate compliance against the development assessment benchmarks of *State Planning Policy – Natural hazards, risk and resilience – Bushfire* (October 2019); and must be consistent with the *Bushfire Resilient Communities Technical Reference Guide* (BRC)(October 2019).

3. Whilst warehouse storage buildings (Class 7b) are not required by the BCA to conform to AS3959-2018 *Construction of buildings in bushfire prone areas*, this Standard provides a means of improving the resilience of buildings where their contents and associated operations warrant.

4. The Work Health and Safety Act (2011) requires as a Primary Duty of Care of any Person Conducting a Business or Undertaking (PCBU) to ensure the health and safety of workers, so far as is reasonably practicable. Workers include volunteers, contractors and contractors' workers. PCBUs also have the same duty of care to any other people who may be at risk from work carried out by the business.

This Bushfire Management Plan demonstrates compliance with all the above codes and planning instruments. It objectively determines the nature and severity of potential worst case wildfire in the area, and develops risk mitigation measures to be used in combination with established construction needs in accordance with *Bushfire Resilient Communities Technical Reference Guide* (October 2019) and AS3959-2018. It is the implementation of all these protection measures in combination, that demonstrates the viability and conformance of the proposed development in the development application process.

2.0 Site and Development Description

2.1 Property Description

Site ID:	Lot 31 on RP88336. Parish of Mackenzie, County of Stanley.
Current address of property:	24 – 28 Cairns Street, Loganholme QLD 4129.
Local Government Area:	Logan City Council.
Total Area:	27 110m²
Zoning:	Environmental Management and Conservation.

2.2 Proposed Development

The proposed development is to construct a Storage Shed and associated Office on Lot 31 on RP88336 (the "Subject Lot").

2.3 Site Location and Layout

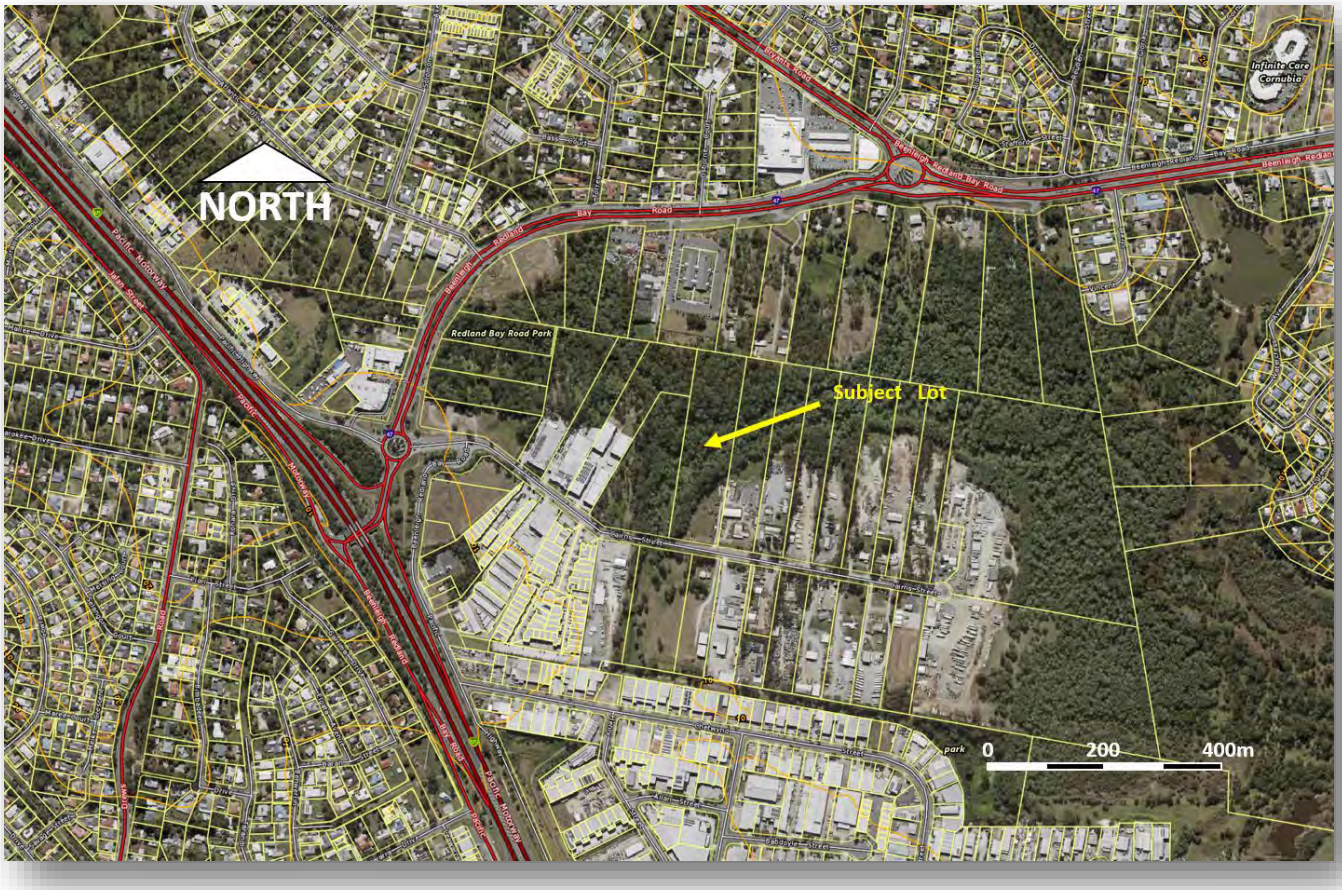


Figure 1. Broader area showing the location of the proposed development.

Located on the northern side of Cairns Street, the site abuts an area of paperbark forest to the north west, associated with a local waterway. Reeds such as *Phragmites sp*, and other weeds such as Singapore Daisy (*Sphagneticola sp)* would help to suppress fire in most circumstances, however under the most extreme fire weather conditions for the region, this forest vegetation would support fir, particularly along the edges of the watercourse. Old evidence of prior fire in the form of charred stumps, encourages a precautionary approach to evaluating this vegetation.

Figure 2 shows the proposed site layout with a street hydrant at the proposed access point to the site.



Figure 2. Proposed site layout.

The site is within approximately 4.5km by road of the nearest Queensland Fire and Emergency Services (Beenleigh Fire Station).

3.0 Bushfire Hazard Assessment

3.1 Bushfire hazard classification

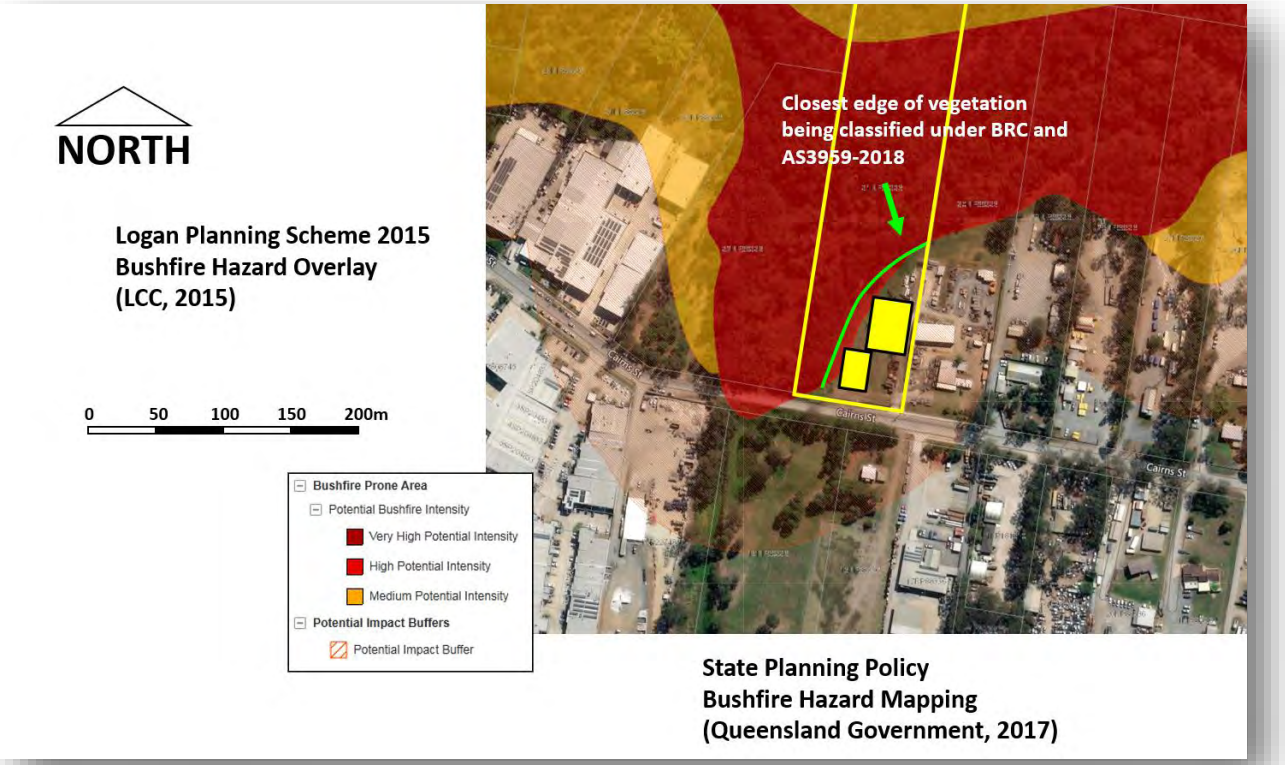


Figure 3. Council and latest State bushfire hazard mapping

"Bushfire Prone Area" (BPA) is defined under Building Regulation 2021 and the BCA as an area **identified as such by Local Government** , in this case using the methodology specified in *A new methodology for State-wide mapping of bushfire prone areas in Queensland* (CSIRO 2014). Logan City Council Policy 6 (Management of Bushfire Hazard) Part 2.1 outlines the requirement for a bushfire hazard assessment report based on such methodology in order to validate the bushfire hazard overlay mapping above.

It is argued that the purpose of Logan City Council Policy 6 (Management of Bushfire Hazard) Part 2.1 is ultimately to establish simply whether the site and bushland interface is BPA or not. This does not warrant a separate extensive report as inferred by Part 2.1.3, which would add complexity and cost to the process without achieving any more value than is achieved by the clear and concise approach taken by this BMP. This BMP achieves the same validation by stepping through Sections 3 (evidencing vegetation hazard class (VHC), fuel loads, slope, separation distances) and carrying this data forward to Section 6 (Fire weather characteristics and calculated fire parameters, based on the same (CSIRO) methodology). In the process it validates the future BPA status of the potential hazard interface along the north western boundary of the site.

The BCA calls up AS3959-2018 as providing "Deemed to Satisfy" construction levels for Class 1, 2 and 3 buildings and associated Class 10 structures constructed in bushfire prone areas. Whilst storage sheds (Class 7b) are not required by the BCA to conform to this Standard, it provides a means of improving the resilience of buildings where their contents and associated operations warrant. This BMP establishes Bushfire Attack Levels (BALs) for the built environment on the site, using a combination of Methods 1 and 2 approach under AS3959-2018.

3.2 Vegetation Assessment, Slope and Separation Distances from Proposed Development



Figure 4. Fuel Zones Assessed Contours shown are 10m.

The vegetation type is “Forest”.

The effective slope beneath vegetation being classified is taken as 0^{o}.

Section 6 objectively calculates and determines the potential nature and severity of bushfire attack more thoroughly. This serves as a basis for determining the construction and other bushfire protection measures outlined in this Plan.

Fuel assessments were undertaken using the Overall Fuel Hazard Assessment - DSE Victoria (Oct 2010), although the fuel values applied to fire modelling in Section 6.3 are taken from the Queensland Government (QFES) dataset, as required under BRC 2019 and AS3959-2018.

3.3 Fuel Accumulation Assessment – Forest Northwest



Figure 5. Fuel Accumulation Assessment – Forest Northwest

Fuel hazard estimate	**Assessment according to Hines et al 2010**		
Date: 20th April 2023			
Layer	**Rating**	**Description / Comments**	**Equivalent fuel load t/ha**
Surface and near surface	Low to moderate	Moderate to high litter bed 20 with moderate NS fuels suppressed by shading.	8 - 9
Elevated	High	Canopy recruiters. Brush against vegetation most of the time. Fuel throughout layer.	3
Bark	High	Some ribbon barks *(E.tereticornis).* Papery barks (*M.quinquinervia)*	2
Overall rating	**Moderate**		**13 - 14t/ha**

Table 1. Fuel Assessment - Forest Northwest.

The predominant vegetation community is representative of Regional Ecosystem (RE) 12.3.5 (Vegetation Hazard Class 22.1) for which State Government attributes a default value for total available fuel load of 28.4t/ha (23.4t/ha of which is Surface and Near surface fuel).

Given the actual available fuel loads assessed, the calculated fire parameters in section 6.3 are a likely overestimate.

4.0 Site constraints and environmental values which may limit mitigation options

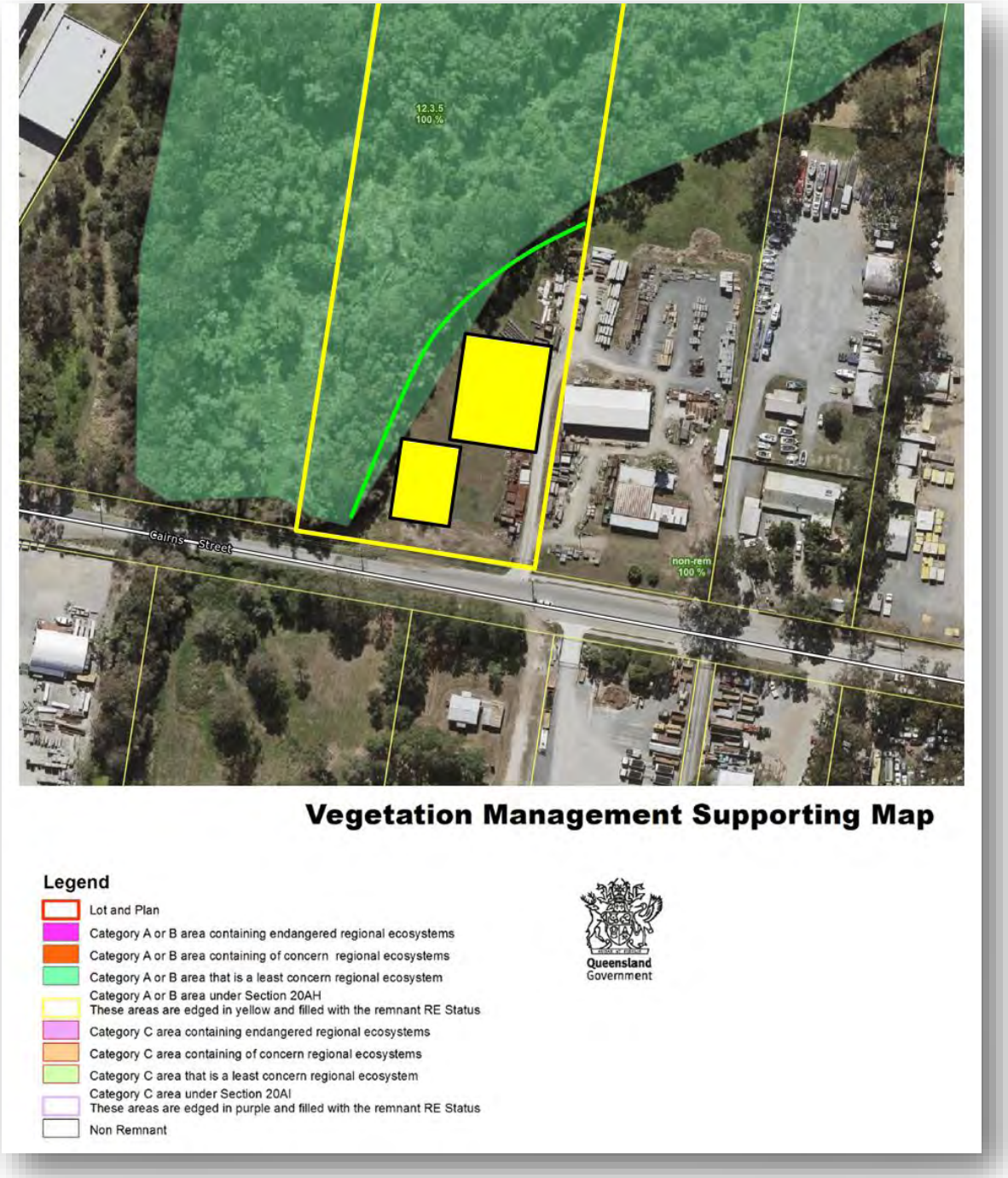


Figure 6. Regional Ecosystem (RE) Mapping

Figure 6 shows the location of the proposed development location in relation to vegetation mapped by The Queensland Department of Natural Resources, Mines and Energy (DNRME) as “Of Least Concern” RE 12.3.5 west and north of the site, and site assessment supports this classification.

DNRME provides the following Description and recommended fire guidelines for the vegetation communities mapped.

Regional Ecosystem	Description	Fire Guidelines
RE 12.3.5 Of Least Concern	*Melaleuca quinquenervia* open-forest to woodland. Understorey depends upon duration of water logging; sedges and ferns, especially *Blechnum indicum*, in wetter microhabitats and grasses and shrubs in drier microhabitats. Ground layer species include the grasses *Leersia hexandra and Imperata cylindrica*, the sedges/rushes, *Baumea rubiginosa, Gahnia sieberiana, Lepironia articulata, Schoenus brevifolius* and *Schoenus scabripes* and the fern *Lygodium microphyllum*. Other tree species that may be present as scattered individuals or clumps include *Lophostemon suaveolens, Eucalyptus robusta, E. tereticornis, E. bancroftii, E. latisinensis, Corymbia intermedia, Melaleuca salicina, Livistona australis, Casuarina glauca, Endiandra sieberi. Melastoma malabathricum subsp. malabathricum, Glochidion sumatranum and Melicope elleryana* are often in understorey. Occurs on Quaternary alluvial plains in coastal areas. (BVG1M: 22a) Vegetation Hazard Class (VHC) 22.1 Potential Available Fuel Load 28.4t/ha	OPTIMAL FIRE SEASON: Late summer to mid-winter (after rain). INTENSITY: Planned and occasional unplanned burns (typically of higher intensity) influence the ecology of melaleuca ecosystems. INTERVAL: Heath 8-12 years, Sedge 12-20 years, Mixed grass/shrub 6-20 years. STRATEGY: Aim for a 25-70% burn mosaic (in association with surrounding ecosystems, as melaleuca ecosystems often just occur in patches or along natural drainage lines). Fires may, depending on the conditions and type of vegetation, burn areas larger than just the melaleuca ecosystem. Ensure secure boundaries from non fire-regime adapted ecosystems. Consider the needs of melaleuca ecosystems based on understorey (i.e., heath dominated, sedge dominated or mixed grass/shrub) when planning burns. High soil moisture (or presence of water on the ground) is required, as avoidance of peat-type fires must be maintained. ISSUES: Fire regimes for melaleuca ecosystems require further fire research. Melaleuca forests are fire-adapted, but too high an intensity or frequent fire will slow or prevent regeneration and lead to lower species richness (since these communities contain numerous obligate seed regenerating species that require sufficient fire intervals to produce seed). High intensity fires may kill trees and lead to whipstick regeneration. Too frequent fire may result in a net loss of nutrients over time from an already nutrient poor system. Fire associations are significantly influenced by understorey composition. Melaleuca communities with a heath understorey should burn in a similar way to coastal heath (8-12 years). Sedge understorey communities will burn in association with the surrounding ecosystems (so will often burn with them but sometimes not, such that these communities have a slightly less fire frequency). Mixed understorey communities burn in a similar way to dry sclerophyll, in association with the surrounding dry sclerophyll, though somewhat less frequently due to the additional moisture present in melaleuca communities.

Table 2. Regional Ecosystems Descriptions and Fire Guidelines

Cooperation of multiple land owners and suitably prepared fire trails are required for successful planned burning to occur , and this is unlikely to occur. Planning has to be based on fuel levels reaching a long term maximum stable state, coinciding with ignition under worst case foreseeable fire weather conditions.

4.1 Fire History and Frequency

This study found old indicators of prior fire, examples of which are in the lower portion of Figure 5. Recurrence of fire at some time has to be regarded as possible, potentially coinciding with maximum fuel accumulation and worst case fire weather conditions.

5.0 Specific risk factors associated with the development proposal

5.1 Nature of activities anticipated on site

Normal warehousing activities are anticipated to occur in the area. This does not introduce new sources of ignition. The number of fire incidents expected by QFES varies in direct proportion to the numbers of people present. The proposed development makes little difference to the number of people living in the area and or potential sources of ignition, and this Plan serves to reduce risk to levels that should be considered acceptable.

5.2 Numbers of people likely to be present

The proposed development makes little difference to the number of people living in the area or likely to cause ignition, and protection measures required under this plan serve to reduce risk to levels that should be deemed acceptable.

6.0 Nature and Severity of Potential Bushfire Attack

6.1 Bushfire season and Fire Weather

The "typical fire season" in this area peaks between September and November. The predominant winds in the area are south easterly, however during the fire season, hot gusty westerlies of over 30 kph can be expected, with Relative Humidity falling to 10% and less. Temperatures on these days can climb over 35^{o}C , and for two or three days a year, fire weather conditions equivalent to FDI levels of around 50 - 60 can be anticipated. (Note that this is in contrast to the value of 40 which Queensland is currently using in the recently revised AS3959 - 2018).

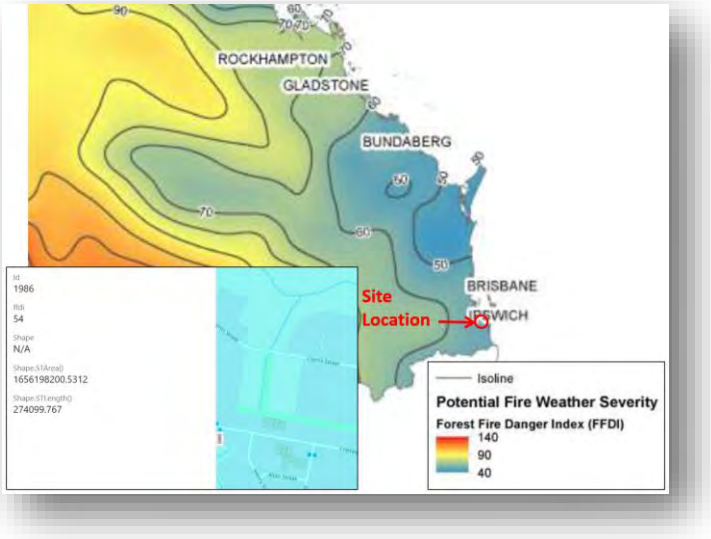


Figure 7. State Government revised FDI values to FDI 54 for the area involved. (QFES Catalyst).

6.2 Anticipated direction of bushfire attack

Unplanned “wildfire” attack is possible from the north west, as indicated in Figure 4, a direction that is aligned with worst case fire weather conditions for the region, these being westerly through north westerly to northerly.

Bushfire attack comes in a number of forms: direct flame, radiant heat, embers, smoke and wind. Research shows that over 80% of houses lost to bushfire in Australia can be attributed to ember attack, within 100m of bushland.

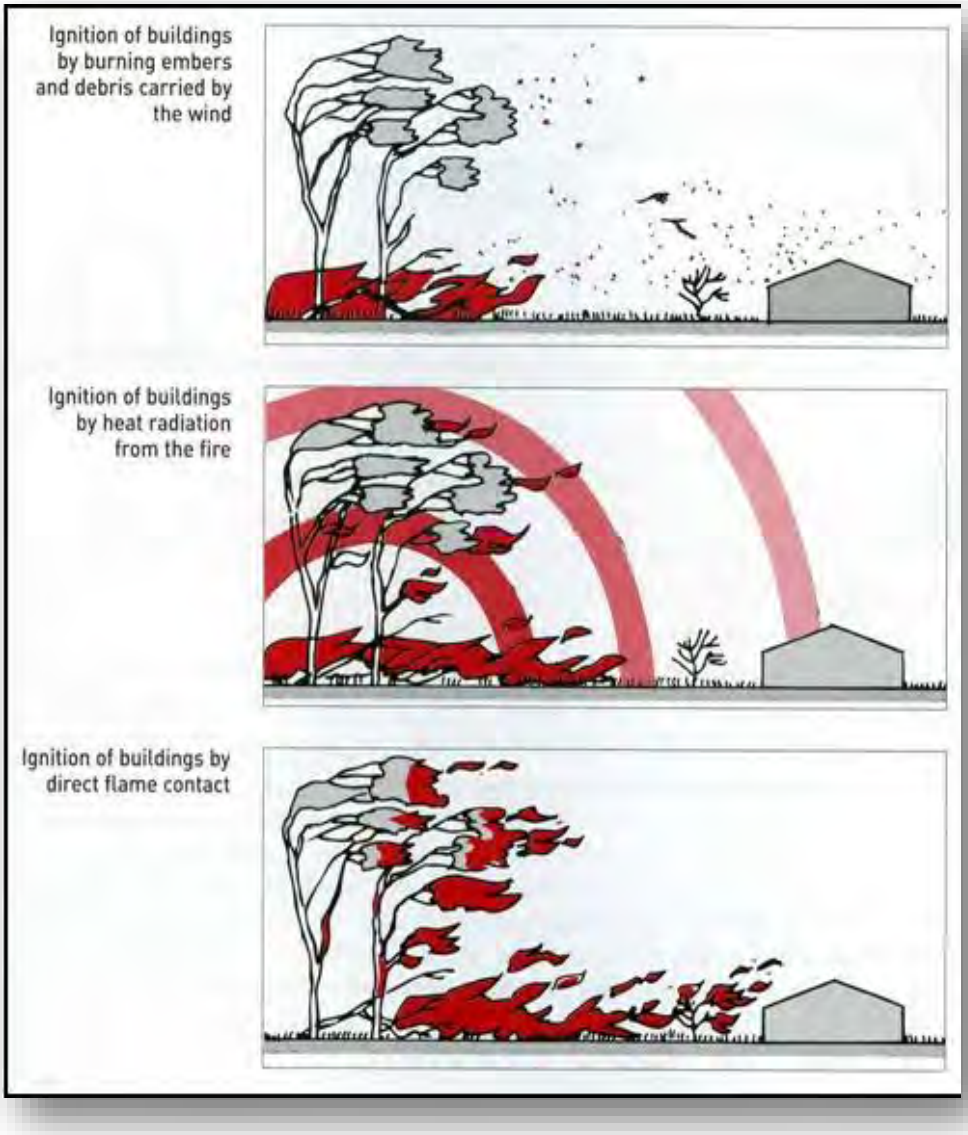


Figure 8. Main Bushfire Attack mechanisms (Image courtesy of Ramsay & Rudolf, 2003)

6.3 Anticipated severity of bushfire attack

Values for vegetation type, fuel load and slope are carried forward to Table 3, to predict the key fire parameters for the main design fire scenario.

Fire Scenario – Northwest **BRC and Method 2 AS3959-2018** **FDI 54** **Forest @ 23.4/28.4t/ha.** **Effective Slope under vegetation 0° Flat**	**Fire Scenario – Northwest** **Method 1 AS3959 – 2018** **FDI 40** **Forest** **Effective Slope under vegetation 0° Flat**
Fire Intensity (Byram, 1959) 22 249kW/m ("HIGH")	
Rate of Spread (Noble et al, 1980) 1.52kph	
Flame Height (modified Mc Arthur V equation, NSW RFS 2001) 13.29m	
Flame Width 100m	
Elevation of Receiver 2.4m	
BAL FZ within <12m of intact unmanaged vegetation BAL 40 from 12 - <15m BAL 29 from 15 - <22m BAL 19 from 22 - <31m BAL 12.5 from 31 – <100m	BAL FZ within 10m of intact unmanaged vegetation BAL 40 from 10 - <13m BAL 29 from 13 - <20m BAL 19 from 20 - <28m BAL 12.5 from 28 – <100m

Table 3. Calculated values for potential bushfire characteristics, and methods used.

The radiant heat flux values are compared as Bushfire Attack Levels (BALs) in Table 3 and Figure 9. The predicted fireline intensity for the forested areas is in the "High" range as indicated in State and Council bushfire hazard mapping.

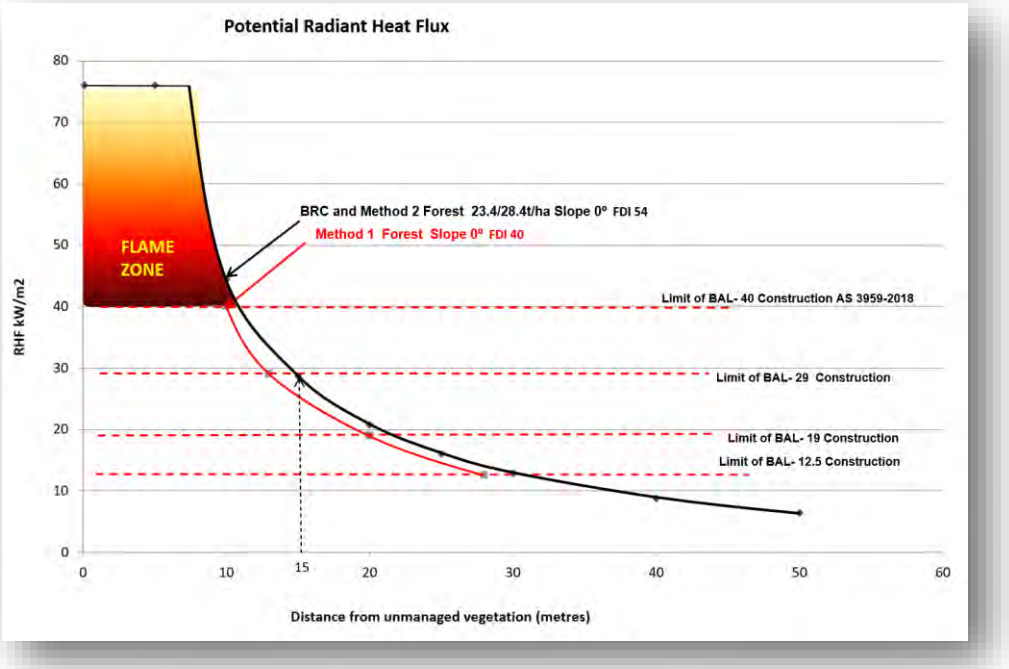


Figure 9. Radiant Heat Flux Predicted by Methods 1 and 2.

Site specific fire modelling in accordance with Method 2 of AS3959-2018 predicts slightly greater radiant heat flux (RHF) values than Method 1.

With a minimum setback of 15m from adjacent areas of forest vegetation 29kW/m² would not be exceeded.

The significance of the radiant heat flux levels discussed is shown below in Table 4.

Radiant Heat Flux (kW/m²)	Likely Effects
> 40 - 110	Flame Zone. Even the strongest toughened glass fails.
29 - 40	Latest technology in toughened glass may survive. Most will not. Timber ignites without pilot flame. Limit of BAL-40 Construction AS3959 - 2018.
29	Ignition of timbers without piloted ignition (3 minutes exposure) during the passage of a bushfire. Most types of toughened glass could fail. Limit of BAL-29 Construction AS3959 - 2018.
19	Screened float glass could fail during the passage of a bushfire.Limit of BAL-19 Construction AS3959 - 2018.
12.5	Standard float glass could fail during the passage of a bushfire. Limit of BAL-12.5 Construction AS3959 - 2018. Some timbers can ignite with prolonged exposure and with pilot ignition sources (eg embers)
10	Critical conditions. Firefighters not expected to operate in these conditions. Considered life threatening in under a minute in protective equipment. Fabrics inside a building could ignite spontaneously with long exposures.
7	Likely fatal to unprotected persons after exposure of several minutes.
4.7	Extreme conditions. Firefighter in protective clothing will feel pain after 60 seconds exposure.
3	Hazardous conditions. Firefighters expected to operate for a short period (10 minutes).
2.1	Unprotected person will feel pain after 1 minute exposure - non fatal.

Table 4. Significance of various RHF levels (Source: NSW RFS, 2006)

7.0 Bushfire Protection Measures in Combination

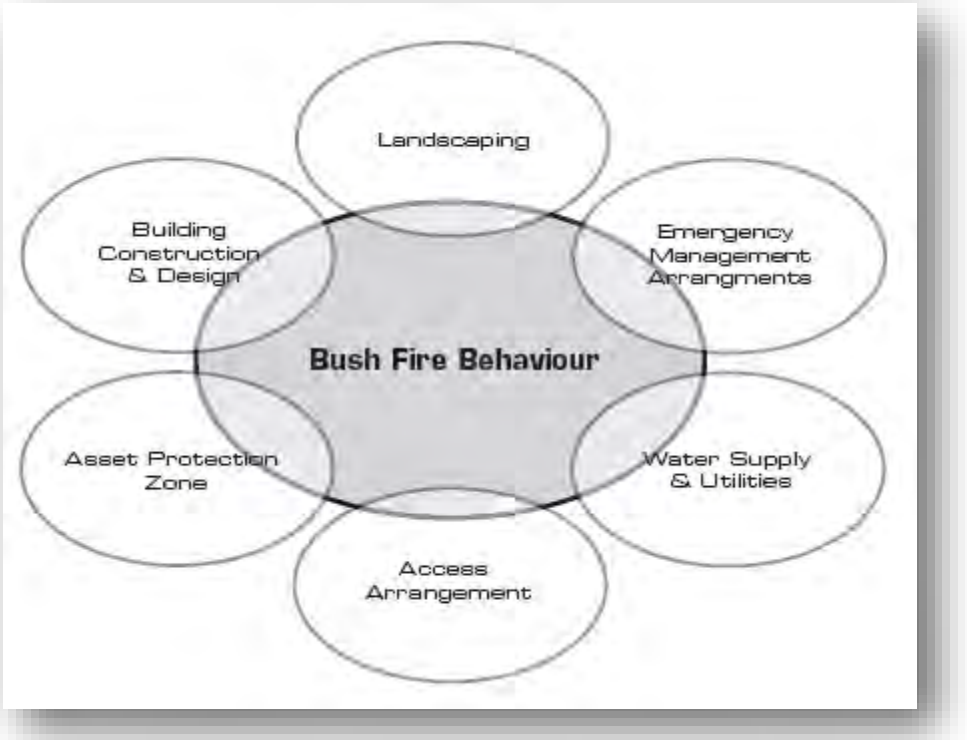


Figure 10. Bushfire Planning Measures in Combination (Source: NSW RFS, 2006)

Figure 10, taken from *Planning for Bushfire Protection* (NSW Rural Fire Service, 2006) illustrates that there are other factors and measures which need to be integrated to mutually support one another to provide protection against bushfire.

Simply removing the hazard (bushland) is one possible way of removing risk to life and property, but this approach is not desirable. The safety of life and property can be achieved whilst retaining the natural amenity and value of bushland areas, provided these integrated bushfire protection measures are applied.

7.1 Building Construction and Design

Section 6.3 and Table 3 and Figure 9 show the predicted radiant heat flux values for the site.

Whilst such cannot be mandated, consideration should be given to constructing the proposed buildings in accordance with AS3959-2018.

7.2 Asset Protection Zones and Landscaping

Asset protection zones provide the most strategically valuable defense against radiant heat and flame, and to a lesser extent embers. The relationship between radiant heat level and distance is not linear, as shown in Figure 12. The function of the Inner Protection Area (IPA) is to distance the Asset from Flame and Radiant Heat. The Outer Protection Area (OPA) separates ground fuels from canopy fuels, causing canopy fires to collapse and become ground fires.

- Plants retained in or introduced into the IPA should be selected based on low combustibility, by virtue of high moisture content, low volatile oil content, high leaf mineral levels, large fleshy leaves, absence of shedding bark.
- Plant arrangement is just as important as low combustibility. Plants should be placed so as to minimize either vertical or horizontal connectedness of plant material. Appendix 1 provides examples of less hazardous native plant species.
- Combustible vegetation shall not be allowed to come into contact with combustible parts of buildings.
- Trees should not be allowed to directly overhang roof lines.
- Regular yard maintenance should be undertaken to remove available fine fuels and debris, particularly throughout the fire season.

The existing cleared portion of the lot will be maintained as IPA.

An Outer Protection Area involves removal of the understorey so as to deprive an advancing fire front of its fuel continuity, and thereby collapsing the fire front. In this case the APZ around buildings will be maintained as IPA.

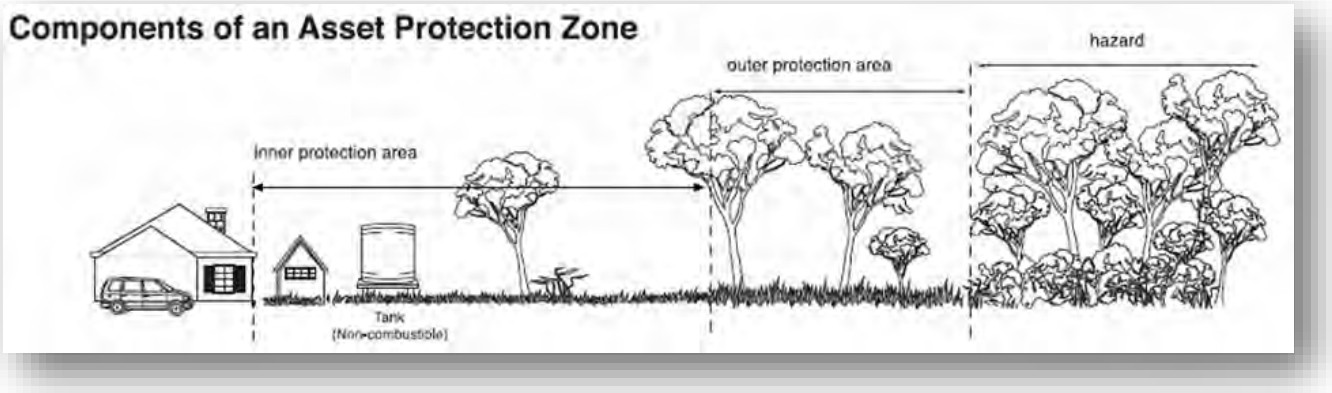


Figure 11. Components of an Asset Protection Zone (APZ)

7.3 Access and Egress Management

The site is within approximately 4.5km by road of the nearest Queensland Fire and Emergency Services (Beenleigh Fire Station).

Access and egress for fire fighters will be provided in accordance with the Queensland Fire and Emergency Services Guideline (*Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots, 2015).* The guideline is attached as Appendix 2.

Access and egress is available along a safe route to the south via Cairns Street.

Access to all sides of the buildings shall be preserved free of obstructions for fire fighters on foot.

Obstructions on the access road verges should be prevented.

7.4 Water Supplies and Utilities

Water supply for the development will be connected to Council mains reticulated supply, with existing hydrants installed in accordance with AS2419.1 – 2005, and with volumes and pressure under the control of Council water utilities provider. . Fire fighting water supply and fire hydrants will be provided in accordance with the Queensland Fire and Emergency Services Guideline (*Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots, 2015).*

Electricity supply to the site shall be supplied underground.

Any reticulated or bottled gas shall be installed and maintained in accordance with AS1596 – 2002. Metal piping is to be used. Any fixed LPG tanks shall be kept clear of flammable materials, and located on the non hazard side of the building. Any gas cylinders which need to be kept close to a building shall have release valves directed away from the building. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

7.5 Fire Fighting and Emergency Management Arrangements

The development will serviced by the existing road and new driveway for Emergency Services use.

Obstructions to access across the site and to the rear of buildings should be avoided.

Lot owners shall be made aware of the existence of this Plan, and their need to comply with the relevant provisions, in particular building construction, APZ maintenance, optimizing access around buildings and emergency response preparations.

Occupants shall decide on their Stay and Defend / or Go Early strategy before each fire season so as to ensure this decision is not made too late, when smoke and emergency vehicles prevent an orderly evacuation.

Occupants staying to defend should ensure that they have adequate protective clothing , including full length cotton or denim garments, sturdy boots, gloves, smoke mask (minimum P2 with valves) and smoke goggles.

Appendix 3 provides guidance for Residents' Emergency Management Planning in relation to bushfire.

8.0 Assessment of proposal against Logan Planning Scheme 2015 – Part 8.2.3 Bushfire Hazard Overlay Code

Performance Outcomes	Acceptable Outcomes
8.1 (PO1) Development is designed to: (a) minimise risk of bushfire hazard; (b) provide safe premises; (c) create efficient emergency access for firefighting and other emergency vehicles.	Acceptable Outcome AO1 is applied in that: Development: (a) increases the number of persons living in, or lots in, the Bushfire hazard area identified on Bushfire hazard overlay map– OM–03.00; however the risk posed by bushfire is mitigated by this Plan.
8.2 (PO2) Development is sited and constructed to minimise the bushfire hazard and maximise the protection of life and property from bushfire.	Acceptable Outcome AO2 is applied in that: Development is located and constructed: (a) where there is no bushfire management plan approved by an existing development approval: (i) such that the bushfire attack level for future buildings is less than or equal to BAL–29; (ii) (not possible to achieve) - away from the most likely direction of a fire front; (iii) so that generally elements of the development least susceptible to fire are sited closest to the bushfire hazard; (iv) such that asset protection zones are sited on land with a slope less than 18 degrees; (v) such that asset protection zones are entirely within the boundaries of the private property of the development site;

8.3 (PO3) Reconfiguring a lot ensures that lots are designed to minimise bushfire hazard and provide safe sites for people, property and buildings.	Acceptable Outcome AO3 is applied in that: Lots: (a) are suitable for people, property and buildings by: (i) having a bushfire attack level less than or equal to BAL–29; and (ii) containing a development envelope area that has a bushfire attack level less than or equal to BAL–29; (b) provide asset protection zones that: (i) are located on land with a slope less than 18 degrees; (ii) are located on the same lot.
8.4 (PO4) Vehicular Access and Fire Maintenance Trails Access for fire management and evacuation is provided by access that: (a) separates premises from adjoining vegetation; (b) is safely accessible by fire fighting vehicles; (c) has regular vehicular access points for bushfire management, response and evacuation; (d) has regular vehicle passing and turning areas for bushfire management, response and evacuation; (e) allows access at all times for fire fighting vehicles; (f) allows for maintenance, burning off and bushfire response; (g) has vehicular links to an alternative through road; (h) is readily maintained.	Acceptable Outcome AO4 is applied to the extent that: Access for fire management and evacuation is provided by vehicular access in the form of new proposed roads in safe locations and (d) is constructed to otherwise comply with Section 3.4 – Movement infrastructure standards of PSP5 – Infrastructure; and
8.5 (PO5) Water Supply Development has access to adequate water supply for fire fighting purposes.	Acceptable Outcome AO5 is applied in that: Development: (a) is connected to a reticulated water supply scheme that has sufficient flow and pressure characteristics for fire fighting purposes at all times with a minimum pressure and flow of 10 litres per second at 200kPa.
8.6 (PO6) Community Infrastructure Community infrastructure is not located in a bushfire hazard area or is able to function effectively during and immediately after a bushfire event.	Acceptable Outcome AO6 is applied to the extent that the infrastructure involved does not involve vital core services to the community.
8.7 (PO7) Hazardous Materials Public safety and the environment are not adversely affected by the adverse impacts	Acceptable Outcome AO6 is applied to the extent that: The proposed Development does not involve the manufacture or storage of hazardous materials in bulk.

of bushfire on hazardous materials including fuels, explosives and flammable chemicals manufactured or stored in bulk on premises.	

9.0 Assessment of proposal against State Planning Policy 2019

State Planning Policy – Natural hazards, risk and resilience (SPP, December 2013, latest version December 2019) replaces State Planning Policy 1/03 *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide.* The *SPP Natural hazards, risk and resilience – Bushfire* provides a methodology for determining Bushfire Hazard based on Potential Fireline Intensity. The methodology and hazard mapping has been included in Section 3.1 of this Plan in establishing the adjacent area to the west as potentially hazardous and as a bushfire prone area.

The *State interest guidance material* supporting the SPP contains assessment benchmarks to ensure that State interests are appropriately considered in relation to natural hazards, including bushfire hazard areas. These provisions serve as general guidelines to either avoid or otherwise adequately mitigate bushfire risk.

Development Assessment Benchmarks	Solutions Provided
(3) Development avoids natural hazard areas or where it is not possible to avoid the natural hazard area, development mitigates the risks to people and property to an acceptable or tolerable level, and	This Plan establishes the nature and potential severity of the adjacent hazard and provides a combination of bushfire protection measures to mitigate risk including building construction, asset protection zones, access, water supplies and utilities, and emergency management arrangements.
(4) Development supports, and does not unduly burden, disaster management response or recovery capacity and capabilities, and	The combined effect of the bushfire protection measures specified by this Plan serves to reduce risk to a low level and ensure resilience and preparedness for unplanned fire so that the response or recovery capacity and capability of emergency services is not unduly burdened or impeded. This Plan serves to protect life and property from bushfire without depending on emergency services for protection.
(5) Development directly, indirectly and cumulatively avoids an increase in the severity of the natural hazard and the potential for damage on the site or to other properties, and	The development does not increase the nature of the existing hazard, and site layout and landscaping on the site is designed to moderate the exposure of buildings. The potential for damage to other properties is not increased as a consequence of the proposed development.
(6) Risks to public safety and the environment from the location of hazardous materials and the release of these materials is avoided, and	Hazardous materials are not stored in quantities or locations on the site which would pose a risk to the public or the environment.
(7) The natural processes and the protective function of landforms and the vegetation that can mitigate risks associated with the natural hazard are maintained or enhanced.	The development maintains the natural processes and protective function of vegetation that previously existed for the site.

10.0 Recommendations

1. Whilst such cannot be mandated, consideration should be given to constructing the proposed buildings in accordance with AS3959-2018.

2. The existing cleared portion of the Subject Lot will be constructed and maintained as IPA as described in Section 7.2 of this Plan. The Stormwater basin will be established with low combustibility species consistent with creating a Low hazard condition.

3. Reticulated water supplies shall be fully installed in accordance with AS2419.1-2005 and Council water utilities provider with sufficient flow and pressure characteristics for fire fighting purposes at all times (minimum 10litres a second at 200kPa). Compliance shall be achieved against the acceptable outcomes specified under the QFES Fire Hydrant and Vehicle Access Guideline (2015) in particular marking of hydrant locations and providing adequate hydrant access.

4. Lot buyers shall be made aware of the existence of this Plan and their responsibilities outlined within it, in particular construction, asset protection zone and emergency management.

11.0 Summary

The area of "hazard" faced by the proposed development is significant and available fuel loads are not particularly high, partly reducing the threat posed by bushfire. The likelihood of unplanned fire at some point is considered possible, requiring a range of protection measures to be taken. This Plan demonstrates compliance with legislative requirements of State and Local Government.

Along with adequate water supply and emergency management arrangements, compliant construction under AS3959-2018 and APZs to reduce the exposure of life and property to bushfire, these combined measures assist prepare residents for the slim possibility of fire in the area.

12.0 References

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Appendix 1

Less combustible native plants list

Source: Bowden, J (1999)

APPENDIX 10

Fire Retardant Native Plants

Form: S = Shrub; T = Tree; V = Vine; H = Herb; Gc = Ground cover; eO = epyphytic Orchid; eF = epyphytic Fern; tF = terrestrial Fern.

Fire-retardance: Lm = due to leaf water contents; St = due to salt content; Sl = succulent leaves

Comments: Wb = suitable for windbreak/fire barrier; Ad = suitable as addition to windbreak/fire barrier but not as main species; Us = suitable for understory of windbreak/fire barrier; Oa = suitable for open areas near house; Sa = suitable for sheltered areas near house; Pf = suitable if protected from direct flames; De = Deciduous in winter, in flower or in dry periods

(-) = may not occur naturally in Pine Rivers Valley but has not proved invasive.

Fire-Retardant Plants for Small Gardens

Scientific Name	Common Name	Form	Fire Retardance	Comments
GYMNOSPERMS				
Zamaceae				
Lepidozamia peroffskyana	Shining Burrawang	S	Lm	Us Sa
Macrozamia lucida	Pineapple Zamia	S	Lm	Us Sa
Macrozamia miquelii	Wild Pineapple	S	Lm	Us Oa Sa
Agavaceae				
Cordyline petiolaris	Broad-leaf Palm Lily	S	Lm	Us Sa
Cordyline rubra	Red-fruit Palm Lily	S	Lm	Us Sa
Cordyline strica	Slender Palm Lily	S	Lm	Us Sa
MONOCOTYLEDONS				
Amaryllidaceae				
Crinum pedunculatum	River Lily	H	Lm Sl	Us Oa Sa
Doryanthes palmeri (-)	Spear Lily	H	Lm Sl	Us Oa Sa
Proiphys cunninghamii	Brisbane Lily	H	Lm Sl	Us Sa
Araceae				
Alocasia brisbanensis	Cunjevoi	H	Lm	Us Sa
Gymnostachys anceps	Settlers Flax	H	Lm	Us Sa
Pothos longipes	Pothos	V	Lm	Us Sa
Typhonium brownii	Stinking Lily	H	Lm	Us Sa
Arecaceae				
Linospadix monostachya	Walking Stick Palm	P	Lm	Us Sa
Commelinaceae				
Aneilema acuminatum	Aneilema	H Gc	Lm	Us Sa
Aneilema biflorum (-)	Aneilema	H Gc	Lm	Us Sa
Commelina cyanea	Scurvy Plant	H Gc	Lm	Us Op Sa
Pollia crispata	Snake Weed	H Gc	Lm	Us Sa
Pollia macrophylla	Large Snake Weed	H Gc	Lm	Us Sa
Dioscoraceae				
Dioscorea transversa	Native Yam	V	Lm	Us Sa
Lillaceae				
Bulbine bulbosa (-)	Bulbine Lily	H	Lm Sl	Oa
Dianella brevipedunculata	Blue Flax Lily	H	Lm	Us Oa Sa
Dianella caerulea	Blue Flax Lily	H	Lm	Us Oa Sa
Dianella revoluta	Flax Lily	H	Lm	Us Oa Sa
Drymophila moorei (-)	Orange Berry	H	Lm	Us Sa
Tripladenia cunninghamii	Bush Lily	H	Lm	Us Sa
Orchidaceae				
Dendrobium gracilicaule	Spotted Orchid	eO	Lm	Sa
Dendrobium X gracillimum	Natural Hybrid	eO	Lm	Sa
Dendrobium monophyllum	Lily of the Valley Orchid	eO	Lm	Sa
Dendrobium schoeninim (D. beckleri)	Pencil Orchid	eO	Lm	Sa
Dendrobium speciosum	King Orchid	eO	Lm	Sa
Dendrobium teretifolium	Bridal Veil Orchid	eO	Lm	Sa
Dendrobium tetragonum	Spider Orchid	eO	Lm	Sa
Philesiaceae				
Eustrephus latifolius	Wombat Berry	V	Lm	Us Oa Sa
Geitonoplesium cymosum	Scrambling Lily	V	Lm	Us Sa
Philydraceae				
Philydrum lanuginosum	Frogsmouth	aH	Lm Sl	Oa Wet areas
Smilacaceae				
Smilax glycophylla	Sweet Sarsparilla	V	Lm	Us Sa
Xanthorrhoeaceae				
Lomandra confertifolia	Mat Rush	H	Lm	Oa
Lomandra hystrix	Creek Mat Rush	H	Lm	Us Sa
Lomandra longifolia	Long-leaf Mat Rush	H	Lm	Us Oa Sa
Lomandra filiformis	Fine-leaf Mat Rush	H	Lm	Oa
Lomandra multiflora	Many-flower Mat Rush	H	Lm	Oa
Lomandra spicata	Mountain Mat Rush	H	Lm	Us Oa Sa
Zingiberaceae				
Alpinia arundeliana	Wild Ginger	H	Lm	Us Sa
Alpinia coerulea	Native Ginger	H	Lm	Us Sa

Scientific Name	Common Name	Form	Fire Retardance	Comments
DICOTYLEDONS				
Aizoaceae				
Carpobrotus glaucescens	Pig Face	H Gc	Lm Sl	Oa
Acanthaceae				
Graptophyllum excelsum (-)	Scarlet Fuchsia	S	Lm	Us Sa
Graptophyllum spinigerum	Samford Holly	S	Lm	Us Sa
Pseuderanthemum tenellum	Pseuderanthemum	H	Lm	Us Sa
Pseuderanthemum variabile	Love Flower	H	Lm	Us Sa
Apiaceae				
Centella australis	Pennywort	H Gc	Lm	Oa
Hydrocotyle acutiloba	Pennywort	H Gc	Lm	Us Sa
Hydrocotyle pedicellosa	Pennywort	H Gc	Lm	Us Sa
Apocynaceae				
Alyxia ruscifolia	Chain fruit	S	Lm	Us Sa
Carissa ovata	Current Bush	S	Lm	Us Oa Sa
Neisosperma poweri (-)	Milkbush	S	Lm	Us Sa
Ochrosia moorei (-)	Southern Ochrosia	S	Lm	Us Sa
Parsonsia lenticellata	Narrow-leaf Silkpod	V	Lm	Us Sa
Parsonsia lilacina	Delicate Silkpod	V	Lm	Us Sa
Tabernaemontana pandacaqui	Banana Bush	S	Lm	Us Sa
Aristolochiaceae				
Aristolochia sp. aff. pubera	Pipe Vine	V	Lm	Us Sa
Aristolochia praevenosa	Richmond Birdwing Vine	V	Lm	Us Sa
Asclepiadaceae				
Hoya australis	Wax Flower	V	Lm	Us Sa
Marsdenia longiloba	Slender Milk Vine	V	Lm	Us Sa
Secamone elliptica	Corky Milk Vine	V	Lm	Us Sa
Tylophora paniculata	Thin-leaf Tylophora	V	Lm	Us Sa
Bignoniaceae				
Pandorea floribunda	New sp. Pine R	V	Lm	Us Oa Sa
Pandorea jasminoides	Bower of Beauty	V	Lm	Us Oa Sa
Caesalpineaceae				
Cassia artemisioides (-)	Silver Cassia	S		Oa
Campanulaceae				
Lobelia trigonocaulis	Forest Lobelia	H Gc	Lm	Us Oa
Wahlenbergia gracilis	Bluebells	H		Oa
Capparaceae				
Capparus arborea	Native Caper	S/T	Lm	Us Sa
Capparis sarmentosa	Scrambling Caper	V	Lm	Us Sa

Scientific Name	Common Name	Form	Fire Retardance	Comments
Celastraceae				
Cassine australis	Red Olive Berry	S/T	Lm	Us Sa
Denhamia celastroides	Orange Boxwood	S/T	Lm	Us Sa
Denhamia pittosporoides	Orange Boxwood	S/T	Lm	Us Sa
Maytenus bilocularis	Orangebark	S/T	Lm	Us Sa
Chenopodiaceae				
Einadia hastata	Berry Salt Bush	S Gc	St	Oa
Enchylaena tomentosa	Ruby Salt Bush	S Gc	St Sl	Oa
Halosarcia indica	Samphire	S Gc	St Sl	Oa Salty soil
Sarcocornia quinqueflora	Samphire	S Gc	St Sl	Oa Salty soil
Suaeda australis	Seablite	S Gc	St Sl	Oa Salty soil
Suaeda arbusculoides	Jellybean Plant	S Gc	St Sl	Oa Salty soil
Convolulaceae				
Convolulus erubescens	Australian Bindweed	V	Lm	Oa
Dichondra repens	Kidney Weed	H Gc	Lm	Us Sa
Polymeria calycina	Swamp Bindweed	V	Lm	Oa
Cunoniaceae				
Aphanopetalum resinosum	Gum Vine	V Gc	Lm	Us Sa
Vesselowskya rubifolia (-)	Southern Marara	S/T	Lm	Us Sa
Davidsoniaceae				
Davidsonia pruriens (-)	Davidson's Plum	T	Lm	Us Sa
Dilleniaceae				
Hibbertia aspera	Rough Guinea Flower	S	Lm	Oa
Hibbertia dentata	Toothed Guinea Flower	V	Lm	Us Oa Sa
Hibbertia linearis	Showy Guinea Flower	S	Lm	Oa
Hibbertia obtusifolia	Hoary Guinea Flower	S	Lm	Oa
Hibertia stricta	Erect Guinea Flower	S	Lm	Oa
Hibbertia scandens	Twining Guinea Flower	V	Lm	Us Oa Sa
Elaeocarpaceae				
Elaeocarpus reticulatus	Blueberry Ash	S/T	Lm	Us Oa Sa
Epacridaceae				
Trochocarpa laurina	Tree Heath	S/T	Lm	Us Sa
Escalloniaceae				
Abrophyllum ornans	Native Hydrangea	S	Lm	Us Sa
Polyosma cunninghamii	Featherwood	S/T	Lm	Us Sa
Euphorbiaceae				
Acalypha capillipes	Small-leaf Acalypha	S	Lm	Us Sa
Acalypha eremorum	Native Acalypha	S	Lm	Us Sa
Acalypha nemorum	Southern Acalypha	S	Lm	Us Sa
Actephila lindleyi	Actephila	S/T	Lm	Us Sa
Alchornea ilicifolia	Native Holly	S	Lm	Us Sa
Breynia oblongifolia	Native Coffee Bush	S	Lm	Us Oa Sa
Cleistanthes cunninghamii	Cleistanthes	S/T	Lm	Us Sa

Scientific Name	Common Name	Form	Fire Retardance	Comments
Croton phlebaliodes	Narrow-leaf Croton	S	Lm	Us Sa
Croton verreauxii	Native Cascarilla	S/T	Lm	Us Sa
Macaranga tanarius	Macaranga	S/T	Lm	Us
Mallotus claoxyloides	Scrub Odour Bush	S/T	Lm	Us Sa
Omalanthus nutans (*O. populifolius*)	Qld Bleeding Heart	S/T	Lm	Us Sa
Eupomatiaceae				
Eupomatia bennettii	Small Bolwarra	S	Lm	Us Sa
Eupomatia laurina	Bolwarra	S	Lm	Us Sa
Escaloneaceae				
Cuttsia viburnea (-)	Native Elderberry	T	Lm	Us Sa
Fabaceae				
Abrus precatorius	Crabs Eye Vine	V	Lm	Us Oa Sa
Aotus lanigera	Pointed Aotis	S	Lm	Oa Sa
Glycine clandestina	Twining Glycine	V	Lm	Oa
Glycine tomentella	Wooly Glycine	V	Lm	Oa
Hardenbergia violacea	False Sarsparilla	V	Lm	Oa
Hovea linearis	Common Hovea	S	Lm	Oa
Hovea longipes (-)	Brush Hovea	S	Lm	Sa
Indigophora australis	Australian Indigo	S	Lm	Oa
Kennedia rubicunda	Dusky Coral Pea	V	Lm	Oa
Oxylobium ilicifolium (-)	Holly Pea	S	Lm	Oa
Oxylobium scandens (-)	Netted Shaggy Pea	S	Lm	Oa
Pultenaea retusa	Blunt-leaf Bush Pea	S	Lm	Oa
Pultenaea spinulosa (-)	Prickly Pea	S	Lm	Oa
Pultenaea villosa (-)	Hairy Bush Pea	S	Lm	Oa
Swainsona galegifolia	Darling Pea	S	Lm	Oa
Goodeniaceae				
Goodenia rotundifolia	Star Goodenia	H Gc	Lm	Oa
Scaevola aemula (-)	Fairy Fan Flower	H Gc	Lm	Oa
Scaevola albida (-)	Fan Flower	H	Lm	Oa
Scaevola calendulacea (-)	Scented Fan Flower	H Gc	Lm	Oa
Scaevola ramosissima (-)	A Fan Flower	H Gc	Lm	Oa
Lamiaceae				
Ajuga australis	Southern Bugle	H	Lm	Oa
Plectranthus argentatus (-)	Silver Native Coleus	H	Lm	Us Sa
Plectranthus graveolens	Native Coleus	H	Lm	Us Sa
Plectranthus parviflorus	Cockspur Flower	H	Lm	Us Sa
Prostanthera ovalifolia	Oval-leaf Mint Bush	S	Lm	Os Sa
Lauraceae				
Cryptocarya laevigata	Glossy Laurel	S/T	Lm	Us Sa
Cryptocarya meisneriana	Thick-leaf Laurel	S/T	Lm	Us Sa
Leeaceae				
Leea indica (-)	Bandicoot Berry	S	Lm	Us Sa

Scientific Name	Common Name	Form	Fire Retardance	Comments
Lythraceae				
Lagerstroemia archeriana (-)	Native Crepe Myrtle	S/T	Lm	Us Oa Sa De
Malvaceae				
Pavonia hastata(-)	Pavonia	S	Lm	Oa Sa
Hibiscus heterophyllus	Native Rosella	S/T	Lm	Us Sa
Hibiscus geranioides (-)		S	Lm	Oa
Melastomaceae				
Melastoma affine	Pink Lasiandra	S	Lm	Us Sa Oa
Meliaceae				
Turraea pubescens (brownii)	Native Witch-Hazel	S/T	Lm	Us Sa
Menispermaceae				
Pleogyne australis	Pleogyne	V	Lm	Us Sa
Mimosaceae				
Acacia complanata	Flat-stem Wattle	S		Oa Pf
Acacia hubbardiana	Yellow Prickly Moses	S		Oa Pf
Acacia irrorata	Blue Skin	S		Oa Pf
Acacia myrtifolia	Myrtle Wattle	S		Oa Pf
Acacia suaveolens	Sweet Wattle	S		Oa Pf
Acacia ulicifolia	Prickly Moses	S		Oa Pf
Archidendron lovelliae (-)	Baconwood	S/T	Lm	Us Sa
Monimiaceae				
Wilkiea huegeliana	Tetra Beech	S/T	Lm	Us Sa
Wilkiea macrophylla	Large-leaf Wilkiea	S/T	Lm	Us Sa
Myoporaceae				
Eremophila debilis	Winter Apple	S Gc	Lm	Os
Myoporum boninense (*M. ellipticum*)	Boobialla	S Gc	Lm	Os
Myoporum montanum	Mountain Boobialla	S	Lm	Os
Myrsinaceae				
Aegiceras corniculatum	Milky Mangrove	S/T	Lm St	Oa Coastal
Rapanea howittiana	Scrub Muttonwood	S/T	Lm	Us Sa
Rapanea subsessilis	Red Muttonwood	S/T	Lm	Us Sa
Myrtaceae				
Archirhodomyrtus beckleri (-)	Rose Myrtle	S	Lm	Us Sa
Austromyrtus fragrantissima (-)	Sweet Myrtle	T	Lm	Us Sa
Austromyrtus hillii	Scaly Myrtle	S/T	Lm	Us Sa
Austromyrtus inophloia	Thread-bark Myrtle	S/T	Lm	Us Sa
Austromyrtus aff. lasioclada (-)	Velvet Myrtle	T	Lm	Us Sa
Austromyrtus metrosideros (-)		S	Lm	Us Sa
Pilidiostigma glabrum (-)	Plum Myrtle	S	Lm	Us Sa
Pilidiostigma rhytisperma	Small-leaf Plum Myrtle	S	Lm	Us Sa
Rhodamnia acuminata (-)	Cooloola Ironwood	S	Lm	Us Sa

Scientific Name	Common Name	Form	Fire Retardance	Comments
Rhodamnia dumicola	Rib-fruit Malletwood	S/T	Lm	Us Sa
Rhodamnia maidenii (-)	Smooth Scrub Turpentine	S	Lm	Us Sa
Rhodomyrtus psidioides	Native Guava	S	Lm	Us Sa
Syzygium wilsoni (-)	Powder-puff Lilly Pilly	S	Lm	Us Sa
Nyctaginaceae				
Pisonia aculeata	Native Bougainvillia	V	Lm	Us Sa
Oleaceae				
Jasminum simplicifolium	Slender Jasmine	V	Lm	Us Sa
Notelaea ovata	Netted Mock Olive	S	Lm	Us Sa
Notelaea venosa	Veined Mock Olive	S	Lm	Us Sa
Passifloraceae				
Passiflora aurantia	Red Passion Flower	V	Lm	Us Oa Sa
Passiflora herbertiana	Yellow Passion Flower	V	Lm	Us Oa Sa
Peperomiaceae				
Peperomia blanda (leptostachya)	Native Peperomia	H	Lm	Us Sa
Peperomia tetraphylla	Native Peperomia	H	Lm	Us Sa
Pittosporaceae				
Citriobatus linearis	Black-fruit Thornbush	S	Lm	Us Sa
Citriobatus paucifloris	Orange Thornbush	S	Lm	Us Sa
Pittosporum revolutum	Brisbane Laurel	S	Lm	Us/Wb Sa/Oa
Proteaceae				
Banksia oblongifolia	Dwarf Banksia	S		Oa Pf
Banksia robur	Swamp Banksia	S		Oa Pf
Grevillea leiophylla	Wallum Grevillea	S		Oa Pf
Grevillea 'Robyn Gordon'	G. 'Robyn Gordon'	S		Oa Pf
Grevillea sericea	Pink Spider Flower	S		Oa Pf
Grevillea 'Shirley Howie'	G. 'Shirley Howie'	S		Oa Pf
Grevillea 'Superb'	G. 'Superb'	S		Oa Pf
Hakea florulenta	Hakea	S		Oa Pf
Hakea purpurea	Purple Hakea	S		Oa Pf
Lambertia formosa (-)	Mountain Devil	S		Oa Pf
Lomatia silaifolia	Crinkle Bush	S		Oa Pf
Stenocarpus angusifolia (-)		S		Oa Pf
Rhizophoraceae				
Bruguiera gymnorrhiza	Orange Mangrove	S/T	Lm St	Oa Coastal
Ceriops tagal	Yellow Mangrove	S/T	Lm St	Oa Coastal
Rhizophora stylosa	Stilted Mangrove	S/T	Lm St	Oa Coastal
Rosaceae				
Rubus parvifolia	Pink Raspberry	S	Lm	Oa
Rubus rosifolius	Native Raspberry	S	Lm	Us Sa
Rubiaceae				
Canthium coprosmoides	Coast Canthium	S/T	Lm	Us Oa Sa
Canthium lamprophyllum	Large-leaf Canthium	S/T	Lm	Us Sa

Scientific Name	Common Name	Form	Fire Retardance	Comments
Canthium microphyllum	Small-leaf Canthium	S	Lm	Us Sa
Ixora bleckleri	Brown Coffeewood	S/T	Lm	Us Sa
Morinda acutifolia	Veiny Morinda	V	Lm	Us Sa
Morinda jasminoides	Sweet Morinda	V	Lm	Us Sa
Pavetta australiensis	Pavetta	S	Lm	Us Sa
Psychotria daphnoides	Smooth Psychotria	S	Lm	Us Sa
Psychotria loniceroides	Hairy Psychotria	S	Lm	Us Sa
Psychotria simmondsiana	Small Psychotria	S	Lm	Us Sa
Randia benthamiana	Native Gardenia	S	Lm	Us Sa
Randia chartacea	Narrow-leaf Gardenia	S	Lm	Us Sa
Rutaceae				
Clausena brevistyla (-)	Clausena	S	Lm	Us Sa
Microcitrus australasica (-)	Finger Lime	S	Lm	Us Sa
Murraya ovatifoliolata (-)	Native Murraya	S/T	Lm	Us Sa
Phebalium woombye (-)	Phebalium	S	Lm	Oa
Sambucaceae				
Sambucus australasica	Yellow Elderberry	S	Lm	Us Sa
Sapindaceae				
Alectryon coriaceus (-)	Beach Bird's Eye	S/T	Lm	Wb Oa
Arytera microphylla (-)	Dwarf Coogara	S	Lm	Us Sa
Cupaniopsis newmanii (-)	Long-leaf Tuckeroo	T	Lm	Us Sa Oa
Cupaniopsis serrata	Rusty Tuckeroo	S/T	Lm	Us Sa Oa
Cupaniopsis wadsworthii (-)	Dwarf Tuckeroo	S	Lm	Us Sa
Harpullia alata (-)	Wing-leaf Tulip	S	Lm	Us Sa
Mischocarpus sundaicus	Red Pear-fruit	T	Lm	Us Sa
Sapotaceae				
Planchonella myrsinoides	Yellow Plumwood	S/T	Lm	Us Sa
Scrophulariaceae				
Artenema fimbriatum	Koala bells	H	Lm	Oa
Tetragoniaceae				
Tetragonia tetragonioides	Native Spinach	H Gc	St Sc	Oa
Solanaceae				
Duboisia myoporoides	Corkwood	S/T	Lm	Us Sa
Solanum aviculare	Kangaroo Apple	S	Lm	Us Sa Oa
Solanum densevestitum (-)	Furry Nightshade	S	Lm	Us Sa
Solanum stelligerum (-)	Star Nightshade	S	Lm	Us Sa
Sterculiaceae				
Brachychiton bidwillii	Little Kurrajong	S	Lm	Us Sa Oa
Commersonia fraserii	Scrub Kurrajong	S	Lm	Us Sa Oa
Symplocaceae				
Symplocus baeuerlenii (-)	Shrubby Hazelwood	S	Lm	Us Sa

Scientific Name	Common Name	Form	Fire Retardance	Comments
Thymeliaceae				
Phaleria clerodendron (-)		S	Lm	Us Sa
Phaleria chermsideana	Scrub Daphne	S/T	Lm	Us Sa
Pimelea linifolia	Slender Rice Flower	S		Oa
Wikstroemia indica	Tie Bush	S	Lm	Us Oa Sa
Tiliaceae				
Corchorus cunninghamii	Corchorus	S	Lm	Us Sa
Urticaceae				
Elatostema reticulatum	Rainforest Spinach	H	Lm	Us Sa
Elatostema stipitatum (-)	Small Soft Nettle	H	Lm	Us Sa
Pipturus argenteus	Native Mulberry	S/T	Lm	Us Sa
Verbenaceae				
Callicarpa pedunculata	Velvet-leaf	S	Lm	Us Sa
Clerodendrum floribundum	Lolly Bush	S/T	Lm	Us Oa Sa
Clerodendrum tomentosum	Hairy Lolly Bush	S/T	Lm	Us Oa Sa
Phyla nodiflora (-)	Condamine Couch	H Gc	Lm	Oa
Vitex ovata (-)	Vitex	S Gc	Lm	Oa
Violaceae				
Viola betonicifolia	Purple Violet	H	Lm	Us Sa
Viola hederacea	Native Violet	H	Lm	Us Sa
Vitaceae				
Cayratia acris	Hairy Water Vine	V	Lm	Us Sa
Cayratia clematidea	Slender Grape	V	Lm	Us Oa Sa
Cayratia eurynema	Soft Water Vine	V	Lm	Us Sa
Cissus opaca	Small-leaf Water Vine	V	Lm	Us Oa Sa
Winteraceae				
Tasmannia insipida	Pepper Bush	S	Lm	Us Sa
PTERIDOPHYTES				
Aspleniaceae				
Asplenium attenuatum	A Spleenwort	F	Lm	Sa
Asplenium australasicum	Crow's Nest Fern	eF	Lm	Sa
Osmondaceae				
Todea barbara	King Fern	tF	Lm	Us Sa
Polypodiaceae				
Drynaria rigidula	Basket Fern	eF	Lm	Sa
Phymatodes scandens	Scented Climbing Fern	tF	Lm	Sa
Platycerium bifurcatum	Elkhorn	eF	Lm	Sa
Platycerium superbum	Staghorn	F	Lm	Sa
Pyrrosia confluens	Felt Fern	eF	Lm	Sa
Pyrrosia rupestris	Rock Felt Fern	eF	Lm	Sa

Fire-Retardant Plants for Medium Gardens

The following plants can be used in addition to the list of plants for small gardens.

Scientific Name	Common Name	Form	Fire Retardance	Comments
MONOCOTYLEDONS				
Arecaceae				
Archontophoenix cunninghamii	Picabeen Palm	P	Lm	Ad
Calamus muelleri	Lawyer Cane Vine	P	Lm	Ad
Livistona australis	Cabbage Palm	P	Lm	Ad
Smilacaceae				
Ripogonum fawcettianum	Small Supplejack	V	Lm	Sa
Smilax australis	Barb-wire Vine	V	Lm	Sa Oa
DICOTYLEDONS				
Akaniaceae				
Akania lucens	Turnipwood	T	Lm	Us
Alangiaceae				
Alangium villosum polyosmoides	Muskwood	T	Lm	Us
Alangium villosum tomentosum	Muskwood	T	Lm	Us
Annonaceae				
Polyalthia nitidissima	Canary Beech	T	Lm	Us
Apocynaceae				
Alstonia constricta	Quinine Tree	T	Lm	Us
Melodinus acutiflorus	Merangarra	V	Lm	Sa
Melodinus australis	Southern Melodinus	V	Lm	Sa
Araliaceae				
Cephalaralia cephalobotrys	Climbing Panax	V	Lm	Sa
Bignoniaceae				
Pandorea pandorana	Wonga Vine	V	Lm	Oa Sa
Caesalpiniaceae				
Barklya syringifolia	Crown of Gold Tree	T	Lm	Us Sa Oa
Cassia tomentella (-)	Velvet Bean	S/T	Lm	Us Oa
Cunoniaceae				
Callicoma serratifolia (-)	White Alder	S/T	Lm	Us
Dilleniaceae				
Tecomanthe hillii (-)	Fraser Island Climber	V	Lm	Sa

Scientific Name	Common Name	Form	Fire Retardance	Comments
Ebenaceae				
Diospyros australis	Black Plum	T	Lm	Us/Wb
Diospyros geminata	Scaly Ebony	T	Lm	Us/Wb
Diospyros mabacea (-)	Red-fruited Ebony	T	Lm	Us
Escalloniaceae				
Anopterus macleayanus (-)	Queensland Laurel	T	Lm	Us
Polyalthia nitidissima	Canary Beech	T	Lm	Us
Euphorbiaceae				
Claoxylon australe	Brittlewood	S/T	Lm	Us
Croton achronychioides	Thick-leaved Croton	S/T	Lm	Us
Croton insularis	Queensland Cascarilla	S/T	Lm	Us
Croton stigmatosus	White Croton	T	Lm	Us
Fabaceae				
Erythrina vespertilio	Bat's Wing Coral Tree	T	Lm	Ad De
Hernandiaceae				
Hernandia bivalvis	Cudgerie	T	Lm	Wb
Lauraceae				
Cryptocarya bidwilli	Yellow Laurel	T	Lm	Wb
Cryptocarya meisneriana	Thick-leaf Laurel	T	Lm	Wb
Cryptocarya sclerophylla	Boonah Laurel	T	Lm	Wb
Cryptocarya triplinervis	Brown Laurel	T	Lm	Wb
Cryptocarya triplinervis var. pubens	Hairy Brown Laurel	T	Lm	Wb
Meliaceae				
Owenia venosa	Crow's Apple	T	Lm	Us/Wb
Synoum glandulosum	Scentless Rosewood	S/T	Lm	Us
Turraea pubescens (*T. brownii*)	Native Witch-Hazel	T	Lm	Us
Menispermaceae				
Stephania japonica var. discolor	Tape Vine	V	Lm	Sa Oa
Mimosaceae				
Acacia aulacocarpa	Hickory Wattle	T	Lm	Wb/Pf
Acacia implexa	Light Wood	T	Lm	Wb/Pf
Acacia melanoxylon	Blackwood	T	Lm	Wb/Pf
Acacia cincinnata	Wattle	S/T	Lm	Wb/Pf
Pararchidendron pruinosum	Snowwood	T	Lm	Us/Wb
Moraceae				
Ficus coronata	Creek Sandpaper Fig	T	Lm	Us/Wb
Ficus fraseri	A Sandpaper Fig	T	Lm	Us/Wb
Ficus opposita	A Sandpaper Fig	T	Lm	Us/Wb
Streblus brunonianus (*S. pendulinus*)	Whalebone Tree	T	Lm	Us/Wb

Scientific Name	Common Name	Form	Fire Retardance	Comments
Myoporaceae				
Myoporum acuminatum	Coast Boobialla	S/T	Lm	Wb Oa
Myrsinaceae				
Rapanea variabilis	Muttonwood	T	Lm	Us
Myrtaceae				
Acmena smithii (small varieties)	Creek Lilly Pilly	T	Lm	Us/Wb
Decaspermum humile	Silky Myrtle	S/T	Lm	Us
Metrosideros queenslandica (-)	Pink Myrtle	T	Lm	Us
Rhodamnia rubescens	Brown Malletwood	T	Lm	Us/Wb
Syzygium hodgkinsonia (-)	Smooth-bark Rose Apple	T	Lm	Us
Oleaceae				
Notelaea johnsonii	Veinless Mock Olive	S/T	Lm	Us
Notelaea longifolia	Large Mock Olive	S/T	Lm	Us/Wb
Notelaea microcarpa	Velvet Mock Olive	S/T	Lm	Us/Wb
Pittosporaceae				
Hymenosporum flavum	Native Frangipani	T	Lm	Us Ad
Pittosporum undulatum	Mock Orange	T	Lm	Us/Wb
Proteaceae				
Buckinghamia celsissima (-)	Ivory Curl Flower	T	Lm	Wb
Grevillea helmsiae (-)		T	Lm	Us Pf
Hicksbeachia pinnatifolia (-)	Red Boppel Nut	T	Lm	Us Ad Pf
Lomatia arborescens (-)	Tree Lomatia	S/T	Lm	Us Pf
Macadamia integrifolia	Queensland Nut	T	Lm	Wb
Macadamia ternifolia	Maroochy Nut	T	Lm	Wb
Macadamia tetraphylla	Rough Shell Bush Nut	T	Lm	Wb
Triunia youngiana	Spice Bush	T	Lm	Us
Rubiaceae				
Coelospermum paniculatum	Coelospermum	V	Lm	Sa
Hodgkinsonia ovatiflora	Golden Ash	T	Lm	Us/Wb
Ranunculaceae				
Clematis glycinoides	Headache Vine	V	Lm	Sa
Rutaceae				
Acronychia imperforata	Coast Aspen	S/T	Lm	Us/Wb
Acronychia pauciflora	Soft Acronychia	S/T	Lm	Us
Microcitrus australis	Round Lime	S	Lm	Us
Sapindaceae				
Alectryon connatus	Alectryon	T	Lm	Wb Slow at first
Alectryon subcinereus	Wild Quince	T	Lm	Wb
Alectryon subdentalus	Holly-leaf Bird's Eye	T	Lm	Wb
Alectryon tomentosus	Hairy Bird's Eye	T	Lm	Wb
Arytera distylis	Twin-leaf Coogera	T	Lm	Wb

Scientific Name	Common Name	Form	Fire Retardance	Comments
Arytera divaricata	Rose Tamarind	T	Lm	Wb
Arytera foveolata	Pitted Coogera	T	Lm	Wb
Cupaniopsis parvifolia	Small-leaf Tuckeroo	T	Lm	Wb
Cupaniopsis shirleyana (-)	Wedge-leaf Tuckeroo	T	Lm	Us/Wb
Cupaniopsis tomentella (-)	Boonah Tuckeroo	T	Lm	Wb
Elattostachys nervosa	Beetroot	T	Lm	Us/Wb
Elattostachys xylocarpa	White Tamarind	T	Lm	Wb
Guioa semiglauca	Wild Quince	T	Lm	Wb
Lepiderema pulchella (-)	Fine-leaf Tuckeroo	T	Lm	Wb
Mischocarpus australis	Red Pear-fruit	T	Lm	Wb
Toechima tenax	Scrub Teak	T	Lm	Wb
Sapotaceae				
Planchonella chartacea	Thin-leaf Plum	S/T	Lm	Us Sa
Planchonella cotinifolia	Small-leaf Plum	S/T	Lm	Us Sa
Simaroubaceae				
Guilfoylia monostylis	Native Plum	T	Lm	Us
Symplocaceae				
Symplocus thwaitesii	Buff Hazelwood	S/T	Lm	Us
PTERIDOPHYTES				
Cyatheaceae				
Cyathea australis	Rough Tree Fern	tF	Lm	Us
Cyathea cooperi	CommonTree Fern	tF	Lm	Us
Cyathea leichhardtiana	Prickly Tree Fern	tF	Lm	Us

Fire-Retardant Plants for Large Gardens, Acreage Blocks, Parks and Farms

The following plants can be used in addition to the lists of plants for small and medium gardens.

Scientific Name	Common Name	Form	Fire Retardance	Comments
GYMNOSPERMS				
Araucariaceae				
Agathis robusta (-)	Qld Kauri	T	Lm	Pf - resin
Araucaria bidwillii (-)	Bunya Pine	T	Lm	Pf - resin
Araucaria cunninghamii	Hoop Pine	T	Lm	Pf - resin
Podocarpaceae				
Podocarpus elatus	Brown or Plum Pine	T	Lm	Pf - resin
MONOCOTYLEDONS				
Arecaceae (Palmae)				
Calamus muelleri	Lawyer Cane Vine	V	Lm	Sa Oa
Flagellariaceae				
Flagellaria indica	Supplejack	V	Lm	Sa
Pandanaceae				
Freycinettia excelsa	Climbing Pandanus	V	Lm	Sa
Freycinettia scandens	Climbing Pandanus	V	Lm	Sa
Smilacaceae				
Ripogonum album	White Supplejack	V	Lm	Sa
Ripogonum brevifolium	Supplejack	V	Lm	Sa
Ripogonum discolor	Prickly Supplejack	V	Lm	Sa
Ripogonum elseyanum	Hairy Supplejack	V	Lm	Sa
DICOTYLEDONS				
Anacardiaceae				
Euroschinus falcata	Ribbonwood	T	Lm	Wb
Rhodosphaera rhodanthema	Deep Yellowwood	T	Lm	Wb
Annonaceae				
Melodorum leichhardtii (*Rauwenhoffia l.*)	Zig-Zag Vine	V	Lm	Sa
Apocynaceae				
Alstonia constricta	Quinine Tree	T	Lm	Wb
Melodinus acutiflorus	Merangarra	V	Lm	Sa
Melodinus australis	Southern Melodinus	V	Lm	Sa
Parsonsia eucalyptophylla	Gargaloo	V	Lm	Sa Oa
Parsonsia fulva	Furry Silkpod	V	Lm	Sa
Parsonsia lanceolata	Northern Silkpod	V	Lm	Sa
Parsonsia latifolia	Monkey Vine	V	Lm	Sa
Parsonsia straminea	Monkey Rope	V	Lm	Sa Oa
Parsonsia velutina	Velvet Silkood	V	Lm	Sa Oa
Parsonsia ventricosa	Pointed Silkpod	V	Lm	Sa
Arecaceae				
Calamus muelleri	Lawyer Cane	V	Lm	Sa
Araliaceae				
Cephalaralia cephalobotrys	Climbing Panax	V	Lm	Sa
Polyscias elegans	Celerywood	T	Lm	Wb/Ad Oa Sa
Polyscias murrayi	Pencil Cedar	T	Lm	Ad Oa Sa
Asclepiadaceae				
Marsdenia rostrata	Common Milk Vine	V	Lm	Sa
Atherospermataceae				
Daphnandra micrantha	Socketwood	T	Lm	Wb

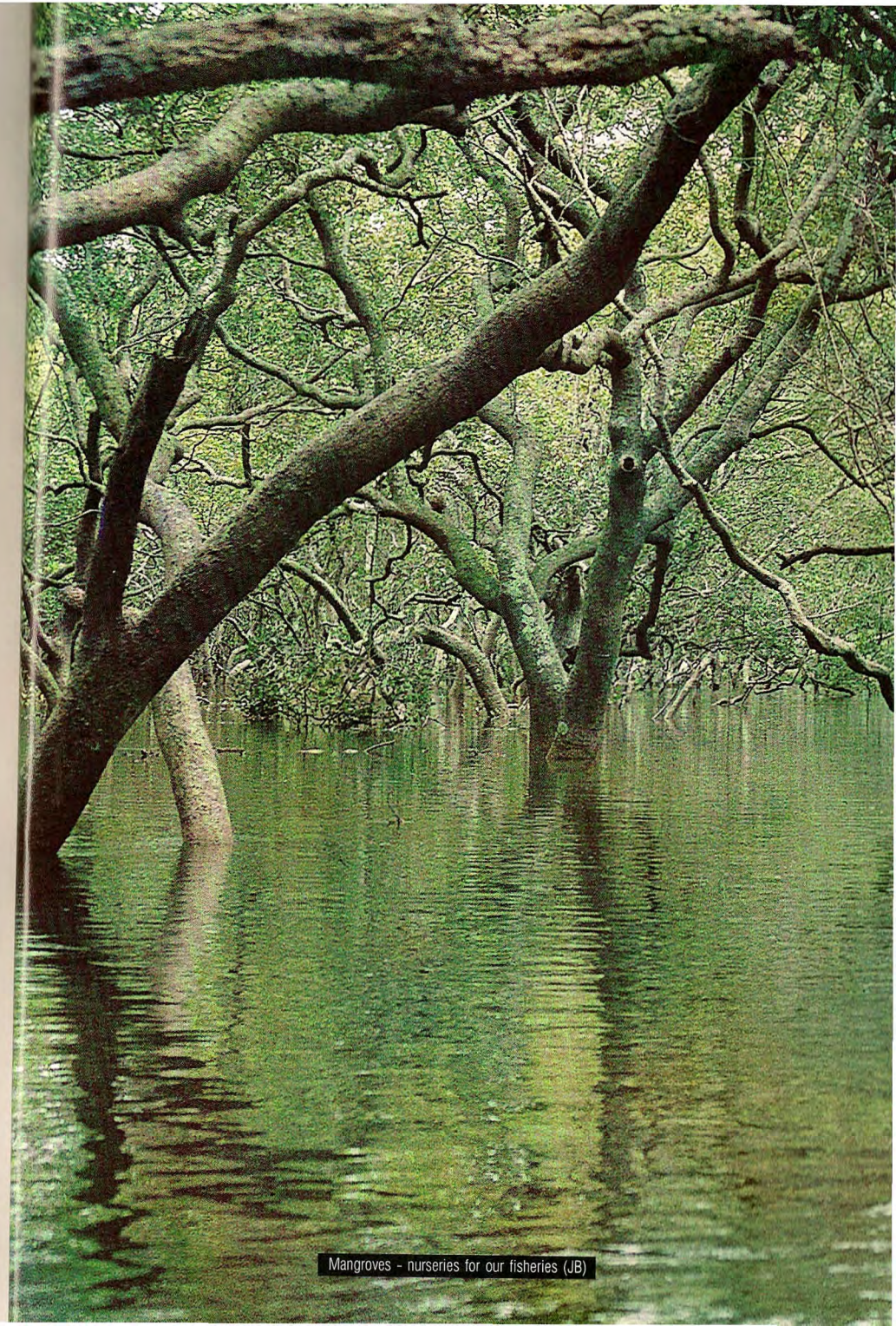
Scientific Name	Common Name	Form	Fire Retardance	Comments
Avicenniaceae				
Avicennia marina	Grey Mangrove	T	Lm St	Oa Coastal
Burseraceae				
Canarium australasicum	Carrotwood	T	Lm	Wb
Caesalpiniaceae				
Cassia marksiana (-)	Native Laburnum	T	Lm	Wb
Caesalpinia bonduc	Caesalpinia	V	Lm	Sa
Caesalpinia scortechinii	Large Prickle Vine	V	Lm	Sa
Caesalpinia subtropica	Corky Prickle Vine	V	Lm	Sa
Celastraceae				
Celastrus australis	Staff Climber	V	Lm	Sa
Celastrus subspicatus	Large Staff Vine	V	Lm	Sa
Loeseneriella barbata (*Hippocratea b.*)	Knot Vine	V	Lm	Sa
Cunoniaceae				
Caldcluvia paniculosa	Rose-leaf Marara	T	Lm	Wb
Ceratopetalum apetalum (-)	Coachwood	T	Lm	Wb
Geissois benthamii	Red Carabeen	T	Lm	Wb
Pseudoweinmannia lachnocarpa	Marara	T	Lm	Wb
Schizomeria ovata	White Birch	T	Lm	Us/Wb
Ebenaceae				
Diospyros fasciculosa	Grey Ebony	T	Lm	Wb
Diospyros pentamera	Myrtle Ebony	T	Lm	Wb
Ehretiaceae				
Cordia dichotoma (-)	Cordia	T	Lm	Wb
Ehretia acuminata	Koda	T	Lm	Ad De
Elaeocarpaceae				
Elaeocarpus eumundi	Eumundi Quandong	T	Lm	Wb
Elaeocarpus grandis	Blue Quandong	T	Lm	Wb
Elaeocarpus kirtonii	White Quandong	T	Lm	Wb
Elaeocarpus obovatus	Hard Quandong	T	Lm	Wb
Sloanea australis	Maiden's Blush	T	Lm	Wb
Sloanea woollsii	Yellow Carabeen	T	Lm	Wb
Escalloniaceae				
Quintinia verdonii	Grey Possumwood	T	Lm	Wb
Euphorbiaceae				
Austrobuxus swainii (-)	Pink Cherry	T	Lm	Wb
Baloghia inophylla (*B. lucida*)	Scrub Bloodwood	T	Lm	Wb
Bridelia exaltata	Scrub Ironbark	T	Lm	Wb
Bridelia leichhardtii	Leichhardt's Ironbark	T	Lm	Wb
Claoxylon australe	Brittlewood	T	Lm	Wb

Scientific Name	Common Name	Form	Fire Retardance	Comments
Dissiliaria baloghioides	Lancewood	T	Lm	Wb
Drypetes australasica	Yellow Tulip	T	Lm	Wb
Exocoecaria agallocha	Milky Mangrove	T	Lm St	Ad Coastal
Exocoecaria dallachyana	Scrub Poison Tree	T	Lm	Wb
Glochidion ferdinandi	Cheese Tree	T	Lm	Wb
Glochidion sumatranum	Buttonwood	T	Lm	Wb
Mallotus discolor	Yellow Kamala	T	Lm	Wb
Mallotus philippensis	Red Kamala	T	Lm	Wb
Fabaceae				
Austrosteenisia blackii	Blood Vine	V	Lm	Sa Oa
Castanospermum australe	Black Bean	T	Lm	Wb
Derris involuta	Native Derris	V	Lm	Sa
Erythrina sp. Lacey's Creek	Corkwood	T	Lm	Ad De
Erythrina vespertilio	Batswing Coral Tree	T	Lm	Ad De
Mucuna gigantea	Burny Bean	V	Lm	Sa
Flacourtiaceae				
Scolopia braunii	Flintwood	T	Lm	Wb
Flindersiaceae				
Flindersia australis	Crows Ash	T	Lm	Wb
Flindersia bennettiana	Bennett's Ash	T	Lm	Wb
Flindersia collina	Leopard Ash	T	Lm	Wb
Flindersia schottiana	Cudgerie or Bumpy Ash	T	Lm	Wb
Flindersia xanthoxyla	Yellowwood	T	Lm	Wb
Icacinaceae				
Citronella moorei	Churnwood	T	Lm	Wb
Pennantia cunninghamii	Brown Beech	T	Lm	Wb
Lauraceae				
Cryptocarya erythroxylon	Pigeonberry Ash	T	Lm	Wb
Cryptocarya hypospodia	Rib-fruit Pepperberry	T	Lm	Wb
Cryptocarya macdonaldii	Cooloola Laurel	T	Lm	Wb
Cryptocarya microneura	Murrogun	T	Lm	Wb
Cryptocarya obovata	Pepperberry Tree	T	Lm	Wb
Endiandra muelleri	Mueller's Walnut	T	Lm	Wb
Endiandra pubens	Hairy Walnut	T	Lm	Wb
Endiandra sieberi (-)	Hard Corkwood	T	Lm	Wb
Neolitsea australiensis	Grey Bolly Gum	T	Lm	Wb
Neolitsea dealbata	White Bolly Gum	T	Lm	Us/Wb
Malvaceae				
Hibiscus tiliaceus	Cotton Tree	T	Lm	Wb
Lagunaria patersonii (-)	Norfolk Is Hibiscus	T	Lm	Wb
Meliaceae				
Anthocarapa nitidula (*Pseudocarapa nitidula*)	Incense Cedar	T	Lm	Wb
Dysoxylum fraseranum	Rosewood	T	Lm	Wb

Scientific Name	Common Name	Form	Fire Retardance	Comments
Dysoxylum mollissimum ssp. molle (D. muelleri)	Red Bean	T	Lm	Wb
Dysoxylum rufum	Hairy Rosewood	T	Lm	Wb
Melia azedarach	White Cedar	T	Lm	Wb/Ad De
Owenia cepiodora	Onion Cedar	T	Lm	Wb
Toona australis	Red Cedar	T	Lm	Wb/Ad De
Menispermaceae				
Legnephora moorei	Wild Grape	V	Lm	Sa
Sarcopetalum harveyanum	Pearl Vine	V	Lm	Sa
Stephania aculeata	Prickly Snake Vine	V	Lm	Sa
Tinospora smilacina	Snake Vine	V	Lm	Sa
Tinospora tinosporoides	Arrow-head Vine	V	Lm	Sa
Mimosaceae				
Acacia aulacocarpa var. aulacocarpa	Hickory Wattle	T	Lm	Wb Pf
Acacia bakeri	Marblewood	T	Lm	Wb Pf
Acacia harpophylla (-)	Brigalow Wattle	T	Lm	Wb
Acacia melanoxylon	Blackwood	T	Lm	Wb Pf
Archidendron grandiflorum	Lace Flower	T	Lm	Wb
Monimiaceae				
Palmeria scandens	Anchor Vine	V	Lm	Sa
Moraceae				
Ficus macrophylla	Moreton Bay Fig	T	Lm	Wb
Ficus obliqua	Small-leafed Fig	T	Lm	Wb
Ficus platypoda	Rock Fig	T	Lm	Wb
Ficus superba var. henneana	Deciduous Fig	T	Lm	Ad De
Ficus virens var. sublanceolata	White Fig	T	Lm	Wb
Ficus watkinsiana	Nipple Fig	T	Lm	Wb
Maclura cochinchinensis (Cudrania c.)	Cockspur Thorn	V	Lm	Oa Sa
Malaisia scandens	Burny Vine	V	Lm	Sa
Myrtaceae				
Acmena hemilampra	Blush Satinash	V	Lm	Wb
Acmena ingens (A. brachyandra)	Red Apple	V	Lm	Wb
Acmena smithii	Creek Lilly Pilly	T	Lm	Wb
Lophostemon confertus	Brush Box	T	Lm	Wb
Syncarpia glomulifera	Turpentine	T	Lm	Wb
Syzygium australe	Scrub Cherry	T	Lm	Wb
Syzygium corynanthum	Sour cherry	T	Lm	Wb
Syzygium crebrinerve	Purple Cherry	T	Lm	Wb
Syzygium moorei (-)	Durobby	T	Lm	Wb
Nyctaginaceae				
Pisonia aculeata	Native Bougainvillea	V	Lm	Sa

Scientific Name	Common Name	Form	Fire Retardance	Comments
Oleaceae				
Olea paniculata	Native Olive	T	Lm	Wb
Piperaceae				
Piper novae-hollandiae	Native Pepper Vine	V	Lm	Sa
Pittosporaceae				
Pittosporum rhombifolium	Hollywood	T	Lm	Wb
Proteaceae				
Floydia praealta	Ball Nut	T	Lm	Wb
Grevillea hilliana (-)	Hill's Silky Oak	T	Lm	Pf
Grevillea robusta	Silky Oak	T	Lm	Pf
Helicia glabriflora	Smooth Helicia	T	Lm	Pf
Macadamia integrifolia	Queensland Nut	T	Lm	Wb
Macadamia ternifolia	Maroochy Nut	T	Lm	Wb
Macadamia tetraphylla (-)	Rough-shell Bush Nut	T	Lm	Wb
Oriocallis pinnata (-)	Pink Silky Oak	T	Lm	Pf
Oriocallis wickhamii (-) *(Alloxylon flammeum)*	Satin Oak	T	Lm	Pf
Stenocarpus salignus (-)	Scrub Beefwood	T	Lm	Pf
Stenocarpus sinuatus	Wheel of Fire Tree	T	Lm	Wb
Ranunculaceae				
Clematis aristata	Old Man's Beard	V	Lm	Sa
Rhamnaceae				
Alphitonia excelsa	Red Ash	T	Lm	Wb
Alphitonia petrei	Pink Ash	T	Lm	Wb
Emmenosperma alphitonioides	Yellow Ash	T	Lm	Wb
Rosaceae				
Rubus moluccanus	MoluccaBramble	V	Lm	Sa
Rutaceae				
Acronychia oblongifolia	White Lilly Pilly	S/T	Lm	Wb
Acronychia suberosa	Corky Acronychia	T	Lm	Wb
Sarcomelicope simplicifolia	Bauerella	T	Lm	Wb
Sapindaceae				
Alectryon reticulatus	Alectryon	T	Lm	Wb
Arytera lautererana	Corduroy Tamarind	T	Lm	Wb
Atalaya multiflora	Broad-leaf Whitewood	T	Lm	Wb
Atalaya salicifolia (*A. virens*)	Scrub Whitewood	T	Lm	Wb
Castanospora aphanandi (-)	Brown Tamarind	T	Lm	Wb
Cupaniopsis anacardioides	Tuckeroo	T	Lm	Wb
Cupaniopsis flagelliformis (-)	Brown Tuckeroo	S/T	Lm	Wb
Diploglottis campbellii (-)	Small-leaf Tamarind	T	Lm	Wb
Diploglottis cunninghamii	Native Tamarind	T	Lm	Wb/Ad
Harpullia hillii	Blunt-leaf Tulip	T	Lm	Wb
Harpullia pendula	Tulipwood	T	Lm	Wb

Scientific Name	Common Name	Form	Fire Retardance	Comments
Jagera pseudorhus	Foam Bark Tree	T	Lm	Wb
Mischocarpus anodontus	Veiny Pear-fruit	T	Lm	Wb
Mischocarpus pyriformis	Yellow Pear-fruit	T	Lm	Wb
Rhysotoechia bifoliolata (-)	Twin-leaf Tuckeroo	T	Lm	Wb
Sarcopteryx stipata	Corduroy	T	Lm	Wb
Toechima dasyrrhache	Blunt-leaf Steelwood	T	Lm	Wb
Sapotaceae				
Amorphospermum antilogum	Brown Pearwood	T	Lm	Wb
Amorphospermum whitei (-)	Rusty Plum	T	Lm	Wb
Planchonella australis	Black Apple	T	Lm	Wb
Planchonella laurifolia (-)	Blush Coondoo	T	Lm	Wb
Planchonella pohlmaniana	Yellow Boxwood	T	Lm	Wb
Simaroubaceae				
Ailanthus triphysa	White Siris	T	Lm	Wb
Guilfoylia monostylis	Native Plum	T	Lm	Wb
Siphonodontaceae				
Siphonodon australis	Ivorywood	T	Lm	Wb
Sterculiaceae				
Argyrodendron actinophyllum	Black Booyong	T	Lm	Wb
Argyrodendron trifoliolatum	Brown Tulip Oak	T	Lm	Wb
Brachychiton acerifolius	Flame Tree	T	Lm	Ad De
Brachychiton discolor	Lace Bark	T	Lm	Ad De
Brachychiton populneus	Kurrajong	T	Lm	Wb
Brachychiton rupestris (-)	Qld Bottletree	T	Lm	Ad De
Brachychiton sp. (-)	Ormeau Bottletree	T	Lm	Ad De
Commersonia bartramia	Brown Kurrajong	T	Lm	Us/Wb
Sterculia quadrifida	Peanut Tree	T	Lm	Ad De
Symplocaceae				
Symplocos stawelli	White Hazelwood	T	Lm	Wb
Ulmaceae				
Aphananthe philippinensis	Native Elm	T	Lm	Wb
Celtis paniculata	Investigator Tree	T	Lm	Wb
Urticaceae				
Dendrocnide excelsa	Giant Stinging Tree	T	Lm	Wb
Dendrocnide photinophylla	Mulberry Stinger	T	Lm	Wb
Verbenaceae				
Gmelina leichhardtii	White Beech	T	Lm	Wb
Premna lignum-vitae	Lignum-vitae	T	Lm	Wb
Vitaceae				
Cissus antarctica	Kangaroo Vine	V	Lm	Wb
Cissus hypoglauca	Five-leaf Watervine	V	Lm	Wb
Cissus sterculiifolia	Long-leaf Watervine	V	Lm	Wb
Tetrastigma nitens	Shining Grape	V	Lm	Wb

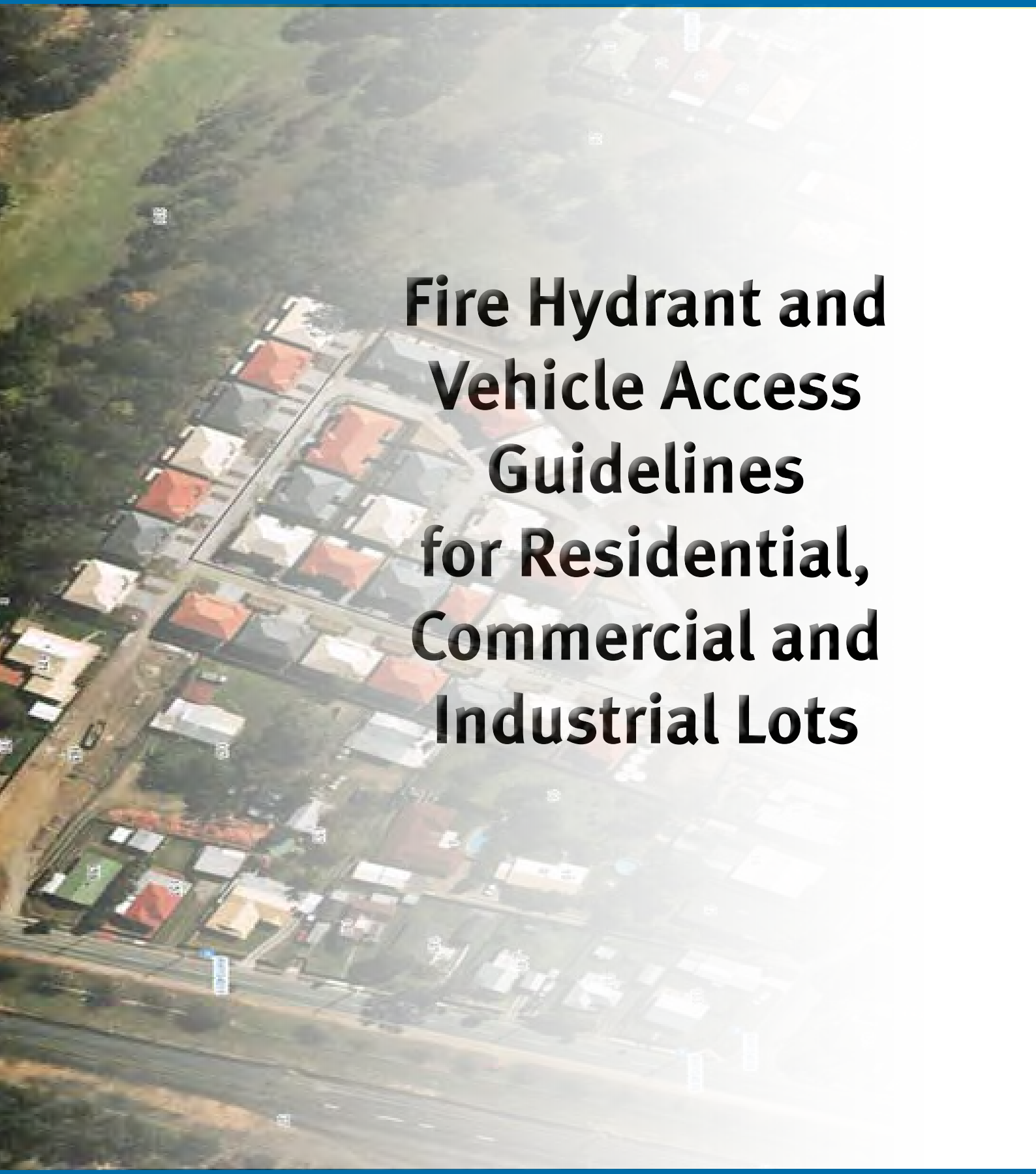


Mangroves - nurseries for our fisheries (JB)

Appendix 2

Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots

Source: Queensland Fire and Emergency Services (2015)



Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots

Queensland Government

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Glossary of Terms

In this document, the terms are limited to the meanings described below.

Building:	A building is a fixed structure that is wholly or partly enclosed by walls or is roofed.
Structure:	For this document refer to definition of a Building.
Fire Appliance:	A vehicle used to combat a fire. A typical fire appliance (a pumper) is approximately 2.5m wide, 7.7m long and it is typically used in urban residential areas. Further specifications of fire appliances and larger appliances are available from the QFES if design solutions are required for specific situations.
Hydrant:	An assembly installed on a branch from a water pipeline, which provides a valved outlet to permit a supply of water to be taken from the pipeline for fire fighting. These include above and below ground hydrants.
QFES:	Queensland Fire and Emergency Services.
Material Change of Use:	As per the *Sustainable Planning Act 2009*
Reconfiguration of a Lot:	As per the *Sustainable Planning Act 2009*
Reticulated Water Supply:	Is a permanent infrastructure provided to deliver treated water to lots from an Urban Utility Authority through a system of pipes, mains, control valves etc. for household or industrial use. It will supply uninterrupted water at a positive pressure for fire fighting purposes.
Road or Carriageway:	Construction which is specifically designed for all vehicle travel (may or may not include a sealed top surface layer).
A Constructed Road:	For the purpose of defining widths, includes the part of the road reserve set aside for traffic and also includes roll-over kerbs but does not include the remaining part of the road reserve.
Trafficable Width:	Refers to that width of the constructed road that is unimpeded by encroachments such as street furniture or landscaping, and is available for free movement of fire appliances.

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Public Safety Business Agency working in partnership with the Queensland Fire and Emergency Services.

1. Scope

For applications seeking development approval for material change of use or reconfiguring a lot for the purpose of building, where streets and common access ways are proposed regardless of building classification.

Where reticulated hydrant systems and vehicle access are not currently required under the *Sustainable Planning Act 2009* (SPA), the *Building Act 1975* or Building Code of Australia (BCA) the measures in this document should be adopted.

Australian Standard (AS) 2419.1 2005 Appendix B is a minimum standard of design and performance for the State of Queensland. In a Local Government Authority where a local Water Authority specifies a design and performance criteria above the requirements of AS 2419.1 2005 Appendix B, the Local Water Authority requirements will be adopted.

For the installed reticulated hydrant systems the minimum water flow rate and pressure is to be 10 L/S @ 200 Kpa as per AS 2419.1 2005 Table 2.2. In a Local Government Authority where a local Water Authority specifies a flow rate and pressure above the requirements of AS 2419.1 2005 Table 2.2, the Local Water Authority requirements will be adopted.

For fire appliance access, a minimum width and height clearance for roadways is required. Constructed roads must comply with Government legislation such as the "Road Planning and Design Manual".

2. Introduction

The Queensland Fire and Emergency Services (QFES) is the primary provider of fire and rescue services throughout Queensland. The QFES is responsible for community safety, the protection of people, property and the environment from fire and chemical incidents and, in conjunction with other agencies, the rescue of people trapped in vehicles, buildings and other emergency situations.

The loss of life and property damage by fire in residential, commercial and industrial premises is a major concern to the QFES, and for this reason, these lot reconfigurations need to be designed to provide ready access for fire appliances, whilst providing a fire fighting water supply from a Hydrant System.

Water supply and access requirements for material change of use or reconfiguring a lot within this document are a planning tool and advice for building and developer applicants, it is not the intent of this document for land development applications to be referred to the QFES. They outline fire safety requirements to enable the QFES to efficiently manage fire incidents.

This document reflects Queensland Government policy of promoting sustainable development that achieves economic, social and environmental objectives, including safety. The provisions are flexible allowing planners and designers to economically achieve safety objectives without compromising aesthetics or amenity.

3. Where Do These Guidelines Apply?

These guidelines apply to all material change of use or reconfiguration of a lot that will include streets and common access ways within a common private title in areas serviced by reticulated water within Queensland, for residential buildings, both attached and detached commercial or industrial buildings that are not covered in other legislation or planning provisions.

For example, this would apply to planned townships or reconfigurations regardless of current fire service intervention.

4. Water Supply Specification

Installed reticulated hydrant systems are to be located on roadways or access ways for all material change of use and reconfigured lots for fire fighting purposes as per AS 2419.1 2005 Appendix B that provides a minimum standard for hydrant intervals. In a Local Government Authority where a Local Water Authority specifies a design and performance criteria above the requirements of AS 2419.1 2005 Appendix B, the Local Water Authority requirements will be adopted.

For the installed reticulated hydrant systems the minimum water flow rate and pressure is to be 10 L/S @ 200 Kpa as per AS 2419.1 2005 Table 2.2. In a Local Government Authority where a local Water Authority specifies a flow rate and pressure above the requirements of AS 2419.1 2005 Table 2.2, the Local Water Authority requirements will be adopted.

4.1 Hydrant Provision:

Hydrant Provision	
Expectation	**Acceptable Outcomes**
Where reticulated water is available, operable hydrants are to be provided.	Hydrants above or below ground should be provided and maintained to the minimum required performance standard as per AS 2419.1 2005.

Rationale:

Firefighters use water as a prime extinguishing medium for structure fires. Reticulated water mains have hydrants placed at regular intervals to enable firefighters to connect into the reticulated system. The water is pressurised by pumps in the fire appliance and delivered via hoses to the fire.

Figure 1 illustrates hydrant locations on reticulated water mains.



Figure 1 – Reticulated Hydrant System



Figure 2 – Use of Hydrant System

4.2 Hydrant Markers

Hydrant Markers	
Expectation	**Acceptable Outcomes**
Hydrants are suitably identified so that firefighters can locate them at all hours.	Blue cats eyes are preferred for sealed roads. Marker posts at the fence line should be used to identify hydrants where there is an unsealed road as road (HR) or path (HP) hydrants. The Figures 3-6 are examples of marker locations.

Rationale:

Firefighters need to quickly locate water supplies in emergencies. Hydrant indicators need to be visually identifiable from both directions by the approaching fire appliance crews and must identify the location of the hydrant.



Figure 3 – Hydrant Markers

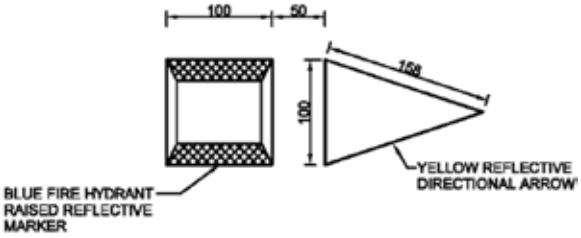
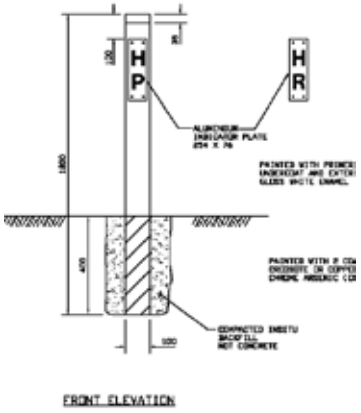


Figure 5 – Marker/directional arrow spacing detail



INDICATOR PLATES

- *254 x 76 aluminium indicator plate.*
- *Fix top and bottom with galvanised clouts.*
- *HP indicates hydrant located in footpath.*
- *HR indicate hyrdant located in road carriageway.*

Figure 4 – Hydrant marker posts

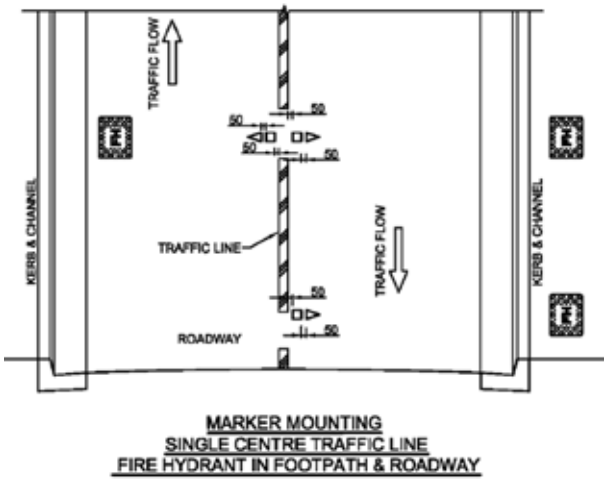


Figure 6 – Location of cats eyes on a sealed roadway

4.3 Hydrant Location

Hydrant Location	
Expectation	**Acceptable Outcomes**
Hydrants are located in positions that will enable firefighters to access water safely, effectively and efficiently.	**Residential Streets and Accessways** Above or below ground fire hydrants should be provided at not more than 120m intervals along residential streets and at each street intersection. Above ground fire hydrants may be single outlet. **Commercial and Industrial Streets and Accessways** Within streets serving commercial properties such as factories, warehouses and offices, above or below ground fire hydrants should be provided at not more than 90 m intervals and at each street intersection. Above ground fire hydrants should have dual valved outlets.

Rationale:

Upon arriving at a structure fire, firefighters site the fire appliance with considerations to safety, access to the fire, other responding appliances and accessible water supply for fire fighting purposes. Firefighters have an expectation that fire hydrants will be located on reticulated water systems no more than 120 metres apart as per AS 2419.1 2005, Appendix B. QFES equipment, procedures and the training of personnel is based on this preferred standard of fire hydrant placement and associated access requirements.



Note: Hydrants should be located at each intersection. With this in mind hydrant interval distances should not exceed 120 metres.

Figure 6 – Hydrant System design to minimum standards

5. Vehicle Access Requirements

Fire service vehicular access is to enable the service to intervene to fight the fire, assist with evacuation and stop the spread of fire to another building.

A minimum roadway clearance of 3.5m wide by 4.8m high is required for a fire appliance. Constructed roads must comply with Government legislation as specified in the "Road Planning and Design Manual".

5.1 Road Width and Height

Road Width and Height	
Performance Outcomes	**QFES Acceptable Outcomes**
Roads are wide enough for fire appliances to gain access to a safe working area close to dwellings and water supplies whether or not on-street parking spaces are occupied.	Constructed roads must be as specified in the "Road Planning and Design Manual".

Rationale:

Fire appliances often used in residential areas are typically 2.5 m wide and 7.7m long. The road width must allow room for safe passage of a fire appliance with additional margins for human error and safe clearances.

5.2 Road Construction

Road Construction	
Performance Outcomes	**QFES Acceptable Outcomes**
Roads must be constructed to facilitate the safe passage of a laden fire appliance in all weather conditions.	Roads must be constructed to a standard so that they are accessible in all weather conditions and capable of accommodating a vehicle of 15 tonnes for the trafficable road width as specified in the "Road Planning and Design Manual".

Rationale:

Roads must be trafficable in all weather conditions. Most appliances in residential areas currently weigh less than 13 tonnes.

5.3 Road Grades

Road Grades	
Performance Outcomes	**QFES Acceptable Outcomes**
Grades of roads must facilitate the safe passage of fire appliances.	The average grades, dips, and exit angles must be addressed as specified in the “Road Planning and Design Manual”.

Rationale:

Steep slopes affect the free movement of appliances and hinder safe fire fighting. Severe short dips may limit access due to the overhang of the body from the wheels.

5.4 Turning Bays

Turning Bays	
Performance Outcomes	**QFES Acceptable Outcomes**
Provision is made for fire appliances to turn at the end of dead end roads.	Constructed roads more than 60m in length from the nearest intersection must have a turning circle with a minimum radius of 8m (including roll-over kerbs if they are provided). Other solutions using T or Y heads of specified dimensions are also appropriate. See figure 2 in the “Road Planning and Design Manual” .

Rationale:

It is dangerous for emergency vehicles to be required to reverse along roads for excessive distances in urban areas. Turning is normally carried out after the incident is under control when emergency movement is not required. Even then, large appliances reversing in residential areas create safety concerns. Fire appliances occasionally need to seek an alternative route necessitating a 180 degree turn in emergency conditions. Using a three point turn, fire appliances require a turning circle radius of 8m to turn safely. Alternative designs using specified T or Y heads are also appropriate. This area needs to be clear of obstructions.

Turning Examples

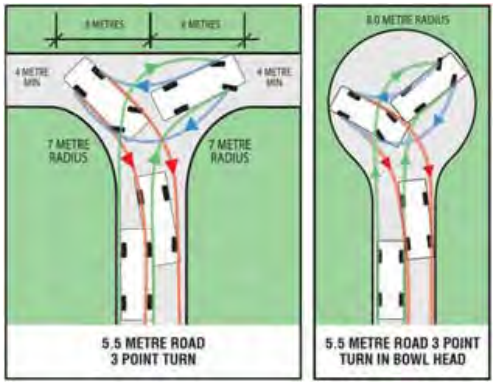


Figure 7 – Vehicle Turning Provisions

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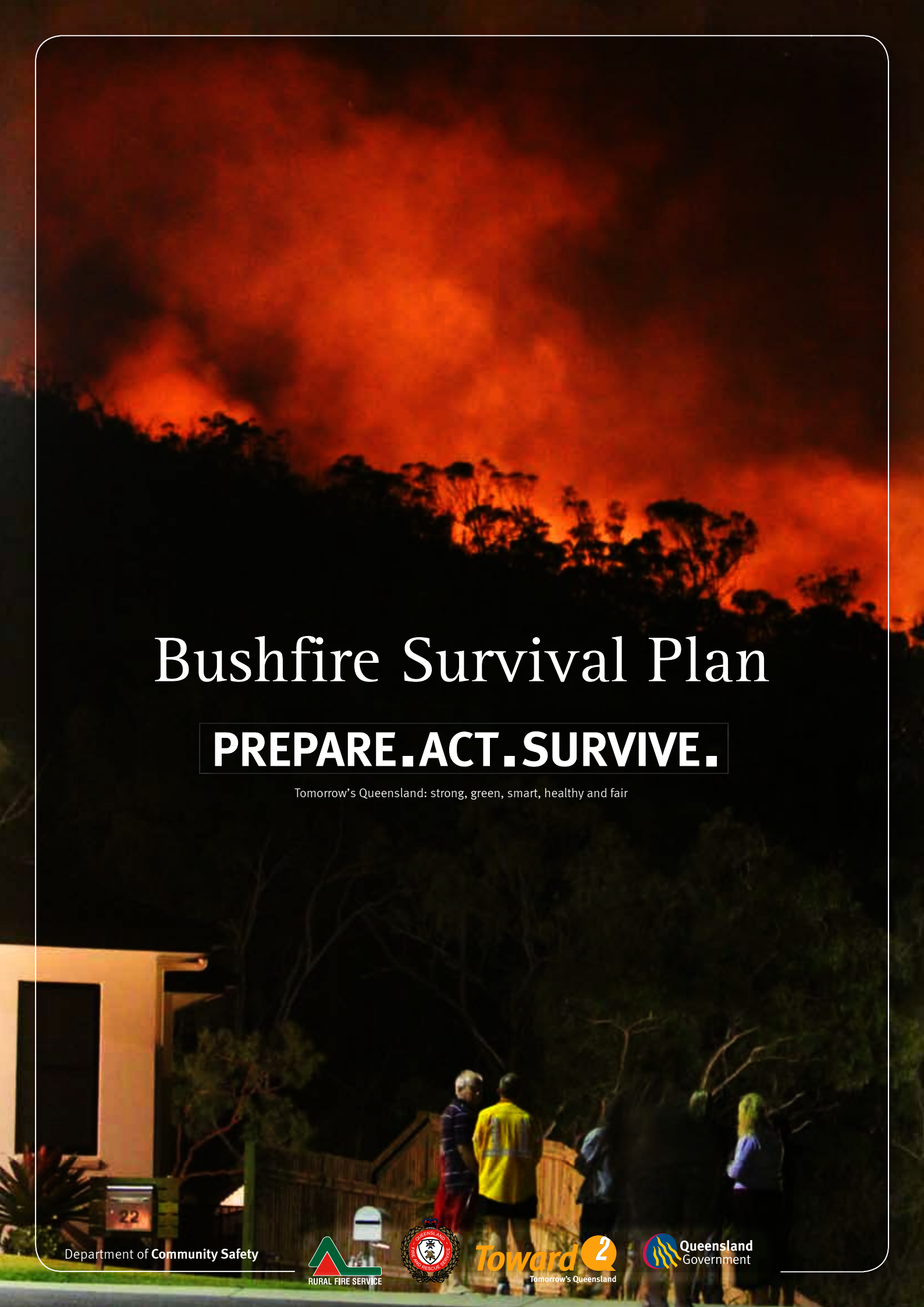
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Version 11/2015

Appendix 3

Bushfire Survival Plan Guideline / Template

Source: Queensland Fire and Emergency Services



Bushfire Survival Plan

PREPARE.ACT.SURVIVE.

Tomorrow's Queensland: strong, green, smart, healthy and fair

Department of **Community Safety**

RURAL FIRE SERVICE

Toward 2 Tomorrow's Queensland

Queensland Government



You must PREPARE. ACT. SURVIVE.

Your main priority is to ensure that you and your family are safe. During a bushfire you and your family's survival and safety depend on your preparations, and the decisions you make.

The lives of you and your family are more important than any building.

Whether your plan is to leave early or stay, you must prepare your home and property to increase their level of resilience and your chances of survival.

Bushfires in Queensland

The fire season in Queensland normally commences in the far north of the state in July and progresses through to southern areas as spring approaches. The fire season can extend through to February in southern and far south-western Queensland. These time frames can vary significantly from year to year, depending on the fuel loads, long-term climate and short-term weather conditions in each area.

There are four key considerations for dealing with bushfire:

- The safety of you and your family.
- The resilience of your property.
- The protection of irreplaceable valuables and important documents.
- The maintenance of adequate levels of insurance.

This document will provide you with information about the things you need to consider to prepare yourself and your home for the bushfire season, and how to make your own personal Bushfire Survival Plan.

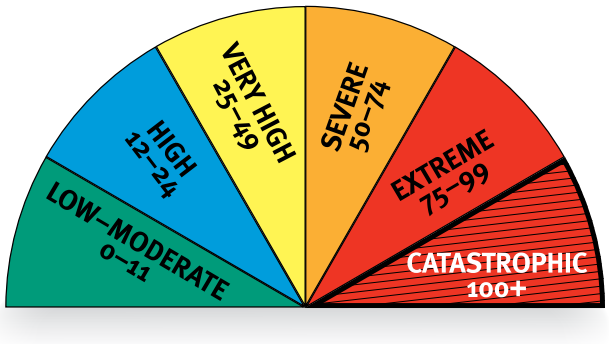
It is your responsibility to prepare yourself, your family and your home for the threat of bushfire.

Understand your risk

The first step in planning to survive a bushfire is to understand your own level of risk. By understanding your own level of risk you will be able to make informed decisions that are right for you and your family. Included with this Bushfire Survival Plan is a self-assessment tool that will enable you to assess the risk level associated with your property. If you are still unsure of your level of risk or require assistance contact your local fire station for more information. To book a Bushfire Safety presentation call 1300 369 003.

Fire danger ratings

The increased frequency of extreme bushfires in Australia in the last 10 years and the recent experience of the Black Saturday fires in Victoria have encouraged fire services throughout Australia to introduce new levels of Fire Danger Rating (FDR). A lift-out chart of the FDR system is contained within this document. Display it in a prominent place in your home or keep it with your Bushfire Survival Plan.



Catastrophic fire danger rating

The highest level is catastrophic. On a day of catastrophic FDR leaving early is the only option to ensure your survival. You must relocate early to a safer location, hours or the day before a fire occurs. Under no circumstances will it be safe to stay with your property.

Extreme fire danger rating

The second highest level is extreme. Should a fire occur in your area on a day of extreme FDR leaving early will always be the only option. Staying can only be considered for homes that:

- Have been designed and constructed specifically to address the threat of bushfire.
- Have been maintained to those levels and are currently well prepared.
- Can be actively defended by people with the skills, knowledge and confidence to implement a well-rehearsed Bushfire Survival Plan.

On days of catastrophic or extreme FDR:

- Fires are likely to be uncontrollable, unpredictable and very fast moving with highly aggressive flames extending high above tree tops and buildings.
- Thousands of embers may be violently blown into and around homes causing other fires to start rapidly and spread quickly up to 20 kilometres ahead of the main fire.
- Fire can threaten suddenly, without warning, and the heat and wind will make it difficult to see, hear and breathe as the fire approaches.
- People in the path of such fires will almost certainly be injured or die and a significant number of homes and businesses will be destroyed or damaged.
- Even well-prepared and constructed homes will not be safe.
- Expect power, water and phone networks to fail as severe winds bring down trees, power lines and blow roofs off buildings well ahead of the fire.

It is vital that you understand on these days that your survival will depend solely on how well you have prepared and how decisively you act.

Leaving late can be
a deadly option.
If you are in any doubt,
make the decision to
LEAVE EARLY.

What will you do?

At all times you need to **PREPARE.ACT.SURVIVE.**

When the fire danger rating is **'catastrophic'** leaving early is the safest option.

When the fire danger rating is lower than **'catastrophic'**, one of the most important decisions you need to make is whether you will leave early or stay with a well prepared property. This decision is the basis of your Bushfire Survival Plan.

The following questions may help you make the right decision for whether you will leave early or stay:

- Do you need to consider family members who are young, elderly or infirm?
- Are you physically and emotionally prepared to stay with your property?
- Do you have the knowledge, skills, and confidence to stay with your property?
- Is your home adequately constructed, maintained and prepared to withstand the impact of a fire? In other words, is your home prepared to withstand the impact of a bushfire?
- Do you have well-maintained resources and equipment to fight fire, and do you know how to use them?
- Do you have appropriate protective clothing to fight a fire?
- What will you do if a rapid onset fire leaves you with no time to leave? Where will you shelter?



Leave early

If you plan to leave early then you must leave your home well before a bushfire threatens and travelling by road becomes hazardous. Your leave early preparations include:

Step 1: Preparation – your property should be well prepared for bushfire even if you intend to leave early.

Step 2: What you will do – make your Bushfire Survival Plan in accordance with your decision to leave early.

Step 3: Make a contingency plan – the FDR, the preparedness of your home, a change in household circumstances, a change in your physical preparedness or unexpected visitors are some things that may require you to reconsider your Bushfire Survival Plan.

Planning to stay

Planning is critical to successfully staying with your home may involve the risk of psychological trauma, injury or death.

Step 1: Preparation – your property must be able to withstand the impact of bushfire and well prepared to shelter you and your family.

Step 2: What you will do – make your Bushfire Survival Plan in accordance with your decision to stay.

Step 3: Make a contingency plan – the FDR, the preparedness of your home, a change in household circumstances, a change in your physical preparedness or unexpected visitors are some things that may require you to reconsider your Bushfire Survival Plan.

In making your decision to stay, here are a few things you need to consider.

- Is your property able to withstand the impact of a bushfire?
- Are you physically and emotionally prepared to stay with your property?
- Do you have well-maintained resources and equipment and do you know how to use them?
- Do you have appropriate protective clothing?
- Will your bushfire survival plan need to be different for weekdays, weekends or if someone is sick at home?
- Do you have a contingency plan?

Preparing your Bushfire Survival Plan

Preparation is the key to survival. Being involved in a fire will be one of the most traumatic experiences of your life.

- Prepare yourself – you need to be both mentally and physically prepared to carry out your Bushfire Survival Plan.
- Prepare your Bushfire Survival Plan.
- Prepare your Bushfire Survival Kit.
- Prepare your Bushfire Relocation Kit.
- Prepare your property.

When writing your plan you need to consider:

- Have you made the right choice: to leave early or stay?
- Have you discussed your choice with your family, friends and neighbours?
- Who will take charge and lead other family members by carefully communicating the various tasks set out in the plan?
- If you have chosen to stay what will you do to protect your property when the fire arrives?
- What will you put in your Bushfire Survival Kit and where will you store it?
- Do your friends, family and neighbours know the details of your plan?

- What will you do if your Bushfire Survival Plan fails?
- Do you have an alternative option or contingency plan if your plan fails?
- Do you have a Neighbourhood Safer Place (NSP) you can go to as a last resort? For more information on NSPs see www.ruralfire.qld.gov.au.
- Is it safe to travel there?

If your decision is to leave early, you must include the following information or action items in your Bushfire Survival Plan:

- Monitor media outlets – radio, TV, mobile phone and internet for bushfire alerts.
- When will you leave?
- What will be your trigger for action?
- Will your plan be different for weekdays, weekends, or if someone is at home sick or injured?
- What will you take with you (Relocation Kit)?
- Where will you and your family go when you leave early?
- What route will you take to get there?
- What will you do with your pets?
- What will you do if there are consecutive or multiple **'catastrophic'** or extreme fire danger days?
- Will you go into work on days when the FDR is in the upper levels?
- Will you send your children to school when the FDR is in the upper levels?
- Will all members of your household leave early?
- What will you do to prepare your property?
- What is your contingency plan in the event that it is unsafe to leave?

If your decision is to stay you must include the following information or actions items in your Bushfire Survival Plan:

- Monitor media outlets – Radio, TV, mobile phone and internet.
- Locate your Bushfire Survival Kit.
- Put on protective clothing.
- Remain hydrated by drinking lots of water.
- Move any stock to fully grazed paddocks.
- Move cars to a safe location.
- Remove garden furniture, doormats and other items.
- Close windows and doors and shut blinds.
- Take down curtains and move furniture away from windows.
- Seal gaps under doors and window screens with wet towels.
- Place pets inside, restrain them, and provide water.
- Block downpipes and fill gutters with water.
- Wet down the sides of buildings facing the approaching fire front.
- Wet down decks and verandas.
- Wet down fine fuels close to buildings.
- Turn on sprinklers in garden before bushfire arrives.
- Fill containers with water; bath, sinks, buckets, wheelie bins, etc.
- Have ladders ready for roof space access (inside) and against roof (outside).
- Have generator or petrol pump ready.
- Start checking and patrolling for embers outside.

When the fire front arrives:

- Take all fire fighting equipment inside such as hoses and pumps as they may melt during the fire.
- Go inside and shelter away from the fire front.
- Patrol the inside of your home, including the ceiling space, for embers or small fires that may start.
- Drinks lots of water.
- Check family and pets.

After the fire front has passed:

- Wear protective equipment.
- Go outside once it is safe.
- Check for small spot fires and burning embers:
  - inside roof space
  - under floor boards
  - under house space
  - on veranda and decks

- on window ledges and door sills
- in roof lines and gutters
- garden beds and mulch
- wood heaps
- outdoor furniture
- sheds and carports

- Continue to drink lots of water.
- Stay at your property until the surrounding area is clear of fire.
- Monitor media outlets – radio, TV, mobile phone and internet.

You need to be both mentally and physically prepared to carry out your Bushfire Survival Plan

There may be other actions to include, depending on your individual property and the level of bushfire risk you are exposed to.

Include the whole family in creating your Bushfire Survival Plan. You and your family should be aware of the actions you will take at the various FDR levels and it is important to ensure this is incorporated into your Bushfire Survival Plan. The FDR for your area can be found on roadside signs and by visiting www.ruralfire.qld.gov.au and following the FDR link.

It is important that your Bushfire Survival Plan does not rely solely on receiving an alert.

Once you have completed your Bushfire Survival Plan, practise it regularly to ensure everyone involved knows exactly what to do in the event of a fire.

Preparing your Bushfire Survival Kit

It is essential that you have a Bushfire Survival Kit if your choice is to stay with your property. This kit will ensure you and your family have the important equipment you need to stay. For a comprehensive list of equipment needed in a Bushfire Survival Kit see page 14.

Preparing your Bushfire Relocation Kit

It is equally important to have a relocation kit if your choice is to leave early. This kit will ensure you and your family have important items and equipment required to relocate for the time needed. For a comprehensive list of items and equipment needed in a Bushfire Relocation Kit see page 15.

Making a contingency plan

No matter whether your decision is to leave early, well before a bush fire threatens or to stay you should still have a contingency plan as part of your Bushfire Survival Plan. There are many scenarios to consider, such as what you will do if a rapid onset fire starts in your local area making roads impassable or travel particularly dangerous. You should have other options if road travel is not safe.

- Is your house well prepared?
- Can it provide you with protection from radiant heat?
- Have you identified a safer location such as an NSP?

Sheltering in a well-prepared property is far safer than being out in the open or in a vehicle

Preparing your property

An unprepared property is not only at risk itself, but may also present an increased danger for your neighbours and their homes.

Planning is absolutely critical to safely staying with your home. Staying home involves the risk of psychological trauma, injury and death.

There are a number of measures you can take to prepare your home and property for bushfire. These include several preparations you must take annually prior to the bushfire season.

Your pre-season property preparations should include:

- Displaying a prominent house number.
- Ensuring there is adequate access for fire trucks to your property – 4 metres wide by 4 metres high with a turn-around area. Reduce vegetation loads along the access path.
- Mowing your grass regularly.
- Removing excess ground fuels and combustible material (long dry grass, dead leaves and branches).
- Clearing of leaves, twigs, bark and other debris from the roof and gutters.
- Purchasing and testing the effectiveness of gutter plugs.
- Trimming low-lying branches 2 metres from the ground surrounding your home.
- Enclosing open areas under your decks and floors.
- Installing fine steel wire mesh screens on all windows, doors, vents and weep holes.
- Pointing LPG cylinder relief valves away from the house.
- Conducting maintenance checks on pumps, generators and water systems.
- Checking that you have sufficient personal protective clothing and equipment.
- Relocating flammable items away from your home including woodpiles, paper, boxes, crates, hanging baskets and garden furniture.
- Sealing all gaps in external roof and wall cladding.
- Checking that the first aid kit is fully stocked.

Bushfire Alerts

If you receive an emergency warning about a bushfire or other emergency, take notice as it could save your life.

There are three types of alert messages to help you make the right safety choices:

Bushfire Advice Message – a fire has started – general information to keep you up to date.

Bushfire Watch and Act Message – represents a heightened level of threat. Conditions are changing, a fire is approaching; lives may come under threat. Take appropriate action.

Bushfire Emergency Warning – is the highest level message advising of impending danger. It may be preceded with the Standard Emergency Warning Signal (SEWS).

An Emergency Warning means there is a threat to lives and protective action is required immediately.

When a bushfire strikes

You have made your decision to **PREPARE.ACT.SURVIVE.** You have prepared your property before the fire season. You have made your Bushfire Survival Plan. You have practised your Bushfire Survival Plan.

A bushfire is threatening? What do you do?

- Know the FDR for any given day.
- Regularly check the FDR on the Rural Fire Services website at www.ruralfire.qld.gov.au.
- Monitor your media outlets for warnings on bushfire activity.
- Seek out information if you have to, and do not assume that you will receive a warning.
- Leave early or stay according to your Bushfire Survival Plan.
- Act decisively in accordance with your Bushfire Survival Plan.
- Do not adopt the ‘wait and see’ option.

Travelling in your vehicle near a bushfire

Sheltering inside a vehicle is a high-risk strategy that can result in death. Whilst sheltering inside a vehicle offers you a slightly higher chance of survival than being caught in the open, having a leave early or stay strategy is a much safer option.

You should never take a journey into areas where the fire danger is catastrophic or extreme. You should consider postponing or finding alternative routes if necessary. If you can smell or see smoke in the distance it is best to u-turn and drive away from the danger.

If you are caught in smoke or flames while on the road:

- Turn on the vehicle's headlights and hazard warning lights.
- If you need to shelter in your vehicle drive your car into a bare, clear area well away from surrounding trees, leaving lights on. Position vehicle to prevent side impact from advancing fire front.
- Close all windows and vents.
- Leave the engine running and turn off the air conditioning system.
- Cover your entire body with woollen or cotton blankets to protect from radiant heat.
- Take shelter below the window level.
- Drink water frequently and stay in the vehicle until the fire front has passed.
- Once the fire front has passed exit the vehicle to inspect the damage and ensure other passengers are safe.

Neighbourhood Safer Places

A Neighbourhood Safer Place (NSP) is a place of last resort for people during a bushfire. An NSP may form part of a back-up plan when:

- Your Bushfire Survival Plan has failed.
- Your plan was to stay but the extent of the fire means that your home cannot withstand the impact of the fire and therefore your home is not a safe place to shelter.
- The fire has escalated to an extreme or catastrophic level and relocation is the safest option.

An NSP is an identified building or open space within the community that can provide a level of protection from the immediate life-threatening effects of a bushfire. NSPs still entail some risk, both in moving to them and while sheltering in them and cannot be considered completely safe.

They are a place of *last resort* in bushfire emergencies only. The following limitations of NSPs need to be considered within your Bushfire Survival Plan:

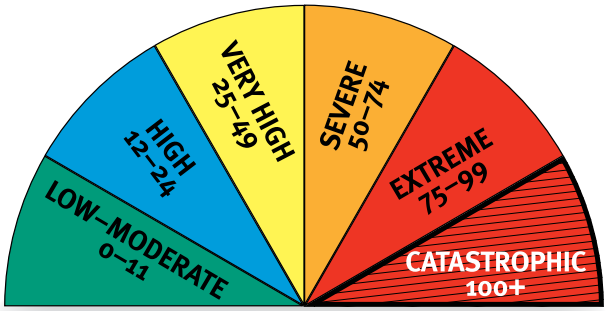
- NSPs do not cater for pets.
- Firefighters may not be present as they will be fighting the main fire front elsewhere.
- NSPs do not provide meals or amenities.
- They may not provide shelter from the elements, particularly flying embers.

If you are a person with special needs you should give consideration to what assistance you may require at an NSP.

Although QFRS cannot guarantee an immediate presence during a bushfire, every effort will be made to provide support as soon as resources are available.

If an NSP is part of your contingency plan it should not require extended travel through fire-affected areas to get there.

FIRE DANGER RATING



The Fire Danger Rating (FDR) is an early indicator of potential danger and should act as your first trigger for action. The higher the rating the greater the need for you to act.

The FDR is an assessment of the potential fire behaviour, the difficulty of suppressing a fire, and the potential impact on the community should a bushfire occur on a given day.

A Fire Danger Index (FDI) of 'low–moderate' means that fire will burn slowly and that it will be easily controlled, whereas a FDI in excess of 'catastrophic 100+' means that fire will burn so fast and so hot that it will be uncontrollable.

CATASTROPHIC 100+

A fire with a rating of **'catastrophic'** may be uncontrollable, unpredictable and fast moving. The flames will be higher than roof tops. Many people will be injured and many homes and businesses will be destroyed.

During a **'catastrophic'** fire, well-prepared and constructed homes will not be safe. Leaving is the only option for your survival.

EXTREME 75–99

A fire with an **'extreme'** rating may be uncontrollable, unpredictable and fast moving. The flames will be higher than roof tops. During an **'extreme'** fire, people will be injured and homes and businesses will be destroyed.

During an **'extreme'** fire, well-prepared and well-constructed homes may not be safe. Leaving is the only option for your survival.

SEVERE 50–74

A fire with a **'severe'** rating may be uncontrollable and move quickly, with flames that may be higher than roof tops. A **'severe'** fire may cause injuries and some homes or businesses will be destroyed.

During a fire with a **'severe'** rating, leaving is the safest option for your survival. Use your home as a place of safety only if it is well-prepared and well-constructed.

VERY HIGH 25–49

A fire with a **'very high'** danger rating is a fire that can be difficult to control with flames that may burn into the tree tops. During a fire of this type some homes and businesses may be damaged or destroyed.

During a fire with a **'very high'** danger rating, you should use your home as a place of safety only if it is well prepared and well-constructed.

HIGH 12–24

A fire with a **'high'** danger rating is a fire that can be controlled where loss of life is unlikely and damage to property will be limited.

During a fire with a **'high'** danger rating, you should know where to get more information and monitor the situation for any changes.

LOW–MODERATE 0–11

A fire with a **'low to moderate'** rating can be easily controlled and pose little/or no risk to life or property.

During a fire with a **'low to moderate'** rating, you should know where to get more information and monitor the situation for any changes.

BUSHFIRE SURVIVAL PLAN

Complete your personalised Bushfire Survival Plan lift-out.

Personal details:

Important phone numbers: **000** (Fire, Police and Ambulance)

Family: Family: Family:

Work: Friends: Friends:

School:

Important contact details – name and phone number:

Insurer: Policy Number: Phone:

Electricity: Phone:

Water: Phone:

Gas: Phone:

Phone Company: Phone:

Council: Phone:

Leave early:

List all names and contact phone numbers of household members who have decided to leave early then complete Section 1.

Names:

Phone:

Stay:

List all names and contact phone numbers of household members who have decided to stay, then complete Section 2.

Names:

Phone:

Leave early – Section 1

Pull this Bushfire Survival Plan lift-out from this document and keep in a safe place.

Leaving early will always be the safest option for you and your family. It is extremely important for you to prepare a detailed leave early plan to ensure everyone understands what to do and when. Use the boxes below to list tasks to do.

When to go – Think of different triggers that will cause you and your family to leave early. Think about what you will do if you have sent the children to school that day. Think about whether or not you will have to travel from work into the fire zone.

Where to go – Identify one or more safer locations. Consider putting on personal protective clothing before you leave home.

How to get there – What roads will you take to your destination? Have an alternative route if your first choice is impassable.

What to take – Make a list of your most valuable items (e.g. insurance papers, electronic records, photo albums, passports, birth certificates and other important documents).

Stay – Section 2

Anyone who is not going to leave early must be involved in completing this stay and defend plan to ensure they know what to do. Every stay plan will be different depending on your circumstances. Use the boxes below to list tasks to do.

Before the fire approaches – Start getting yourself and your property ready for a bushfire.

As the fire approaches – Prepare for ember attack on or near your home.
Remember to put on personal protective clothing.

As the fire front arrives – Stay safe by monitoring the fire from inside your home.

After the fire has passed – Patrol your property and extinguish any spot fires or burning embers.
You may need to keep this up for several hours.

Everyone must have a contingency plan

Have a contingency plan – what will you do if you can't activate your Bushfire Survival Plan? Remember that leaving late can lead to loss of lives.

Know where your nearest NSP is and how to get there.

ACTIVATING YOUR BUSHFIRE SURVIVAL PLAN

Once you have prepared your Bushfire Survival Plan and completed your preparations, it is absolutely essential that you regularly practise and review your plan. This will make sure you and your family are well organised in the event of a bushfire. If a bushfire threatens the health and safety of you, your family, home or property, you should follow these steps:

Step 1 – Activate your Bushfire Survival Plan

Someone must take charge and lead other family members through this emotional experience by carefully communicating the various tasks set out in the plan. Know who is going to leave early and who is going to stay.

Step 2 – Put on your personal protective clothing

Every member of the family must change into their personal protective clothing, including long pants, long-sleeve-shirt and closed-in shoes.

Step 3A – Pack your vehicle and leave early

If your plan is to leave early, pack all valuables in your vehicle (see Relocation Kit) and relocate to your designated safer location. Give yourself enough time to get you and your family to safety. Don't return home until it is safe to do so.

OR

Step3B – Implement your strategy to stay and defend

If your plan is to stay ensure you have all the items in the Bushfire Survival Kit ready to go. This can be a dangerous option and you should be physically and mentally prepared.

Step 4 – Keep informed of bushfire activity

Listen to the radio, television, internet, firefighters and/or police for information on the fire in your local area. Bushfire is dynamic and unpredictable so you need to be prepared for the unexpected. Warnings are not guaranteed so do whatever is necessary to ensure you remain safe.

BUSHFIRE SURVIVAL KIT

You need to have a Bushfire Survival Kit stored in an area of the house that is safe and easy to access. It should contain:

- protective clothing
- mop
- gloves
- torch
- hoses
- shovel
- towels
- buckets
- safety goggles
- ladder
- medications
- bottled drinking water
- fire extinguishers
- battery operated radio
- spare batteries
- smoke mask
- woollen blankets
- first aid kit
- knapsack sprayer
- protective clothing for the whole family.





















RELOCATION KIT

Write a list of all items your family will need before, during and after your relocation.
The list below shows items that you might like to put in your relocation kit.

- protective clothing for the whole family
- battery operated radio and spare batteries
- safety goggles
- mobile phone and battery charger
- medications
- wallet or purse and money
- clothing (two sets of clothes for each family member)
- identity information (passports, birth certificates)
- bottled water (enough for each relocated family member)
- family and friends' phone numbers
- items of high importance (e.g. family photos, valuables, important documents)
- blankets (natural fibres)
- children's toys









BUSHFIRE RISK SELF-ASSESSMENT CHECKLIST



This basic self-assessment checklist is designed to give you a greater understanding of the bushfire risk level relevant to your property. Information provided in this assessment will assist you when completing your Bushfire Survival Plan.

Address:

Postcode:

Property Owner/Property Name:

ACCESS/EGRESS Road/Street/Driveway	PLEASE √ APPROPRIATE BOX	
Clear of overhanging vegetation	Yes ☐	No ☐
Unrestricted gate access	Yes ☐	No ☐
Clear of overhead power lines	Yes ☐	No ☐
Able to reverse in	Yes ☐	No ☐
Turning/passing areas	Yes ☐	No ☐
Heavy vehicle access on cattle grid/bridge	Yes ☐	No ☐
Alternative way out	Yes ☐	No ☐
Two wheel drive access	Yes ☐	No ☐
STRUCTURE/S		
Exterior walls – non-combustible	Yes ☐	No ☐
Roof ridge capping sealed	Yes ☐	No ☐
Eaves enclosed	Yes ☐	No ☐
Roofing gutters and valleys clear of leaf litter and fine fuels	Yes ☐	No ☐
Underfloor enclosed	Yes ☐	No ☐
Vents screened	Yes ☐	No ☐
Windows – non-combustible finishing	Yes ☐	No ☐
Deck/veranda non-combustible	Yes ☐	No ☐
WATER SUPPLY		
Reticulated water supply	Yes ☐	No ☐
Tank supply with QFRS access – 50mm male camlock fitting so fire figthers can use water if needed	Yes ☐	No ☐
QFRS accessible external open water supply (dam/pool)	Yes ☐	No ☐
Firefighting pump and hose connected to water supply	Yes ☐	No ☐

Other considerations

There are a range of other things to be considered regardless of your decision to leave early or stay:

- Firefighting equipment such as pumps, hoses and sprinkler systems should be tested regularly and maintained in maximum operational working condition.
- Firefighters may need access to your property during a bushfire so it is in your best interests to allow enough space for fire trucks (4 metres wide by 4 metres high).
- Your pets, livestock and other animals require proper care and attention during fires. Consider food, medication, transportation and sleeping arrangements for your animals.

Myths versus Reality

Myths	Reality
There will always be a fire truck available to fight a bushfire threatening my home.	Firefighters may be required to fight many fronts of a large fire. Fire trucks and firefighters are finite resources so it is important they are deployed in an appropriate manner to best manage the fire.
I know the back streets in town like the back of my hand so it is OK for me to leave at the last minute.	If your decision in your Bushfire Survival Plan is to leave early, then you should leave well before the fire front reaches your property. Irrespective of your local area knowledge you must stick to your plan and leave early. Leaving late can be fatal.
Someone from an emergency service will knock on my door when it is time to leave.	Emergency services personnel may not be available to alert the community by door-knocking and encouraging you to leave. You need to monitor the bushfire alerts by listening to the radio, watching TV or checking the rural fire website. You need to be ready to leave early if your life or the people in your care are at risk.
My house will not burn down because there is more than 50 metres between my home and nearby bushland.	Most houses which burn down during bushfires have been attacked by flying embers. Under certain conditions embers can cause ignitions up to 20kms in front of the main fire. A combination of your level of preparation and your home's construction will determine the survivability of your home.
I only have to clean my gutters and mow my lawns to prepare my property for bushfire.	Fire requires fuel, heat and oxygen to occur. This means that flames or embers do not necessarily rely solely on your gutters and lawns for fuel. They might utilise overhanging trees, woodpiles, old building materials under the deck or chemicals in the garden shed to sustain them. Take the time to properly prepare your whole property, which includes yourself, your house and your land.

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