

# BUSHFIRE MANAGEMENT PLAN



**AMENDED IN RED**

By: Owen Haslam

Date: 13/12/18



Lots 6 on RP193185 and Lot 9 on SP203507

**Mountain Ridge Road, South MacLean**

Client Reference: 005.09.17



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**PLANS AND DOCUMENTS**  
referred to in the PDA  
**DEVELOPMENT APPROVAL**

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**DOCUMENT CONTROL****Bushfire Management Plan**

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Rev 0	8.09.2017	First Draft		AH	AH
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Rev 5	23.04.2018	Final Report	Reponse to further further details request	AH	AH

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## 1.0 Introduction

This report has been commissioned by Mountain Ridge Pty Ltd in order to support a Development Application for the subdivision of Lot 6 on RP193185 and Lot 9 on SP203507 into 650 Lots; and also in compliance with the Building Code of Australia (BCA), in respect of future residential buildings on each of the Lots.

Logan City Council (LCC) bushfire hazard overlay mapping classifies part of the Subject Lots and adjacent Lots 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 BPA has two main implications:

1. It requires the production of a Bushfire Management Plan which complies with the Planning Scheme (in this case Part 8.2.3 (Bushfire Overlay Code) of the Logan Planning Scheme 2015).
2. It invokes the Building Code of Australia (BCA), requiring compliance with its bushfire related function performance objectives and with AS3959-2009 *Construction of buildings in bushfire prone areas*.

This Bushfire Management Plan 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 AS3959-2009. It is the implementation of all these protection measures in combination, that will demonstrate the viability and conformance of the proposed development in the development application process.

## 2.0 Site and Development Description

### 2.1 Property Description

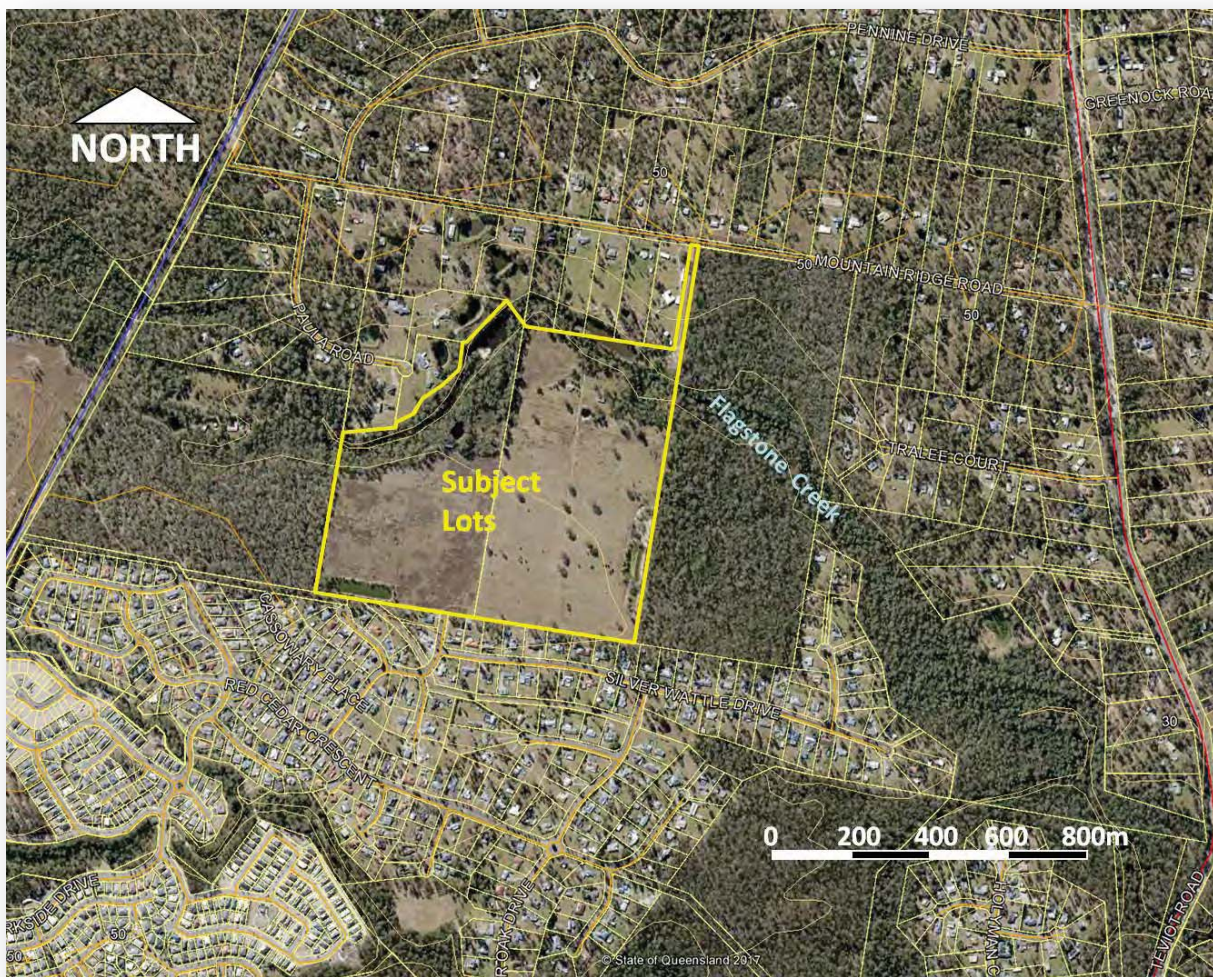
Site ID:	Lot 6 on RP193185 and Lot 9 on SP203507 Parish of MacLean, County of Stanley.
Current address of property:	3744 Mountain Ridge Road, South McLean, QLD 4280.
Local Government Area:	Logan City Council.
Total Area:	53.91ha
Zoning:	Emerging Community

### 2.2 Proposed Development

The proposed development is planned to create 650 Lots generally between 300 and 700m<sup>2</sup> in area, with a district Recreation Park and a Bio Basin.



## 2.3 Site Location and Layout



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

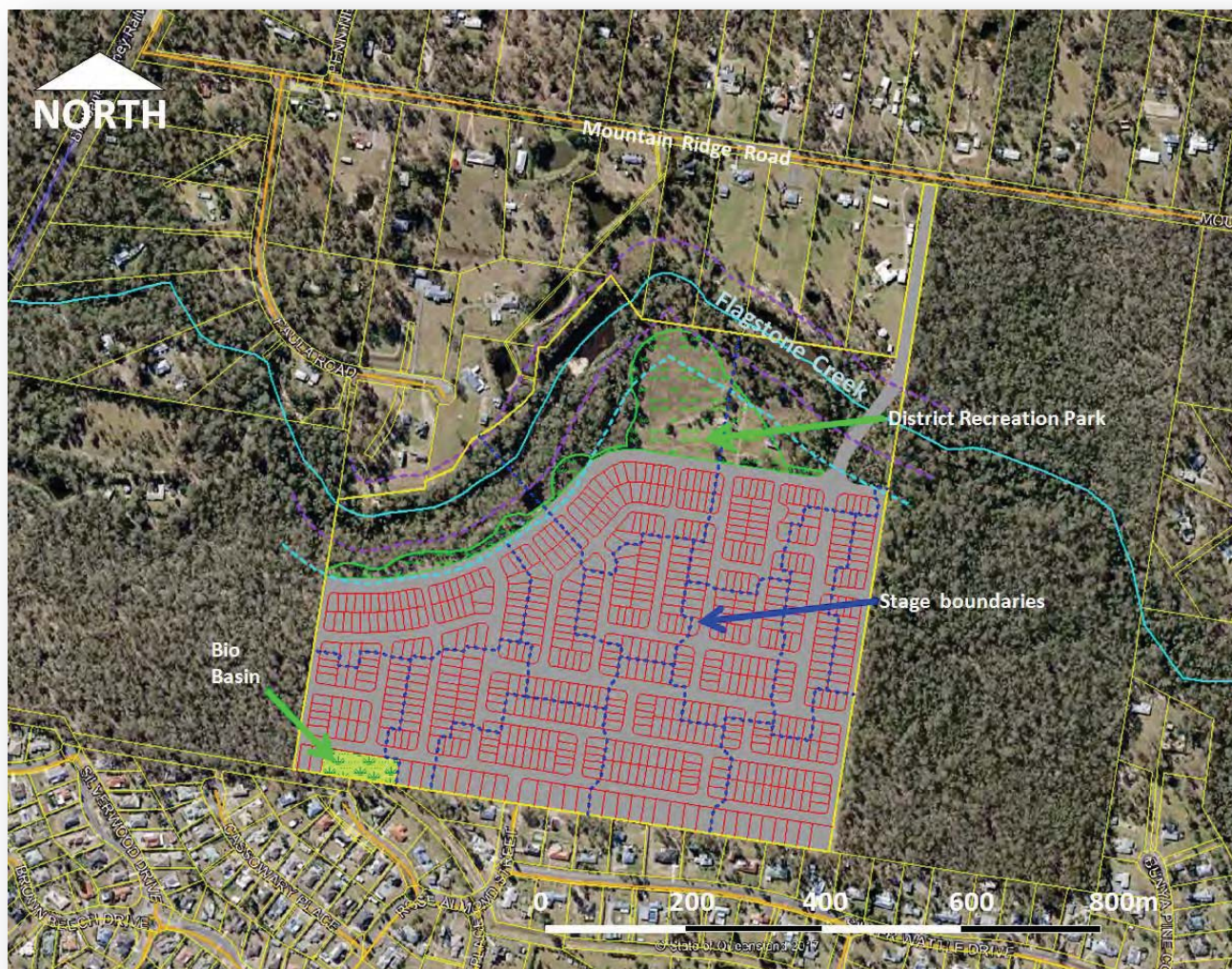
Located on the southern side of Mountain Ridge Road, and south of Flagstone Creek, the site abuts extensive areas of unmanaged forest to the west and east, and a strip of riparian forest across the north.

The proposed development involves a bridge being constructed across Flagstone Creek, so that two alternate access/egress routes exist for the site, one via Mountain Ridge Road to the north, and the other via Rose Almond Street to the south.

As designated Priority Development Area, development is anticipated to the west and east of the site, effectively lifting the bulk of the bushfire constraint. However in the meantime, current land use to the west and east of the site represents a potential threat to the development which is objectively assessed by this Plan, which develops a range of bushfire protection measures. In so doing this Plan serves to mitigate risk in the interim, to levels that can be considered acceptable.

Figure 2 shows the proposed subdivision in relation to vegetation that is being classified under AS3959-2009, and which is classifiable as potential hazard under Sc 6.2.6 Planning scheme policy 6 and under SPP 2016 – Natural hazards, risk and resilience.





**Figure 2. Proposed Subdivision and forest interfaces**

Staging Plans are attached in Appendix 2.

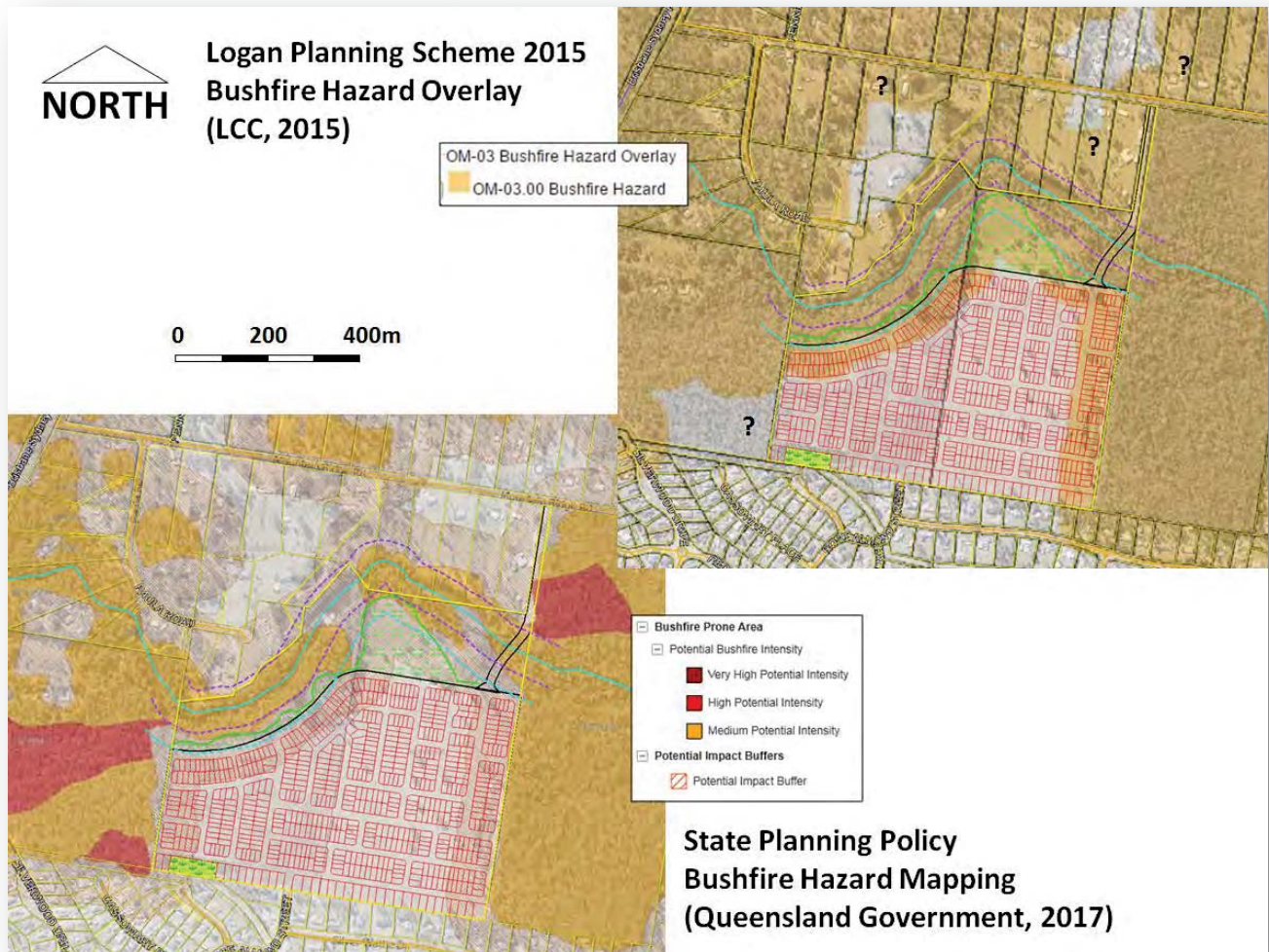
Throughout the Staged development, the balance of Lot will be retained in a low hazard state by slashing.

The site is within approximately 10km by road of the nearest Queensland Fire and Emergency Services (Jimboomba 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 Section 12 of Building Regulation 2006 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 achieved by the clear and concise approach taken by this BMP. This BMP achieves the same validation by stepping through Sections 3 (evidencing vegetation, 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 BPA status of the remaining hazard interfaces.







### 3.3 Fuel Accumulation Assessment – Fuel Area 1



**Figure 5. Fuel Accumulation Assessment – Fuel Area 1**

Fuel hazard estimate	Assessment according to Hines et al 2010		
Date: 30th August 2017			
Layer	Rating	Description / Comments	Equivalent fuel load t/ha
Surface and near surface	Low Potential Moderate	Low litter bed 10 mm with Low to moderate NS fuels, <i>Themeda sp.</i> , partly grazed by macropods <i>Lomandra sp.</i> , and fine native grasses.	5 – 6 Potential 8
Elevated	Moderate	Canopy recruiters, with <i>Alphitonia sp.</i> , <i>L.suavolens</i> , <i>Acacia spp.</i> , and patches of <i>Lantana sp.</i> ... most fuel at the top of the layer	3
Bark	High	Some ribbon bark ( <i>E.tereticornis</i> ) and papery barks ( <i>L.suavolens</i> ) with low bark hazard - <i>C. intermedia</i> , <i>C.trachyphloia</i> , <i>C.tessellaris</i> .	1 - 2
Overall rating	Moderate		11t/ha

**Table 1. Fuel Assessment Fuel Area 1.**

Whilst not mapped as remnant, site assessment identified the developing vegetation community most closely resembling RE12.3.11, for which Queensland Fire and Emergency Services (QFES) attributes a default Total Available Fuel Load of 15.9t/ha.

Giving consideration to both State and observed available fuel values, more than 15 years post fire; and recognising the limitations in soil water holding capacity, a total of 15.9t/ha (8t/ha of which is Surface and Near Surface fuel) is considered reasonable to use in fire modelling in accordance with Method 2 of AS3959-2009, as presented in Section 6.



### 3.4 Fuel Accumulation Assessment – Fuel Area 2



**Figure 6. Fuel Accumulation Assessment – Fuel Area 2**

Fuel hazard estimate	Assessment according to Hines et al 2010		
Date: 30th August 2017			
Layer	Rating	Description / Comments	Equivalent fuel load t/ha
Surface and near surface	Very high	High litter bed 20 -30 mm with Very high NS fuels as grasses to 1m.	12
Elevated	High	Canopy recruiters, with <i>Acacia spp</i> , and areas of dense <i>Lantana sp</i> ... more dense toward Flagstone Creek	3 - 5
Bark	High	Some ribbon bark ( <i>E.tereticornis</i> ) with low bark hazard - <i>C. citriodora</i> , <i>C.tessellaris</i> , <i>E.propinqua</i> , <i>E.siderophloia</i> .	1 - 2
Overall rating	Very high		19t/ha

**Table 2. Fuel Assessment Fuel Area 2.**

More than 15 years without fire, fuel loads can be expected to be nearing their long term stable maximum state. More favourable soil moisture conditions closer to Flagstone Creek have supported higher fuel loads, higher than the QFES dataset default values for Total Available Fuel Load of 14.9t/ha and 15.9t/ha for mapped RE 12.3.6 and 12.3.11, and closer to the 20.8t/ha for RE12.9 – 10.2. A total available fuel value of 21t/ha (12t/ha of which is surface and near surface fuel) is applied to site specific fire modelling for Area 2 in Section 6.



### 3.5 Fuel Accumulation Assessment – Fuel Area 3



**Figure 7. Fuel Accumulation Assessment – Fuel Area 3**

Fuel hazard estimate	Assessment according to Hines et al 2010		
Date: 30th August 2017			
Layer	Rating	Description / Comments	Equivalent fuel load t/ha
Surface and near surface	High	High litter bed 30 mm with Low NS fuels shaded out.	10 - 12
Elevated	Very high	Canopy recruiters, with <i>Acacia spp</i> , and areas of dense <i>Lantana sp</i> ... more dense toward Flagstone Creek	5 - 6
Bark	High	Some ribbon bark ( <i>E.tereticornis</i> ) with low bark hazard - <i>C. citriodora</i> , <i>C.tessellaris</i> , <i>C.intermedia</i> , <i>E.propinqua</i> , <i>E.siderophloia</i> .	1 - 2
Overall rating	Very high		20t/ha

**Table 3. Fuel Assessment Fuel Area 3.**

More than 15 years without fire, fuel loads can be expected to be nearing their long term stable maximum state.

More favourable soil moisture conditions closer to Flagstone Creek have supported higher fuel loads, comparable to the State Government default values for Total Available Fuel Load of 20.8t/ha for mapped RE 12.9 – 10.2 in Area 3. A total available fuel value of 20.8t/ha (12t/ha of which is surface and near surface fuel) is applied to site specific fire modelling for Area 3 in Section 6.



### 3.6 Fuel Accumulation Assessment – Area 4



**Figure 8. Fuel Accumulation Assessment – Area 4 South**

Fuel hazard estimate	Assessment according to Hines et al 2010		
Date: 30th August 2017			
Layer	Rating	Description / Comments	Equivalent fuel load t/ha
Surface and near surface	Low Potential Moderate	Low litter bed 10 mm with Low to moderate NS fuels, <i>Themeda sp.</i> , partly grazed by macropods <i>Lomandra sp.</i> , and fine native grasses.	5 – 6 Potential 8
Elevated	Moderate	Canopy recruiters, with <i>Alphitonia sp.</i> , <i>L.suavolens</i> , <i>Acacia spp.</i> , and patches of <i>Lantana sp.</i> ... most fuel at the top of the layer	3
Bark	High	Some ribbon bark ( <i>E.tereticornis</i> ) and papery barks ( <i>L.suavolens</i> ) with low bark hazard - <i>C. intermedia</i> , <i>C.trachyphloia</i> , <i>C.tessellaris</i> .	1 - 2
Overall rating	Moderate		11t/ha

**Table 4. Fuel Assessment Fuel Area 4.**

Mapped by State Government as remnant vegetation of RE12.9 – 10.2, site assessment supports an RE classification more closely resembling RE12.3.11, for which Queensland Fire and Emergency Services (QFES) attributes a default Total Available Fuel Load of 15.9t/ha. However drier soil conditions further away from Flagstone Creek is limiting biomass accumulation potential.

Giving consideration to both State and observed available fuel values, more than 15 years post fire; and recognising the limitations in soil water holding capacity, a total of 15.9t/ha (8t/ha of which is Surface and Near Surface fuel) is considered reasonable to use in fire modelling in accordance with Method 2 of AS3959-2009, as presented in Section 6.



### 3.7 Fuel Accumulation Assessment – Area 5



Figure 9. Fuel Accumulation Assessment – Area 5 South

Fuel hazard estimate	Assessment according to Hines et al 2010		
Date: 30th August 2017			
Layer	Rating	Description / Comments	Equivalent fuel load t/ha
Surface and near surface	Low Potential Moderate	Low litter bed 10 mm with Low to moderate NS fuels, <i>Themeda sp.</i> , partly grazed by macropods <i>Lomandra sp.</i> , and fine native grasses.	5 – 6 Potential 8
Elevated	Moderate	Canopy recruiters, with <i>Alphitonia sp.</i> , <i>L.suavolens</i> , <i>Acacia spp.</i> , and patches of <i>Lantana sp.</i> ... most fuel at the top of the layer	3
Bark	High	Some ribbon bark ( <i>E.tereticornis</i> ) and papery barks ( <i>L.suavolens</i> ) with low bark hazard - <i>C. intermedia</i> , <i>C.trachyphloia</i> , <i>C.tessellaris</i> .	1 - 2
Overall rating	Moderate		11t/ha

Table 5. Fuel Assessment Fuel Area 5.

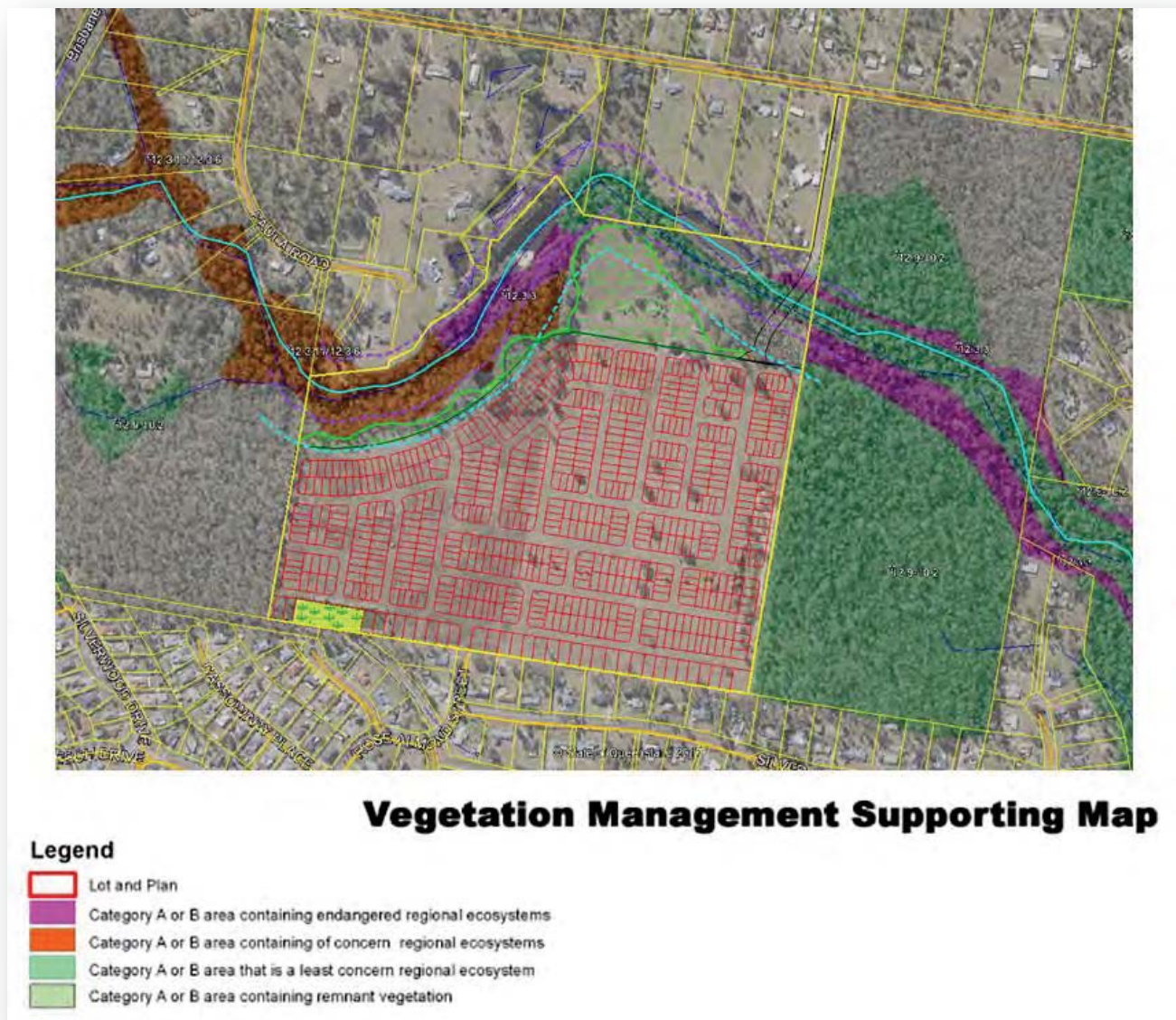
Mapped by State Government as remnant vegetation of RE12.9 – 10.2, site assessment supports an RE classification more closely resembling RE12.3.11, for which Queensland Fire and Emergency Services (QFES) attributes a default Total Available Fuel Load of 15.9t/ha.

However drier soil conditions further away from Flagstone Creek is limiting biomass accumulation potential.

Giving consideration to both State and observed available fuel values, more than 15 years post fire; and recognising the limitations in soil water holding capacity, a total of 15.9t/ha (8t/ha of which is Surface and Near Surface fuel) is considered reasonable to use in fire modelling in accordance with Method 2 of AS3959-2009, as presented in Section 6.



## 4.0 Site constraints and environmental values which may limit mitigation options



**Figure 10. Regional Ecosystem (RE) Mapping**

Figure 10 shows the proposed development location in relation to vegetation mapped by the Queensland Department of Natural Resources and Mines as “Of Least Concern” RE 12.9-10.2, 12.3.6 and “Of Concern” RE 12.3.11 adjacent to the Subject Lot.

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

Regional Ecosystem	Description	Fire Guidelines
<b>RE 12.9.10.2</b> <b>Of Least Concern</b>	<p>Open-forest or woodland of <i>Corymbia citriodora</i>, usually with <i>Eucalyptus crebra</i>. Other species such as <i>Eucalyptus tereticornis</i> and <i>Corymbia intermedia</i> may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of <i>Lophostemon confertus</i> (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments. (BVG1M: 10b)</p> <p>Vegetation Hazard Class (VHC) 10.1    20.8t/ha Total Available Fuel Load (State Default Value)</p>	<p>OPTIMAL SEASON: Summer to winter.  INTENSITY: Low to moderate.  INTERVAL: 4-25 years.  STRATEGY: Aim for 40-60% mosaic burn. Burn with soil moisture and with a spot ignition strategy so that a patchwork of burnt/unburnt country is achieved.  ISSUES: The fire regime should maintain a mosaic of grassy and shrubby understoreys. Control of weeds is a major focus of planned burning in most areas. Careful thought should be given to maintaining ground litter and fallen timber habitats by burning only with sufficient soil moisture. Burning should aim to produce fine scale mosaics of unburnt areas. Variability in season and fire intensity is important, as well as spot ignition in cooler or moister periods to encourage mosaics.</p>
<b>RE 12.3.6</b> <b>Of Least Concern</b>	<p><i>Melaleuca quinquenervia</i>, <i>Eucalyptus tereticornis</i>, <i>Lophostemon suaveolens</i> +/- <i>Corymbia intermedia</i> open-forest to woodland with a grassy ground layer dominated by species such as <i>Imperata cylindrica</i>. Occurs on Quaternary floodplains and fringing drainage lines in coastal areas. (BVG1M: 22a)</p> <p>Vegetation Hazard Class (VHC) 22.1    14.9t/ha Total Available Fuel Load (State Default Value)</p>	<p>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</p>

		(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.
<b>RE 12.3.11 Of Concern</b>	<p>Open-forest to woodland of <i>Eucalyptus tereticornis</i>, <i>E. siderophloia</i> and <i>Corymbia intermedia</i>. <i>Corymbia tessellaris</i>, <i>Lophostemon suaveolens</i> and <i>Melaleuca quinquenervia</i> frequently occur and often form a low tree layer. Other species present in scattered patches or low densities include <i>Angophora leiocarpa</i>, <i>E. exserta</i>, <i>E. grandis</i>, <i>C. trachyphloia</i>, <i>C. citriodora</i>, <i>E. latisinensis</i>, <i>E. tindaliae</i>, <i>E. racemosa</i>, <i>Melaleuca sieberi</i> and <i>M. viridiflora</i>. <i>E. seeana</i> may be present south of Landsborough. Occurs on Quaternary alluvial plains and drainage lines along coastal lowlands. Rainfall usually exceeds 1000mm/y (BVG1M: 16c)</p> <p>Major vegetation communities include:</p> <p>12.3.11a: Open-forest of <i>Eucalyptus tereticornis</i> and/or <i>E. siderophloia</i> with vine forest understorey. Other canopy species include <i>Corymbia intermedia</i>, <i>Araucaria cunninghamii</i> and <i>Agathis robusta</i>. Frequently occurring understorey species include <i>Flindersia</i> spp., <i>Lophostemon suaveolens</i>, <i>L. confertus</i>, <i>Cupaniopsis parvifolia</i>, <i>Acronychia</i> spp., <i>Alphitonia excelsa</i> and <i>Acacia disparrima</i> subsp. <i>disparrima</i>. Occurs on sub-coastal Quaternary alluvial plains. Rainfall usually exceeds 1000mm/y. (BVG1M: 16c)</p> <p>Vegetation Hazard Class (VHC) 16.1 15.9t/ha Total Available Fuel Load (State Default Value)</p>	<p>OPTIMAL FIRE SEASON: Summer to late-autumn.</p> <p>INTENSITY: Low.</p> <p>INTERVAL: 3-6 years.</p> <p>STRATEGY: Aim to burn 40-60% of any given area. Spot ignition in cooler or moister periods encourages mosaics.</p> <p>ISSUES: Control of weeds is a major focus of planned burning in most areas. Maintain ground litter and fallen timber habitats by burning only with sufficient soil moisture. Burning should aim to produce fine scale mosaics of unburnt areas.</p>

**Table 6. Regional Ecosystems Descriptions and Fire Guidelines**

The retained areas of forest vegetation are unlikely to be provided with managed fire, along with the temporary hazard reduction benefits this brings.

Planning is not based on any assumptions regarding hazard reduction; and 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 several indicators of prior fire, dating back more than 15 years. 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 residential activities are anticipated to occur in the area, which includes the potential inclination of juveniles and others to make temporary “camps” in bushland, and others to undertake illegal dumping or torching of vehicles. The number of fire incidents expected by QFES varies in direct proportion to the numbers of people present. The proposed development adds significantly to the number of people living in the area or likely to cause ignition. However only a limited number of new Lots are directly exposed.

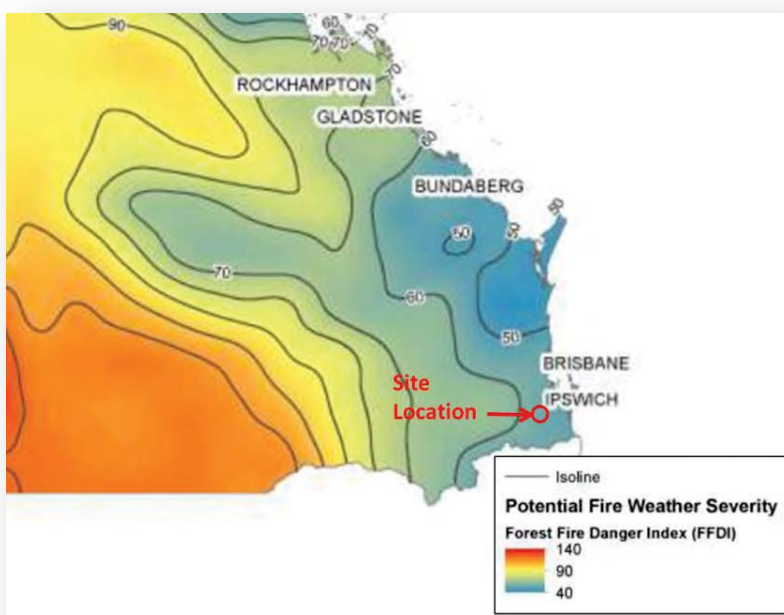
### 5.2 Numbers of people likely to be present

2 - 4 residents could be expected to be present on each of the 650 Lots. The proposed development adds significantly to the number of people living in the area or potentially exposed to the possibility of unplanned fire, however the design of the development and road layout serves to protect life and property, and facilitate access and egress.

## 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°C, and for two or three days a year, fire weather conditions equivalent to FDI levels of around 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 - 2009).



**Figure 11. State Government revised FDI values to FDI 60 for the area involved. (CSIRO, 2014).**

## 6.2 Anticipated direction of bushfire attack

The probability of unplanned “wildfire” attack is currently regarded as possible, or even likely. The potential directions of attack are from the west or north, as indicated in Figure 4. Note that the location of the hazard alligns with the direction of worst case fire weather on the western side of the site, with significant potential fire run lengths.

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.

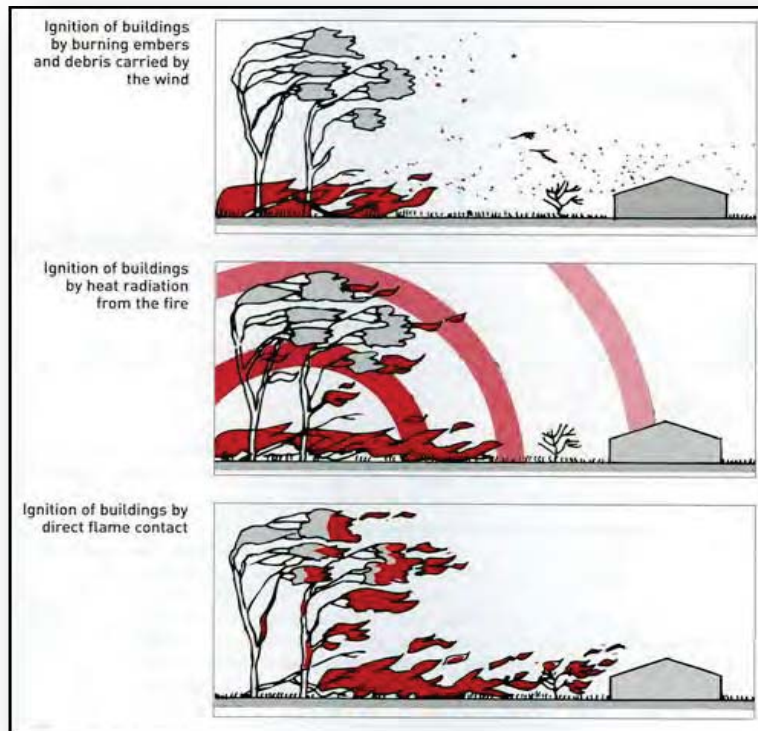


Figure 12. Main Bushfire Attack mechanisms (Image courtesy of Ramsay & Rudolf, 2003)

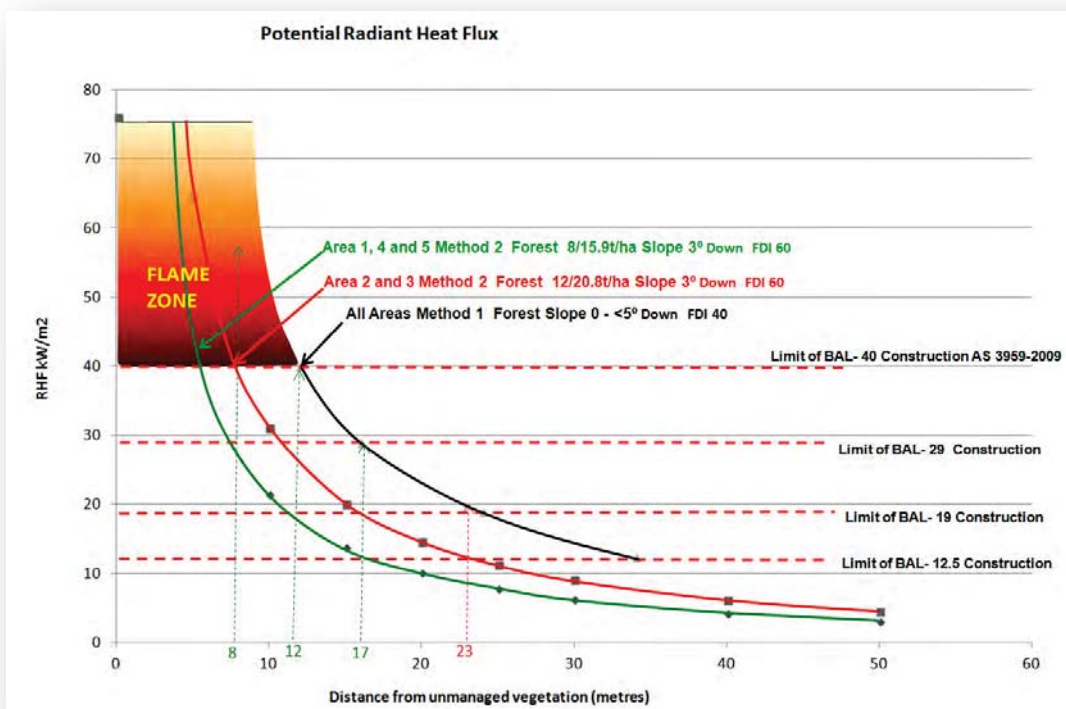
### 6.3 Anticipated severity of bushfire attack

Values for vegetation type, fuel load and slope are carried forward to Table 7, to predict the key fire parameters for the potential worst case fire scenario.

Fire Scenario – Area 1, 4 and 5	Fire Scenario – 1, 2, 3, 4 and 5	Fire Scenario – Area 2 and 3
Method 2 AS3959-2009 FDI 60 Forest @ 8/15.9t/ha. Ave Slope under vegetation 3° Down	Method 1 AS3959 – 2009 FDI 40 Forest Ave Slope under vegetation 0 - <5° Down	Method 2 AS3959-2009 FDI 60 Forest @ 12/20.8t/ha. Ave Slope under vegetation 3° Down
Fire Intensity (Byram, 1959) 5 820W/m ("MEDIUM")		Fire Intensity (Byram, 1959) 11 421kW/m ("MEDIUM")
Rate of Spread (Noble et al, 1980) 0.71kph		Rate of Spread (Noble et al, 1980) 1.06kph
Flame Height (modified Mc Arthur V equation, NSW RFS 2001)6.51m		Flame Height (modified Mc Arthur V equation, NSW RFS 2001) 9.4m
Flame Width 100m		Flame Width 100m
Elevation of Receiver 2.4m		Elevation of Receiver 2.4m
BAL FZ within <6m of intact unmanaged vegetation BAL 40 from 6 - <8m BAL 29 from 8 - <12m BAL 19 from 12 - <17m BAL 12.5 from 17 – 100m	BAL FZ within <12m of intact unmanaged vegetation BAL 40 from 12 - <16m BAL 29 from 16 - <24m BAL 19 from 24 - <34m BAL 12.5 from 34 – 100m	BAL FZ within <8m of intact unmanaged vegetation BAL 40 from 8 - <11m BAL 29 from 11 - <16m BAL 19 from 16 - <23m BAL 12.5 from 23 – 100m

**Table 7. Calculated values for potential bushfire characteristics, and methods used.**

The radiant heat flux values for Methods 1 and 2 are compared as Bushfire Attack Levels (BALs) in Table 7 and Figure 13. The predicted fireline intensity for all unmanaged vegetation interfaces is in the “Medium” range, validating the designation of bushland interfaces as BPA for the purposes of Logan City Council Policy 6 (Management of Bushfire Hazard) Part 2.1.



**Figure 13. Radiant Heat Flux Predicted by Methods 1 and 2.**



LCC bushfire overlay code permits development design that results in construction up to and including BAL 29 for future dwellings. With a minimum separation of 8m between future dwellings and retained vegetation being classified in Areas 1, 4 and 5, BAL 29 is shown to be viable. With a minimum separation of 12m between future dwellings and vegetation being classified in Areas 1, 4 and 5, BAL 19 is shown to be viable. With a minimum separation of 17m between future dwellings and vegetation being classified in Areas 1, 4 and 5, BAL 12.5 is shown to be viable. (Refer to the BAL contours in Figure 15 and 16).

With a minimum separation of 23m between future dwellings and vegetation being classified in Areas 2 and 3, BAL 12.5 is shown to be viable. The roadway and District Recreation Park to the north provides such setback.

The significance of the radiant heat flux levels discussed is shown below in Table 8.

Radiant Heat Flux (kW/m <sup>2</sup> )	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 - 2009.
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 - 2009.
19	Screened float glass could fail during the passage of a bushfire. Limit of BAL-19 Construction AS3959 - 2009.
12.5	Standard float glass could fail during the passage of a bushfire. Limit of BAL-12.5 Construction AS3959 - 2009. 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 8. Significance of various RHF levels (Source: NSW RFS, 2006)

## 7.0 Bushfire Protection Measures in Combination



Figure 14. Bushfire Planning Measures in Combination (Source: NSW RFS, 2006)

Figure 14, 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 hardly 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**

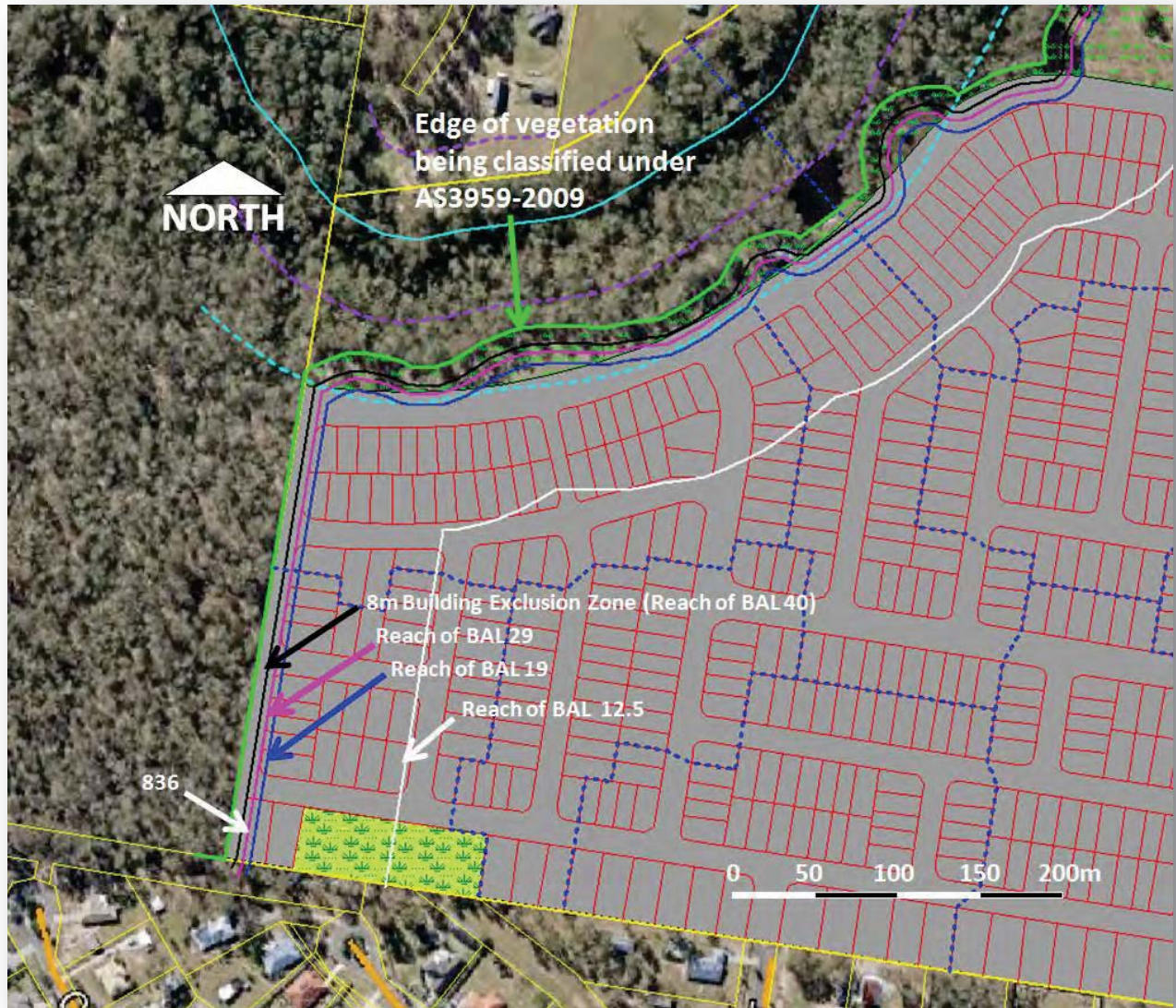
LCC bushfire overlay code permits development design that results in construction up to and including BAL 29 for future dwellings. With a minimum separation of 8m between future dwellings and retained vegetation being classified in Areas 1, 4 and 5, BAL 29 is shown to be viable. With a minimum separation of 12m between future dwellings and vegetation being classified in Areas 1, 4 and 5, BAL 19 is shown to be viable. With a minimum separation of 17m between future dwellings and vegetation being classified in Areas 1, 4 and 5, BAL 12.5 is shown to be viable. (Refer to the BAL contours in Figures 15 and 16).

With a minimum separation of 23m between future dwellings and vegetation being classified in Areas 2 and 3, BAL 12.5 is shown to be viable. The roadway and District Recreation Park to the north provides such setback. Any other structure built within 6m of each residence shall be constructed in accordance with this Standard.

Fences constructed immediately adjacent to designated hazardous vegetation (Lots 836 and 1256) should be non combustible.

Throughout the Staged development, the balance of Lot will be retained in a low hazard state by slashing.

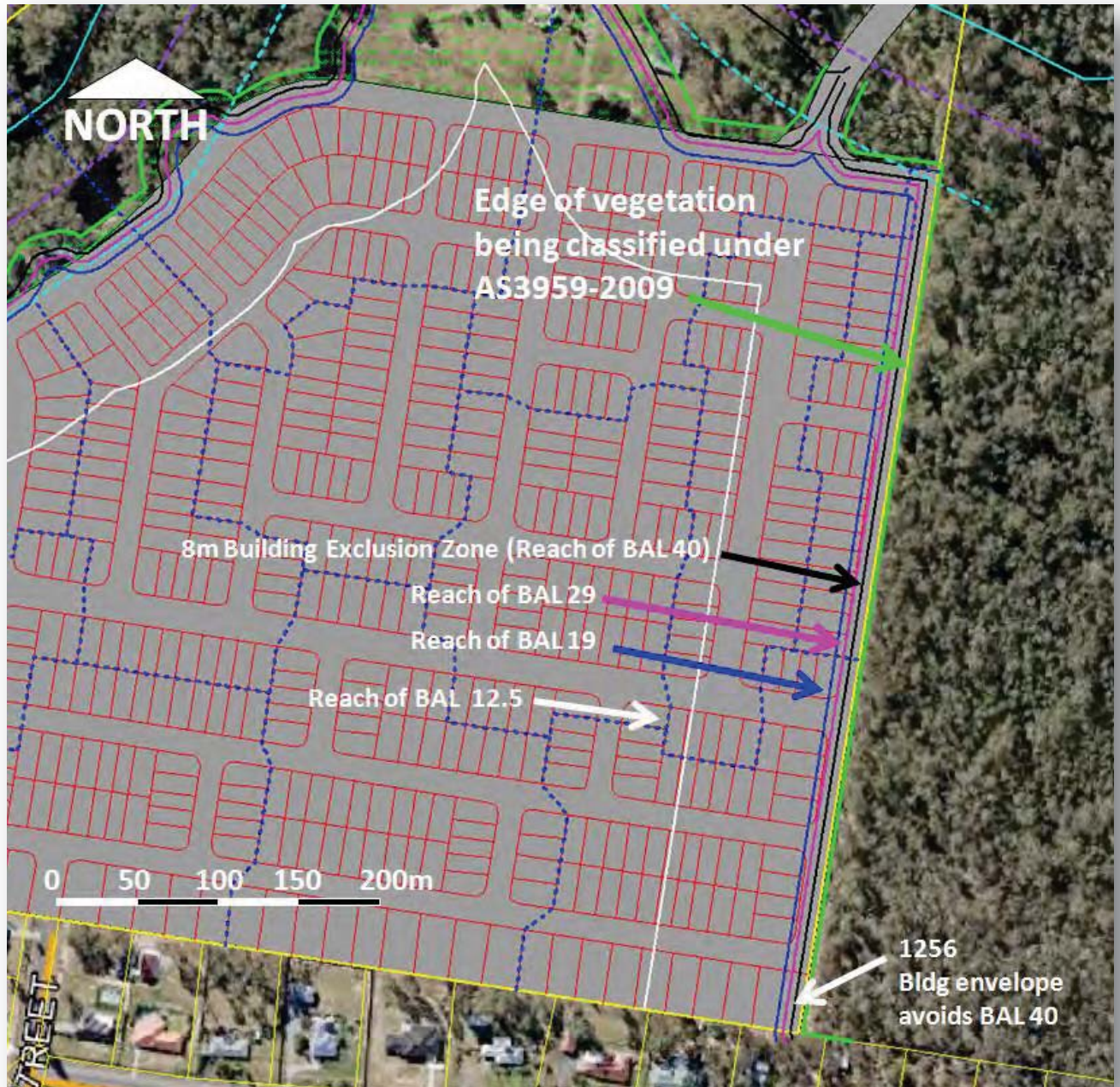
Figures 15 and 16 shows the “reach” of the various BAL ratings under AS3959-2009. BAL contours have been transferred to Plan of Development (POD) Plans attached in Appendix 1. BAL ratings for individual Lots should be reviewed post-construction as earthworks/pad levels may have implications for BAL ratings.



**Figure 15. BAL contours and 8m Building Exclusion Zone for Lot 836**

Note the BAL 40 contour sits along the western boundary of Lot 836, ensuring that BAL 29 construction will not be exceeded.





**Figure 16. BAL contours and 8m Building Exclusion Zone for Lot 1256**

The building envelope on Lot 1256 ensures that BAL 29 construction is not exceeded.

## 7.2 Asset Protection Zones and Landscaping

Asset protection zones are the most strategically valuable defence against radiant heat and flame, and to a lesser extent embers.

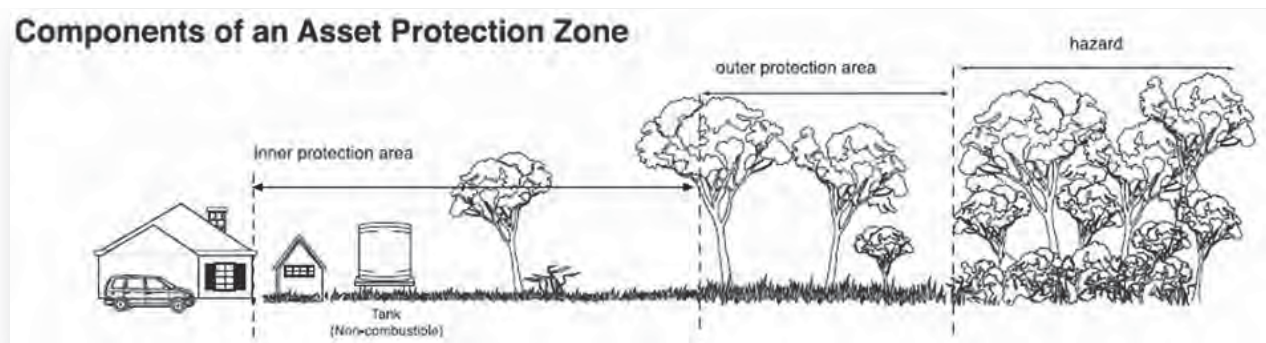
The landscaping plan shall maintain an “Inner Protection Area” (IPA) for the entire unbuilt area of all Lots effectively free of available fuel.



- 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.

A minimum 9m separation shall be maintained between unmanaged vegetation to the west and east. This is best achieved by an establishing a “building exclusion zone” of 8m, applying to Lots 393 and 640, established as a Covenant on each Lot.

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 recommended for the new lots shall be constructed and maintained as IPA.



**Figure 17. Components of an Asset Protection Zone (APZ)**

The bio retention basin shall be managed in a low hazard state , with a predominantly mown surface, similar to Figure 18.



**Figure 18. Bio retention basin managed in a low hazard state.**



Throughout the Staged development, the balance of Lot will be retained in a low hazard state by slashing.

### **7.3 Access and Egress Management**

The site is within approximately 10km by road of the nearest Queensland Fire and Emergency Services (Jimboomba Fire Station).

Two access/egress options exist, via Mountain Ridge Road to the north and via Roas Almond Street to the South, the latter being a particularly safe route. With future development to the west and east, further access/egress options become available, and at that point, the majority of the hazard present will have been removed.

The proposed internal road system provides for continuous traffic flow and for through roads. Ample turning opportunities are also available for large urban fire fighting appliances (a minimum inside radius of 6m and minimum outside radius of 12m).

Temporary turn-arounds at the termination of the roads shall be provided to ensure truck turnaround can be achieved for fire vehicles. These are shown on the Staging Plans attached as Appendix 2.

### **7.4 Water Supplies and Utilities**

Water supply for the development will be connected to Council mains reticulated supply, with hydrants installed in accordance with AS2419.1-2005 and with volumes and pressure under the control of Council water utilities provider.

Compliance will 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.

Electricity supply to the site will 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 is serviced by the proposed road and driveways for Emergency Services use. The maintenance of a mown or slashed grass surface of all Lots provides safe defensible space around key assets in the unlikely event of bush fire.

Obstructions to access onto individual Lots and the rear of buildings should be avoided.

Residents 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.

Residents 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. Staying to defend is a viable and preferable option for the proposed development.

Residents 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 2 provides guidance for Residents' Emergency Management Planning in relation to bushfire.

## 8.0 Assessment of proposal against Logan City Plan 2015 (Part 8.2.3 Bushfire Hazard Overlay Code)

Performance Outcomes	Acceptable Outcomes
<b>8.1 (PO1)</b> 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.
<b>8.2 (PO2)</b> 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 dwellings 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 (perimeter roads and parklands) 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;
<b>8.3 (PO3)</b> 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.



<p><b>8.4 (PO4) Vehicular Access and Fire Maintenance Trails</b></p> <p>Access for fire management and evacuation is provided by access that:</p> <ul style="list-style-type: none"> <li>(a) separates premises from adjoining vegetation;</li> <li>(b) is safely accessible by fire fighting vehicles;</li> <li>(c) has regular vehicular access points for bushfire management, response and evacuation;</li> <li>(d) has regular vehicle passing and turning areas for bushfire management, response and evacuation;</li> <li>(e) allows access at all times for fire fighting vehicles;</li> <li>(f) allows for maintenance, burning off and bushfire response;</li> <li>(g) has vehicular links to an alternative through road;</li> <li>(h) is readily maintained.</li> </ul>	<p>Acceptable Outcome AO4 is applied to the extent that:</p> <p>Access for fire management and evacuation is provided by vehicular access in the form of ring roads (rather than perimeter roads, since the diminished area and nature of the hazard does not make a perimeter road vital); and</p> <ul style="list-style-type: none"> <li>(d) are constructed to otherwise comply with Section 3.4 – Movement infrastructure standards of PSP5 – Infrastructure; and</li> <li>(e) layout does not include a cul de sac.</li> </ul>
<p><b>8.5 (PO5) Water Supply</b></p> <p>Development has access to adequate water supply for fire fighting purposes.</p>	<p>Acceptable Outcome AO5 is applied in that:</p> <p>Development:</p> <ul style="list-style-type: none"> <li>(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.</li> </ul>
<p><b>8.6 (PO6) Community Infrastructure</b></p> <p>Community infrastructure is not located in a bushfire hazard area or is able to function effectively during and immediately after a bushfire event.</p>	<p>Acceptable Outcome AO6 is applied to the extent that the infrastructure involved does not involve vital core services to the community.</p>
<p><b>8.7 (PO7) Hazardous Materials</b></p> <p>Public safety and the environment are not adversely affected by the adverse impacts of bushfire on hazardous materials including fuels, explosives and flammable chemicals manufactured or stored in bulk on premises.</p>	<p>Acceptable Outcome AO6 is applied to the extent that:</p> <p>The proposed Development does not involve the manufacture or storage of hazardous materials in bulk.</p>

## 9.0 Assessment of proposal against State Planning Policy 2016

State Planning Policy – Natural hazards, risk and resilience (SPP, December 2013, latest version April 2016) replaces State Planning Policy 1/03 *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide*. The SPP Guideline – Natural hazards, risk and resilience 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 as potentially hazardous and as a bushfire prone area.

Part E of the SPP provides interim development assessment requirements 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. Specific guidelines for bushfire hazard overlay codes are yet to be provided, and this detail is addressed by this Plan in terms of meeting the current requirements of Local Government in Section 8 above.

Interim Development Assessment Requirements – SPP Part E	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 park management, 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. That the master plan shall provide a separation between unmanaged vegetation hazard to the west and east and future dwellings on any Lot of a minimum of 8m, in association with BAL 29 construction under AS3959-2009.

This is achieved through provision of a building envelope for Lot 1256.

Preferably a separation of (minimum) 13m should be sought in association with BAL 19 construction, or a separation of (minimum) 19m in association with BAL 12.5 construction.

Lots 835 and 914 will be beside the biobasin, which will be managed in a low hazard state as shown in Figure 18.

Figures 15 and 16 shows the “reach” of the various BAL ratings under AS3959-2009. BAL contours have been transferred to Plan of Development (POD) Plans attached in Appendix 1. BAL ratings for individual Lots should be reviewed post-construction as earthworks/pad levels may have implications for BAL ratings.

Any other structure built within 6m of each residence shall be constructed in accordance with this Standard.

Builders should warrant that they have a copy of this Standard, and that it shall be used consistently throughout the design and construction of dwellings and other structures located within 6m of them.

2. The existing Asset Protection Zones available on each Lot and described in Section 7.2 of this report shall be maintained as IPA separating buildings from retained vegetation on adjacent Lots. Throughout the Staged development, the balance of Lot will be retained in a low hazard state by slashing.
3. Temporary turn-arounds at the termination of the roads shall be provided to ensure truck turnaround can be achieved for fire vehicles.
4. 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.
5. 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 the likelihood of wildfire at some time is regarded as likely, warranting protection measures to be taken, as outlined in this Plan. This Plan demonstrates compliance with legislative requirements of State and Local Government, and the BCA.

Along with adequate water supply and emergency management arrangements, compliant construction under AS3959-2009 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

- ABCB (2012), *Building Code of Australia*, Australian Building Codes Board, Canberra.
- Building Regulation (2006), Queensland Government, Queensland.
- Environmental Protection Act (1994), Queensland Government, Queensland.
- Hines, F., Tolhurst, K.G., & Wilson, A.A.G., (2010) *Overall Fuel Hazard Assessment - Research Report No. 82 4th Edition*, DSE Victoria.
- Queensland Fire and Emergency Services (2015) *Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots*, Queensland Government, Queensland.
- Queensland Government Department of Local Government and Planning (May 2003), *State Planning Policy 01/03*, Queensland.
- Queensland Government Department of Local Government and Planning (April 2016), *State Planning Policy – Natural hazards, risk and resilience*, Queensland.
- Leonard, J., Newnham, G., Opie, K., and Blanchi, R. (2014), *A new methodology for State-wide mapping of bushfire prone areas in Queensland*, CSIRO, Australia.
- Logan City Council (2015), *Logan Planning Scheme*, LCC, Queensland.
- NSW Rural Fire Service (2006), *Planning for Bushfire Protection*, NSW.
- Ramsay, C. and Rudolph, L. (2003), *Landscape and Building Design for Bushfire Areas*, CSIRO Publishing, Collingwood, Victoria.
- Standards Australia (2005), *AS 2419.1– 2005, Fire hydrant installations – System design, installation and commissioning*, Sydney, NSW.
- Standards Australia (2002), *AS 1596 The storage and handling of LP Gas*, Sydney, NSW.
- Standards Australia (2009), *AS 3959 – 2009, Construction of buildings in bushfire-prone areas*, Sydney, NSW.
- Sustainable Planning Act (2009), Queensland Government, Queensland.
- Vegetation Management Act (1999), Queensland Government, Queensland.
- Webster, J. (2000), *The Complete Bushfire Safety Book*, Random House Australia, NSW.



## **Appendix 1**

### **Plan of Development – Plans showing BAL Contours**

Refer to Appendix B (Envelope Plans), Stages 1 - 14 (dwg 9282 P 02 PP C, dated 01/11/18) of the approved Pebble Creek Plan of Development, prepared by Saunders Havill Group, dated 13 November 2018 and amended in red on 13/12/18

## Appendix 2

### Staging Plans - showing temporary turnarounds

Refer to the following approved plans:

- Subdivision Plan - Staging Plan - Stage 1, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18)
- Subdivision Plan - Staging Plan - Stage 2, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18)
- Subdivision Plan - Staging Plan - Stage 3, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18)
- Subdivision Plan - Staging Plan - Stage 4, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18)
- Subdivision Plan - Staging Plan - Stage 5, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18)
- Subdivision Plan - Staging Plan - Stage 6, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18)
- Subdivision Plan - Staging Plan - Stage 7, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18)
- Subdivision Plan - Staging Plan - Stage 8, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18)
- Subdivision Plan - Staging Plan - Stage 9, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18)
- Subdivision Plan - Staging Plan - Stage 10, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18)
- Subdivision Plan - Staging Plan - Stage 11, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18)
- Subdivision Plan - Staging Plan - Stage 12, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18)
- Subdivision Plan - Staging Plan - Stage 13, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18)
- Subdivision Plan - Staging Plan - Stage 14, prepared by Saunders Havill Group (dwg 9282 P 02 PP C, dated 07/11/18 and amended in red on 13/12/18).

## **Appendix 3**

### **Less combustible native plants list**

**Source: Bowden, J (1999)**



# 10

APPENDIX

## Fire Retardant Native Plants

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

Fire-retardance: Lm = due to leaf water contents; St = due to salt content; SI = 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
<b>GYMNOSPERMS</b>				
<b>Zamaceae</b>				
<i>Lepidozamia peroffskyana</i>	Shining Burrawang	S	Lm	Us Sa
<i>Macrozamia lucida</i>	Pineapple Zamia	S	Lm	Us Sa
<i>Macrozamia miquelii</i>	Wild Pineapple	S	Lm	Us Oa Sa
<b>Agavaceae</b>				
<i>Cordyline petiolaris</i>	Broad-leaf Palm Lily	S	Lm	Us Sa
<i>Cordyline rubra</i>	Red-fruit Palm Lily	S	Lm	Us Sa
<i>Cordyline stricta</i>	Slender Palm Lily	S	Lm	Us Sa
<b>MONOCOTYLEDONS</b>				
<b>Amariyllidaceae</b>				
<i>Crinum pedunculatum</i>	River Lily	H	Lm SI	Us Oa Sa
<i>Doryanthes palmeri</i> (-)	Spear Lily	H	Lm SI	Us Oa Sa
<i>Proiphys cunninghamii</i>	Brisbane Lily	H	Lm SI	Us Sa
<b>Araceae</b>				
<i>Alocasia brisbanensis</i>	Cunjevoi	H	Lm	Us Sa
<i>Gymnostachys anceps</i>	Settlers Flax	H	Lm	Us Sa
<i>Pothos longipes</i>	Pothos	V	Lm	Us Sa
<i>Typhonium brownii</i>	Stinking Lily	H	Lm	Us Sa
<b>Arecaceae</b>				
<i>Livistona monostachya</i>	Walking Stick Palm	P	Lm	Us Sa

Scientific Name	Common Name	Form	Fire Retardance	Comments
<b>Commelinaceae</b>				
<i>Aneilema acuminatum</i>	Aneilema	H Gc	Lm	Us Sa
<i>Aneilema biflorum</i> (-)	Aneilema	H Gc	Lm	Us Sa
<i>Commelina cyanea</i>	Scurvy Plant	H Gc	Lm	Us Op Sa
<i>Pollia crispata</i>	Snake Weed	H Gc	Lm	Us Sa
<i>Pollia macrophylla</i>	Large Snake Weed	H Gc	Lm	Us Sa
<b>Dioscoreaceae</b>				
<i>Dioscorea transversa</i>	Native Yam	V	Lm	Us Sa
<b>Liliaceae</b>				
<i>Bulbine bulbosa</i> (-)	Bulbine Lily	H	Lm SI	Oa
<i>Dianella brevipedunculata</i>	Blue Flax Lily	H	Lm	Us Oa Sa
<i>Dianella caerulea</i>	Blue Flax Lily	H	Lm	Us Oa Sa
<i>Dianella revoluta</i>	Flax Lily	H	Lm	Us Oa Sa
<i>Drynophila moorei</i> (-)	Orange Berry	H	Lm	Us Sa
<i>Tripladenia cunninghamii</i>	Bush Lily	H	Lm	Us Sa
<b>Orchidaceae</b>				
<i>Dendrobium gracilicaule</i>	Spotted Orchid	eO	Lm	Sa
<i>Dendrobium X gracillimum</i>	Natural Hybrid	eO	Lm	Sa
<i>Dendrobium monophyllum</i>	Lily of the Valley			
	Orchid	eO	Lm	Sa
<i>Dendrobium schoenitum</i>				
<i>(D. beckeri)</i>	Pencil Orchid	eO	Lm	Sa
<i>Dendrobium spectosum</i>	King Orchid	eO	Lm	Sa
<i>Dendrobium teretifolium</i>	Bridal Veil Orchid	eO	Lm	Sa
<i>Dendrobium tetragonum</i>	Spider Orchid	eO	Lm	Sa
<b>Philetiaceae</b>				
<i>Eustrephus latifolius</i>	Wombat Berry	V	Lm	Us Oa Sa
<i>Geitonoplesium cymosum</i>	Scrambling Lily	V	Lm	Us Sa
<b>Phylidraceae</b>				
<i>Phylidrum lanuginosum</i>	Frogsmouth	aH	Lm SI	Oa Wet areas
<b>Smilacaceae</b>				
<i>Smilax glycyphylla</i>	Sweet Sarsparilla	V	Lm	Us Sa
<b>Xanthorrhoeaceae</b>				
<i>Lomandra confertifolia</i>	Mat Rush	H	Lm	Oa
<i>Lomandra hystrix</i>	Creek Mat Rush	H	Lm	Us Sa
<i>Lomandra longifolia</i>	Long-leaf Mat Rush	H	Lm	Us Oa Sa
<i>Lomandra filiformis</i>	Fine-leaf Mat Rush	H	Lm	Oa
<i>Lomandra multiflora</i>	Many-flower Mat Rush	H	Lm	Oa
<i>Lomandra spicata</i>	Mountain Mat Rush	H	Lm	Us Oa Sa
<b>Zingiberaceae</b>				
<i>Alpinia arundeliana</i>	Wild Ginger	H	Lm	Us Sa
<i>Alpinia coerulea</i>	Native Ginger	H	Lm	Us Sa

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

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



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

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



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

Scientific Name	Common Name	Form	Fire Retardance	Comments
<i>Canthium microphyllum</i>	Small-leaf Canthium	S	Lm	Us Sa
<i>Ixora bleckleri</i>	Brown Coffeeewood	S/T	Lm	Us Sa
<i>Morinda acutifolia</i>	Veiny Morinda	V	Lm	Us Sa
<i>Morinda jasminoides</i>	Sweet Morinda	V	Lm	Us Sa
<i>Pavetta australiensis</i>	Pavetta	S	Lm	Us Sa
<i>Psychotria daphnoides</i>	Smooth Psychotria	S	Lm	Us Sa
<i>Psychotria loniceroides</i>	Hairy Psychotria	S	Lm	Us Sa
<i>Psychotria simmondsiana</i>	Small Psychotria	S	Lm	Us Sa
<i>Randia benthamiana</i>	Native Gardenia	S	Lm	Us Sa
<i>Randia chartacea</i>	Narrow-leaf Gardenia	S	Lm	Us Sa
<b>Rutaceae</b>				
<i>Clausena brevistyla</i> (-)	Clausena	S	Lm	Us Sa
<i>Microcitrus australasica</i> (-)	Finger Lime	S	Lm	Us Sa
<i>Murraya ovatifoliolata</i> (-)	Native Murraya	S/T	Lm	Us Sa
<i>Phebalium woombie</i> (-)	Phebalium	S	Lm	Oa
<b>Sambucaceae</b>				
<i>Sambucus australasica</i>	Yellow Elderberry	S	Lm	Us Sa
<b>Sapindaceae</b>				
<i>Alectryon coriaceous</i> (-)	Beach Bird's Eye	S/T	Lm	Wb Oa
<i>Arytera microphylla</i> (-)	Dwarf Coogara	S	Lm	Us Sa
<i>Cupaniopsis newmanii</i> (-)	Long-leaf Tuckeroo	T	Lm	Us Sa Oa
<i>Cupaniopsis serrata</i>	Rusty Tuckeroo	S/T	Lm	Us Sa Oa
<i>Cupaniopsis wadsworthii</i> (-)	Dwarf Tuckeroo	S	Lm	Us Sa
<i>Harpullia alata</i> (-)	Wing-leaf Tulip	S	Lm	Us Sa
<i>Mischocarpus undulatus</i>	Red Pear-fruit	T	Lm	Us Sa
<b>Sapotaceae</b>				
<i>Planchonella myrsinoides</i>	Yellow Plumwood	S/T	Lm	Us Sa
<b>Scrophulariaceae</b>				
<i>Artemesia fimbriatum</i>	Koala bells	H	Lm	Oa
<b>Tetragoniaceae</b>				
<i>Tetragonia tetragonioides</i>	Native Spinach	H Gc	St Sc	Oa
<b>Solanaceae</b>				
<i>Duboisia myoporoides</i>	Corkwood	S/T	Lm	Us Sa
<i>Solanum aviculare</i>	Kangaroo Apple	S	Lm	Us Sa Oa
<i>Solanum densevestitum</i> (-)	Furry Nightshade	S	Lm	Us Sa
<i>Solanum stelligerum</i> (-)	Star Nightshade	S	Lm	Us Sa
<b>Sterculiaceae</b>				
<i>Brachychiton bidwillii</i>	Little Kurrajong	S	Lm	Us Sa Oa
<i>Commersonia fraseri</i>	Scrub Kurrajong	S	Lm	Us Sa Oa
<b>Symplocaceae</b>				
<i>Symplocos baeuerlenii</i> (-)	Shrubby Hazelwood	S	Lm	Us 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
<b>MONOCOTYLEDONS</b>				
<b>Arecaceae</b>				
<i>Archontophoenix cunninghamii</i>	Picabeen Palm	P	Lm	Ad
<i>Calamus muelleri</i>	Lawyer Cane Vine	P	Lm	Ad
<i>Livistona australis</i>	Cabbage Palm	P	Lm	Ad
<b>Smilacaceae</b>				
<i>Ripogonum fawcettianum</i>	Small Supplejack	V	Lm	Sa
<i>Smilax australis</i>	Barb-wire Vine	V	Lm	Sa Oa
<b>DICOTYLEDONS</b>				
<b>Akaniaceae</b>				
<i>Akania lucens</i>	Turnipwood	T	Lm	Us
<b>Alangiaceae</b>				
<i>Alangium villosum</i>	Muskwood	T	Lm	Us
<i>polyosmoides</i>	Muskwood	T	Lm	Us
<i>Alangium villosum tomentosum</i>				
<b>Annonaceae</b>				
<i>Polyalthia nitidissima</i>	Canary Beech	T	Lm	Us
<b>Apocynaceae</b>				
<i>Alstonia constricta</i>	Quinine Tree	T	Lm	Us
<i>Melodinus acutiflorus</i>	Merangarra	V	Lm	Sa
<i>Melodinus australis</i>	Southern Melodinus	V	Lm	Sa
<b>Araliaceae</b>				
<i>Cephalalaria cephalobotrys</i>	Climbing Panax	V	Lm	Sa
<b>Bignoniaceae</b>				
<i>Pandorea pandorana</i>	Wonga Vine	V	Lm	Oa Sa
<b>Caesalpinaceae</b>				
<i>Barklya syringifolia</i>	Crown of Gold Tree	T	Lm	Us Sa Oa
<i>Cassia tomentella</i> (-)	Velvet Bean	S/T	Lm	Us Oa
<b>Cunoniaceae</b>				
<i>Callicoma serratifolia</i> (-)	White Alder	S/T	Lm	Us
<b>Dilleniaceae</b>				
<i>Tecomathe hillii</i> (-)	Fraser Island Climber	V	Lm	Sa



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

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



Scientific Name	Common Name	Form	Fire Retardance	Comments
<i>Arytera divaricata</i>	Rose Tamarind	T	Lm	Wb
<i>Arytera foveolata</i>	Pitted Coogera	T	Lm	Wb
<i>Cupaniopsis parvifolia</i>	Small-leaf Tuckeroo	T	Lm	Wb
<i>Cupaniopsis shirleyana</i> (-)	Wedge-leaf Tuckeroo	T	Lm	Us/Wb
<i>Cupaniopsis tomentella</i> (-)	Boonah Tuckeroo	T	Lm	Wb
<i>Elattostachys nervosa</i>	Beetroot	T	Lm	Us/Wb
<i>Elattostachys xylocarpa</i>	White Tamarind	T	Lm	Wb
<i>Guioa semiglauc</i>	Wild Quince	T	Lm	Wb
<i>Lepiderma pulchella</i> (-)	Fine-leaf Tuckeroo	T	Lm	Wb
<i>Mischocarpus australis</i>	Red Pear-fruit	T	Lm	Wb
<i>Toechima tenax</i>	Scrub Teak	T	Lm	Wb
<b>Sapotaceae</b>				
<i>Planchonella chartacea</i>	Thin-leaf Plum	S/T	Lm	Us Sa
<i>Planchonella cotinifolia</i>	Small-leaf Plum	S/T	Lm	Us Sa
<b>Simaroubaceae</b>				
<i>Guilfoylia monostylis</i>	Native Plum	T	Lm	Us
<b>Symplocaceae</b>				
<i>Symplocos thwaitesii</i>	Buff Hazelwood	S/T	Lm	Us
<b>PTERIDOPHYTES</b>				
<b>Cyatheaceae</b>				
<i>Cyathea australis</i>	Rough Tree Fern	tF	Lm	Us
<i>Cyathea cooperi</i>	Common Tree Fern	tF	Lm	Us
<i>Cyathea leichhardtiana</i>	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
<b>GYMNOSPERMS</b>				
<b>Araucariaceae</b>				
<i>Agathis robusta</i> (-)	Old Kauri	T	Lm	Pf - resin
<i>Araucaria bidwillii</i> (-)	Bunya Pine	T	Lm	Pf - resin
<i>Araucaria cunninghamii</i>	Hoop Pine	T	Lm	Pf - resin
<b>Podocarpaceae</b>				
<i>Podocarpus elatus</i>	Brown or Plum Pine	T	Lm	Pf - resin
<b>MONOCOTYLEDONS</b>				
<b>Araceae (Palmae)</b>				
<i>Calamus muelleri</i>	Lawyer Cane Vine	V	Lm	Sa Oa

Scientific Name	Common Name	Form	Fire Retardance	Comments
<b>Flagellariaceae</b>				
<i>Flagellaria indica</i>	Supplejack	V	Lm	Sa
<b>Pandanaceae</b>				
<i>Freylinetia excelsa</i>	Climbing Pandanus	V	Lm	Sa
<i>Freylinetia scandens</i>	Climbing Pandanus	V	Lm	Sa
<b>Smilacaceae</b>				
<i>Ripogonum album</i>	White Supplejack	V	Lm	Sa
<i>Ripogonum brevifolium</i>	Supplejack	V	Lm	Sa
<i>Ripogonum discolor</i>	Prickly Supplejack	V	Lm	Sa
<i>Ripogonum elseyanum</i>	Hairy Supplejack	V	Lm	Sa
<b>DICOTYLEDONS</b>				
<b>Anacardiaceae</b>				
<i>Euroschinus falcata</i>	Ribbonwood	T	Lm	Wb
<i>Rhodophaera rhodanthema</i>	Deep Yellowwood	T	Lm	Wb
<b>Annonaceae</b>				
<i>Melodorum leichhardtii</i> (Rauvenhoffia L.)	Zig-Zag Vine	V	Lm	Sa
<b>Apocynaceae</b>				
<i>Alstonia constricta</i>	Quinine Tree	T	Lm	Wb
<i>Melodinus acutiflorus</i>	Merangarra	V	Lm	Sa
<i>Melodinus australis</i>	Southern Melodinus	V	Lm	Sa
<i>Parsonsia eucalyptophylla</i>	Gargaloo	V	Lm	Sa Oa
<i>Parsonsia fulva</i>	Furry Silkpod	V	Lm	Sa
<i>Parsonsia lanceolata</i>	Northern Silkpod	V	Lm	Sa
<i>Parsonsia latifolia</i>	Monkey Vine	V	Lm	Sa
<i>Parsonsia straminea</i>	Monkey Rope	V	Lm	Sa Oa
<i>Parsonsia velutina</i>	Velvet Silkpod	V	Lm	Sa Oa
<i>Parsonsia ventricosa</i>	Pointed Silkpod	V	Lm	Sa
<b>Araceae</b>				
<i>Calamus muelleri</i>	Lawyer Cane	V	Lm	Sa
<b>Araliaceae</b>				
<i>Cephalalaria cephalobotrys</i>	Climbing Panax	V	Lm	Sa
<i>Polyscias elegans</i>	Celerywood	T	Lm	Wb/Ad Oa
<i>Polyscias murrayi</i>	Pencil Cedar	T	Lm	Sa
<b>Asclepiadaceae</b>				
<i>Marsdenia rostrata</i>	Common Milk Vine	V	Lm	Sa
<b>Atherospermataceae</b>				
<i>Daphnandra micrantha</i>	Socketwood	T	Lm	Wb

Scientific Name	Common Name	Form	Fire Retardance	Comments
<b>Avicenniaceae</b>				
<i>Avicennia marina</i>	Grey Mangrove	T	Lm St	Oa Coastal
<b>Burseraceae</b>				
<i>Canarium australasicum</i>	Carrotwood	T	Lm	Wb
<b>Caesalpinhiaceae</b>				
<i>Cassia marksiana</i> (-)	Native Laburnum	T	Lm	Wb
<i>Caesalpinia bonduc</i>	Caesalpinia	V	Lm	Sa
<i>Caesalpinia scortechinii</i>	Large Prickle Vine	V	Lm	Sa
<i>Caesalpinia subtiropica</i>	Corky Prickle Vine	V	Lm	Sa
<b>Celastraceae</b>				
<i>Celastrus australis</i>	Staff Climber	V	Lm	Sa
<i>Celastrus subspicatus</i>	Large Staff Vine	V	Lm	Sa
<i>Loeseneriella barbata</i> ( <i>Hippocratea</i> b.)	Knot Vine	V	Lm	Sa
<b>Cunoniaceae</b>				
<i>Caldcluvia paniculosa</i>	Rose-leaf Marara	T	Lm	Wb
<i>Ceratopetalum apetalum</i> (-)	Coachwood	T	Lm	Wb
<i>Grissois benthamii</i>	Red Carabeen	T	Lm	Wb
<i>Pseudoweinmannia</i>				
<i>lachnocarpa</i>	Marara	T	Lm	Wb
<i>Schizomeria ovata</i>	White Birch	T	Lm	Us/Wb
<b>Ebenaceae</b>				
<i>Diospyros fasciculosa</i>	Grey Ebony	T	Lm	Wb
<i>Diospyros pentamera</i>	Myrtle Ebony	T	Lm	Wb
<b>Ehretiaceae</b>				
<i>Cordia dichotoma</i> (-)	Cordia	T	Lm	Wb
<i>Ehretia acuminata</i>	Koda	T	Lm	Ad De
<b>Elaeocarpaceae</b>				
<i>Elaeocarpus eumundi</i>	Eumundi Quandong	T	Lm	Wb
<i>Elaeocarpus grandis</i>	Blue Quandong	T	Lm	Wb
<i>Elaeocarpus kirtonii</i>	White Quandong	T	Lm	Wb
<i>Elaeocarpus obovatus</i>	Hard Quandong	T	Lm	Wb
<i>Sloanea australis</i>	Maiden's Blush	T	Lm	Wb
<i>Sloanea woollii</i>	Yellow Carabeen	T	Lm	Wb
<b>Escalloniaceae</b>				
<i>Quintinia verdonii</i>	Grey Possumwood	T	Lm	Wb
<b>Euphorbiaceae</b>				
<i>Austrobauxus swainii</i> (-)	Pink Cherry	T	Lm	Wb
<i>Baloghia inophylla</i> ( <i>B. lucida</i> )	Scrub Bloodwood	T	Lm	Wb
<i>Bridelia exaltata</i>	Scrub Ironbark	T	Lm	Wb
<i>Bridelia leichhardtii</i>	Leichhardt's Ironbark	T	Lm	Wb
<i>Claoxylon australe</i>	Brittlewood	T	Lm	Wb
Scientific Name	Common Name	Form	Fire Retardance	Comments
<i>Dissiliaria baloghoides</i>	Lancewood	T	Lm	Wb
<i>Drypetes australasica</i>	Yellow Tulip	T	Lm	Wb
<i>Excoecaria agallocha</i>	Milky Mangrove	T	Lm St	Ad Coastal
<i>Excoecaria dallachyana</i>	Scrub Poison Tree	T	Lm	Wb
<i>Glochidion ferdinandi</i>	Cheese Tree	T	Lm	Wb
<i>Glochidion sumatranum</i>	Buttonwood	T	Lm	Wb
<i>Mallotus discolor</i>	Yellow Kamala	T	Lm	Wb
<i>Mallotus philippensis</i>	Red Kamala	T	Lm	Wb
<b>Fabaceae</b>				
<i>Austrosteenisia blackii</i>	Blood Vine	V	Lm	Sa Oa
<i>Castanospermum australe</i>	Black Bean	T	Lm	Wb
<i>Derris involuta</i>	Native Derris	V	Lm	Sa
<i>Erythrina</i> sp. <i>Lacey's Creek</i>	Corkwood	T	Lm	Ad De
<i>Erythrina vesperitilo</i>	Batswing Coral Tree	T	Lm	Ad De
<i>Mucuna gigantea</i>	Burny Bean	V	Lm	Sa
<b>Flacourtiaceae</b>				
<i>Scolopia braunii</i>	Flintwood	T	Lm	Wb
<b>Flindersiaceae</b>				
<i>Flindersia australis</i>	Crows Ash	T	Lm	Wb
<i>Flindersia bennettiana</i>	Bennett's Ash	T	Lm	Wb
<i>Flindersia collina</i>	Leopard Ash	T	Lm	Wb
<i>Flindersia schottiana</i>	Cudgerie or Bumpy Ash	T	Lm	Wb
<i>Flindersia xanthoxyla</i>	Yellowwood	T	Lm	Wb
<b>Icacinaceae</b>				
<i>Citronella moorei</i>	Churnwood	T	Lm	Wb
<i>Pennantia cunninghamii</i>	Brown Beech	T	Lm	Wb
<b>Lauraceae</b>				
<i>Cryptocarya erythroxylon</i>	Pigeonberry Ash	T	Lm	Wb
<i>Cryptocarya hypospodia</i>	Rib-fruit Pepperberry	T	Lm	Wb
<i>Cryptocarya macdonaldii</i>	Cooloola Laurel	T	Lm	Wb
<i>Cryptocarya microneura</i>	Murrogon	T	Lm	Wb
<i>Cryptocarya obovata</i>	Pepperberry Tree	T	Lm	Wb
<i>Endiandra muelleri</i>	Mueller's Walnut	T	Lm	Wb
<i>Endiandra pubens</i>	Hairy Walnut	T	Lm	Wb
<i>Endiandra sieberi</i> (-)	Hard Corkwood	T	Lm	Wb
<i>Neolitsea australiensis</i>	Grey Bolly Gum	T	Lm	Wb
<i>Neolitsea dealbata</i>	White Bolly Gum	T	Lm	Us/Wb
<b>Malvaceae</b>				
<i>Hibiscus tiliaceus</i>	Cotton Tree	T	Lm	Wb
<i>Lagunaria patersonii</i> (-)	Norfolk Is Hibiscus	T	Lm	Wb
<b>Meliaceae</b>				
<i>Anthocarapa nitidula</i> ( <i>Pseudocarapa nitidula</i> )	Incense Cedar	T	Lm	Wb
<i>Dysoxylum fraserianum</i>	Rosewood	T	Lm	Wb

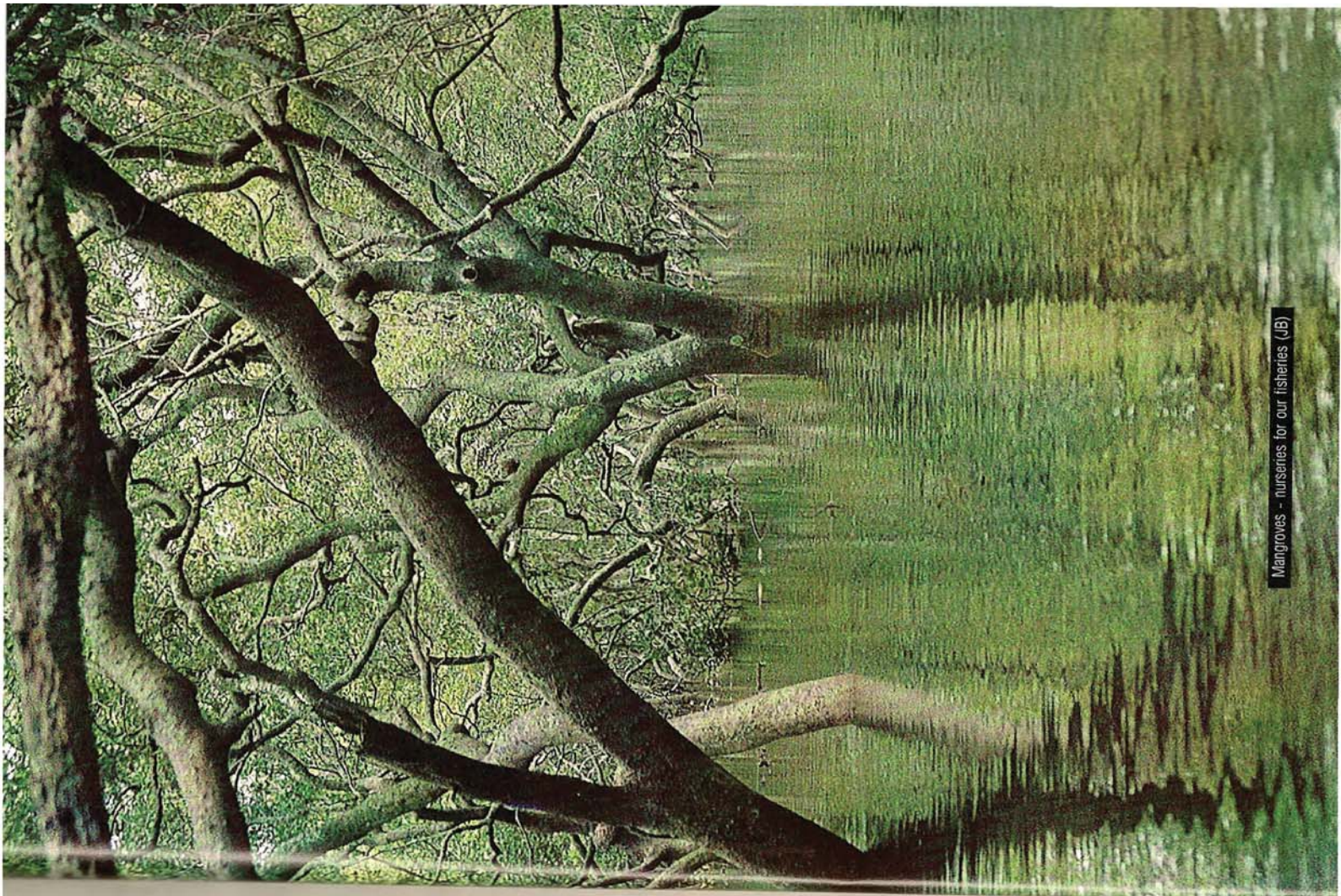


Scientific Name	Common Name	Form	Fire Retardance	Comments
<i>Dysoxylum mollissimum</i> <i>ssp. molle</i> (D. muelleri)	Red Bean	T	Lm	Wb
<i>Dysoxylum rufum</i>	Hairy Rosewood	T	Lm	Wb
<i>Melia azedarach</i>	White Cedar	T	Lm	Wb/Ad De
<i>Owenia cepiodora</i>	Onion Cedar	T	Lm	Wb
<i>Toona australis</i>	Red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

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



Scientific Name	Common Name	Form	Fire Retardance	Comments
<i>Jagera pseudorhus</i>	Foam Bark Tree	T	Im	Wb
<i>Mischocarpus anodontus</i>	Viny Pear-fruit	T	Im	Wb
<i>Mischocarpus pyramidalis</i>	Yellow Pear-fruit	T	Im	Wb
<i>Rhytidocarpus bifoliolata</i> (-)	Twin-leaf Tuckeroo	T	Im	Wb
<i>Sarcocornia stipitata</i>	Corduroy	T	Im	Wb
<i>Toechima dasyrrhache</i>	Blunt-leaf Steelwood	T	Im	Wb
<b>Sapotaceae</b>				
<i>Amorpha fruticosa</i>	Brown Pearwood	T	Im	Wb
<i>Amorpha fruticosa</i> whitei (-)	Rusty Plum	T	Im	Wb
<i>Planchonella australis</i>	Black Apple	T	Im	Wb
<i>Planchonella laurifolia</i> (-)	Blush Coondoo	T	Im	Wb
<i>Planchonella pohlmaniana</i>	Yellow Boxwood	T	Im	Wb
<b>Simaroubaceae</b>				
<i>Ailanthus triphylla</i>	White Siris	T	Im	Wb
<i>Gutierrezia monostylis</i>	Native Plum	T	Im	Wb
<b>Siphonodontaceae</b>				
<i>Siphonodon australis</i>	Ivorywood	T	Im	Wb
<b>Sterculiaceae</b>				
<i>Argyrodendron actinophyllum</i>	Black Booyong	T	Im	Wb
<i>Argyrodendron trifoliolatum</i>	Brown Tulip Oak	T	Im	Wb
<i>Brachychiton acerifolius</i>	Flame Tree	T	Im	Ad De
<i>Brachychiton discolor</i>	Lace Bark	T	Im	Ad De
<i>Brachychiton populneus</i>	Kurrajong	T	Im	Wb
<i>Brachychiton rupestris</i> (-)	Old Bottle tree	T	Im	Ad De
<i>Brachychiton sp.</i> (-)	Ormeau Bottle tree	T	Im	Ad De
<i>Commersonia bartramia</i>	Brown Kurrajong	T	Im	Us/Wb
<i>Sterculia quadrifida</i>	Peanut Tree	T	Im	Ad De
<b>Symplocaceae</b>				
<i>Symplocos stawellii</i>	White Hazelwood	T	Im	Wb
<b>Ulmaceae</b>				
<i>Aphananthe philippinensis</i>	Native Elm	T	Im	Wb
<i>Celtis paniculata</i>	Investigator Tree	T	Im	Wb
<b>Urticaceae</b>				
<i>Dendrocnide excelsa</i>	Giant Stinging Tree	T	Im	Wb
<i>Dendrocnide photinophylla</i>	Mulberry Stinger	T	Im	Wb
<b>Verbenaceae</b>				
<i>Gmelina leichhardtii</i>	White Beech	T	Im	Wb
<i>Premna lignum-vitae</i>	Lignum-vitae	T	Im	Wb
<b>Vitaceae</b>				
<i>Cissus antarctica</i>	Kangaroo Vine	V	Im	Wb
<i>Cissus hypoglauca</i>	Five-leaf Watervine	V	Im	Wb
<i>Cissus sterculiifolia</i>	Long-leaf Watervine	V	Im	Wb
<i>Tetragonia nitens</i>	Shining Grape	V	Im	Wb





## **Appendix 4**

### **QFES Bushfire Survival Plan Guidelines**

# Bushfire Survival Plan

**PREPARE.ACT.SURVIVE.**

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

Department of Community Safety







## 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.

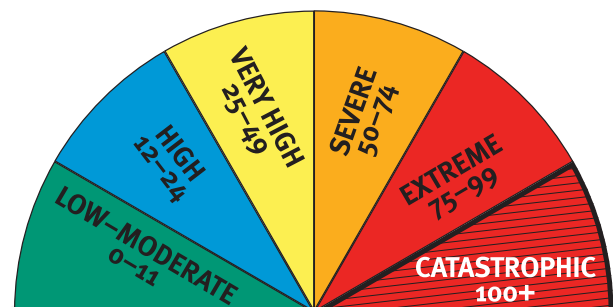
It is your responsibility  
to prepare yourself, your  
family and your  
home for the threat  
of bushfire.

## 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](http://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.
- Drink 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](http://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](http://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:

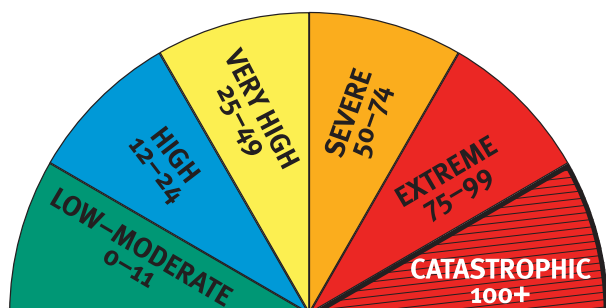
- NSPs do not cater for pets.
- Firefighters may not be present as they will be fighting the main fire front elsewhere.
- NSPs do not provide meals or amenities.
- They may not provide shelter from the elements, particularly flying embers.

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 <input type="checkbox"/>	No <input type="checkbox"/>
Unrestricted gate access	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Clear of overhead power lines	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Able to reverse in	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Turning/passing areas	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Heavy vehicle access on cattle grid/bridge	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Alternative way out	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Two wheel drive access	Yes <input type="checkbox"/>	No <input type="checkbox"/>

## STRUCTURE/S

Exterior walls – non-combustible	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Roof ridge capping sealed	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Eaves enclosed	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Roofing gutters and valleys clear of leaf litter and fine fuels	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Underfloor enclosed	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Vents screened	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Windows – non-combustible finishing	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Deck/veranda non-combustible	Yes <input type="checkbox"/>	No <input type="checkbox"/>

## WATER SUPPLY

Reticulated water supply	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Tank supply with QFRS access – 50mm male camlock fitting so fire fighters can use water if needed	Yes <input type="checkbox"/>	No <input type="checkbox"/>
QFRS accessible external open water supply (dam/pool)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Firefighting pump and hose connected to water supply	Yes <input type="checkbox"/>	No <input type="checkbox"/>



## 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.