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## **BUSH FIRE CONSIDERATIONS REPORT**

### **REZONING PLANNING PROPOSAL**

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**Lot 188 DP 728535, Lot 1 DP 1159861 & Lot 138 DP 755722**

**1-3 Azalea Street, Mullumbimby**

Former Mullumbimby Hospital Site

Prepared for: Byron Shire Council

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BPAD-L3 Accredited Practitioner

**Date:** 4th July 2023

**Reference:** 23/065

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## 1.0 EXECUTIVE SUMMARY

Bushfire Certifiers have been engaged by Byron Shire Council to undertake a bushfire assessment of the old Mullumbimby Hospital site at 1-3 Azalea Street, Mullumbimby having regard to the potential for future rezoning. The report has been undertaken to identify likely constraints and opportunities in relation to bushfire.

The site is considered capable of supporting future residential development incorporating the required APZ setbacks and other bushfire protection measures. It is noted that an indicative subdivision layout was not available at the time of reporting as required by s4.4.1 of Planning for Bushfire Protection 2019, therefore assessment of compliance with Planning for Bushfire Protection 2019 is limited to the responses in this report.

The assessment provides a bushfire hazard assessment against the heads of consideration required by Ministerial Direction 4.3, and section 9.1 of EP&A Act 1979. In this regard, a summary of each component is provided as follows –

### **Direction 4.3**

#### **(2) A planning proposal must:**

##### **(a) have regard to Planning for Bushfire Protection 2019**

The report identifies the required Bushfire Protection Measures likely to be required for the proposed R1 zoning however these requirements have not been tested against an indicative subdivision layout, although a potential residential yield has been provided by the applicant in Section 3 of this report which states –

*‘100-129 dwellings and supporting community infrastructure’.*

##### **(b) introduce controls that avoid placing inappropriate developments in hazardous areas**

Resulting from a bushfire hazard assessment, the report identifies the requirements for the Bushfire Protection Measures required by Planning for Bushfire Protection 2019 in Sections 5-7 of this report, without an indicative plan of subdivision.

##### **(c) ensure that bushfire hazard reduction is not prohibited within the Asset Protection Zone (APZ).**

A future indicative allotment layout will need to incorporate the APZ setbacks for 29kW/m<sup>2</sup> to residential lots/building envelopes and 10kW/m<sup>2</sup> to Special Fire Protection

Purpose (SFPP) development in accordance with Tables A1.12.3 and A1.12.1 of Planning for Bushfire Protection 2019, respectively. It is noted there is considered merit to reduce the acceptable solution asset protection zones in some areas by way of a performance solution report for the non-SFPP residential development, subject to NSW RFS concurrence.

Locations of asset protection zones have been identified in Section 4 of the report for both Special Fire Protection Purpose (SFPP) development and non-SFPP development. Confirmation for potential compliance will need to be determined by other consultants relating to areas such as ecology, cultural heritage, and proposed infrastructure.

It was noted in the ecological assessment that the central line of trees running north/south can be managed beneath the canopy to Inner Protection Area (PBP2019) standards, thereby constituting low-threat vegetation.

**(3) A planning proposal must, where development is proposed, comply with the following provisions, as appropriate:**

**(a) provide an Asset Protection Zone (APZ) incorporating at a minimum:**

- i. an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and**
- ii. an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road,**

Locations of asset protection zones have been identified in Section 5 of the report for both Special Fire Protection Purpose (SFPP) development and non-SFPP development. Confirmation for potential compliance will need to be determined by other consultants relating to areas such as ecology, cultural heritage, and proposed infrastructure.

An indicative internal/perimeter road network was not provided at the time of reporting, therefore an assessment demonstrating compliance cannot be provided. The assessment, however, does provide reference to the requirements for access pursuant to Table 5.3b (residential) and Table 6.8b (SFPP). The report also identifies the existing public road network and limitations noted from a high-level assessment.

The capacity of the internal access and wider public road network will need to be considered by a traffic consultant, considering the assessment consideration of PBP2019 which states –

*The capacity for the proposed road network to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile; and*

*The location of key access routes and direction of travel; and*

*The potential for development to be isolated in the event of a bush fire.*

In the absence of an allotment and road network layout pursuant to PBP2019, it is considered that a capability statement should be provided by a qualified and experienced Traffic Consultant.

**(b) for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the planning proposal permit Special Fire Protection Purposes (as defined under section 100B of the Rural Fires Act 1997), the APZ provisions must be complied with**

Section 5 of this report provides the asset protection zone location and depths for both SFPP and non-SFPP development. The report identifies there is merit to provide performance solutions to further reduce the asset protection depths for non-SFPP development subject to a specific assessment in consultation with the NSW Rural Fire Service (NSW RFS) if required.

**(c) contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks**

An indicative subdivision layout was not provided and therefore an assessment to demonstrate compliance pursuant to PBP2019 could not be undertaken. In the absence of an allotment and road network layout, it is considered that a capability statement should be provided by a Civil Engineer.

**(d) contain provisions for adequate water supply for firefighting purposes,**

New water, electricity and gas services will be required to comply with Section 5.3.3 and Table 5.3c of Planning for Bushfire Protection 2019 and AS 3959-2018 for future non-

SFPP development. For SFPP development, these services are to comply with Section 6.8.3 and Table 6.8c of PBP2019.

An indicative subdivision layout was not provided and therefore an assessment to demonstrate compliance with hydrant locations pursuant to PBP2019 could not be undertaken. In the absence of an allotment and road network layout, capability designs and/or statements by a competent person certifying that existing infrastructure can support a compliant fire hydrant design for reticulated water supply pursuant to these requirements of Planning for Bushfire Protection 2019.

**(e) minimise the perimeter of the area of land interfacing the hazard which may be developed,**

The site is an existing parcel of land (infill site) previously occupied by Mullumbimby Hospital which has since been demolished. In this regard the rezoning perimeter of the area of land interfacing the hazard is already developed and therefore the rezoning of the land will be satisfactory in this regard.

**(f) introduce controls on the placement of combustible materials in the Inner Protection Area.**

As identified in Section 5 of this report, the asset protection zones are to be managed and maintained in accordance with Table 5.3a PBP2019. This requirement limits the placement of combustible material with the Inner Protection Area; however this can be reinforced with planning controls if deemed necessary.

## **2.0 INTRODUCTION**

### **2.1 General**

The report provides an assessment and recommendations to establish the suitability for future rezoning from SP2 Infrastructure to R1 General Residential with community infrastructure. The applicant has advised that the future residential development is expected to support 100-129 dwellings and associated community infrastructure.

The site comprises the former Mullumbimby Hospital and adjacent nursing home (existing SP2 zoning). The hospital buildings have been demolished and the nursing home will remain. An existing public road network provides access to the site from Azalea Street and Left Bank Road. The bushfire hazard has been determined as Category 2 and Category 3 vegetation both on-site and off-site. The site is considered capable of supporting the future

development incorporating the required APZ setbacks and other bushfire protection measures.

A concept subdivision allotment layout plan has not been provided as required by s4.4.1 of Planning for Bushfire Protection 2019 (PBP2019) for assessment and therefore no individual lots or uses have been assessed as part of this report. Section 5 of the report provides the required acceptable solutions setbacks from the identified bushfire hazards for both Special Fire Protection Purpose (SFPP) and non-SFPP uses pursuant to PBP2019. From a high-level assessment, it is considered the site will be capable of accommodating future dwellings and community infrastructure although the impact on yield, forecast population numbers and associated impacts cannot be determined at this stage.

Similarly, only a high-level assessment of the existing public road network for emergency access and egress from the site has been undertaken however a detailed assessment as required by Table 4.2.1 PBP2019 does not form part of this assessment. In this regard, in the absence of a concept subdivision layout, as a minimum, a capability statement should be provided by a suitably qualified person to assess the road network capabilities for evacuation to support the future development.

Several bushfire planning controls have been recommended to reduce the risk from bushfire attack to an appropriate level having regard to the future development and the nature of the locality. The bushfire assessment assumes the Fire Danger Rating (FDI) of 80 for the subject property in accordance with PBP2019 and AS 3959-2018.

The applicant has requested a high-level bushfire report based on the information provided and therefore the assessment considerations of Table 4.2.1 of Planning for Bushfire Protection 2019 have partly been addressed by this report.

This report does not consider the following legislation and should be read in conjunction with the Statement of Environmental Effects submitted with the future development application.

- SEPP (Biodiversity and Conservation) 2021
- SEPP (Resilience and Hazards) 2021
- Biodiversity Conservation Act 2016 (NSW)
- Local Land Services Act 2013 (NSW)
- Land Management (Native Vegetation) Code 2017 (NSW)
- National Parks and Wildlife Act 1974 (NSW)
- Environmental Protection and Biodiversity Conservation Act 1999 (Cwlth)



## 2.2 History

The subject properties until recently supported the former Mullumbimby Hospital which has been demolished. The site was purchased by Byron Shire Council from the NSW State Government in 2017.

Council is proposing to create a mixture of diverse and affordable housing on the site, along with community facilities as shown in the concept structure plan (Figure 1). The future residential development is expected to support 100-129 dwellings and supporting community infrastructure. The site supports an existing aged care facility in the northern precinct which will remain.

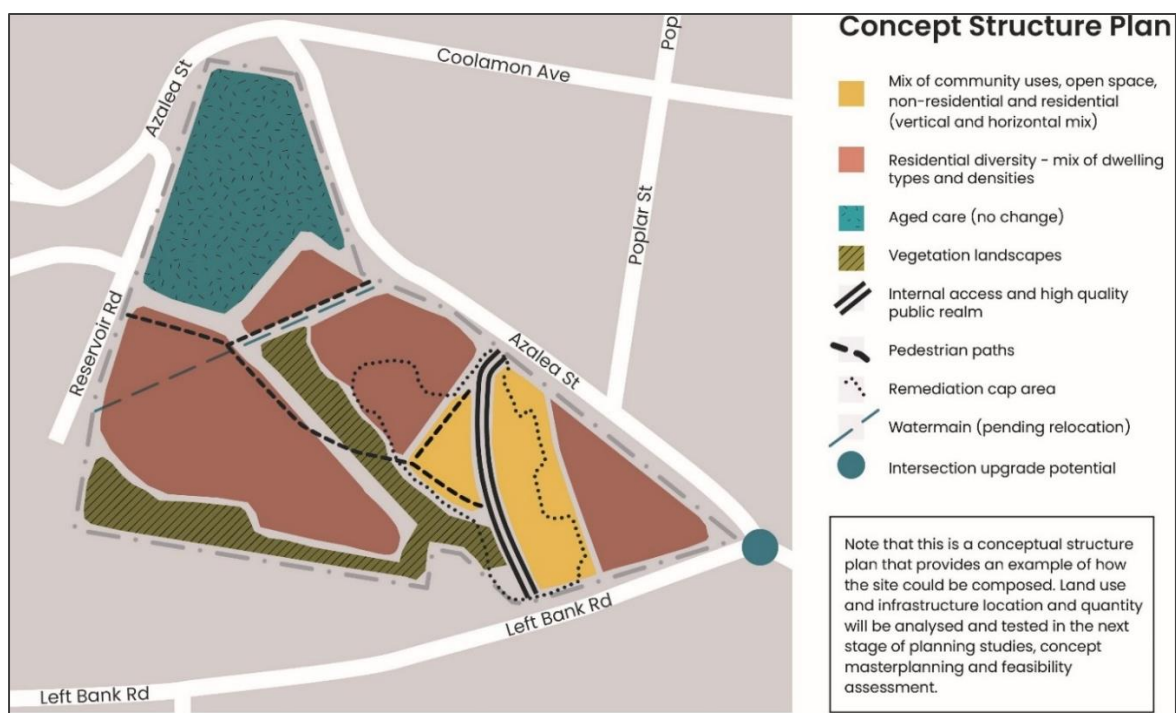


Figure 1- Concept structure plan

## 2.3 Report Details

Report Reference No.:	23/065
Property Address:	Lot 188 DP 728535, Lot 1 DP 1159861 and Lot 138 DP 755722, 1-3 Azalea Street Mullumbimby
Local Government Area:	Byron Shire Council
Proposal:	Rezoning of land from SP2 Infrastructure to R1 General Residential
Drawings:	Concept layout plan supplied by client , see Appendix A
Client:	Byron Shire Council

### 3.0 FUTURE REZONING

The applicant is proposing a future rezoning of part of the site from SP2 Infrastructure to R1 General Residential with a C2 environmental conservation zone within the southwest precinct as shown in Figure 5. The future residential development is expected to support 100-129 dwellings and supporting community infrastructure.

Public road access is available from Azalea Street, Left Bank Road and Reservoir Road to the west as shown on the locality plan and site plans in Figure 2 and 3. Existing zoning plan is shown in Figure 4 with the proposed zoning plan in Figure 5.

A brief description of the future rezoning is provided as follows:

*The aim of the project is to prepare a technical study to support a planning proposal to amend the statutory planning requirements over the former Mullumbimby Hospital Site.*

*These planning amendments are a critical step to delivering between 100-129 dwellings and supporting community infrastructure. The planning proposal is likely to seek:*

- a change in zoning from SP2 Infrastructure to R1 General Residential
- a change in height allowance from 9m to 11.5m.



Figure 2: Location plan

Source: BSC online mapping



Figure 3: Site plan

NSW Govt. Six Maps

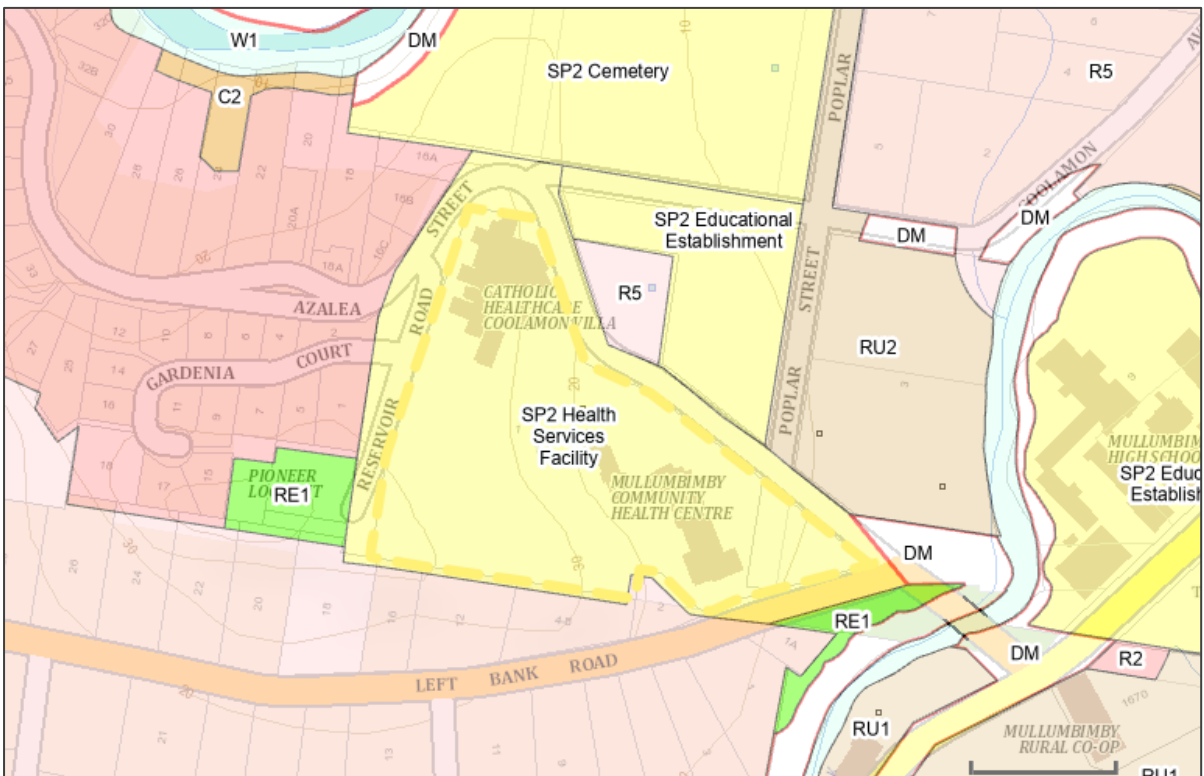


Figure 4: Current zoning

Source: [Planningportal.nsw.gov.au](http://Planningportal.nsw.gov.au)

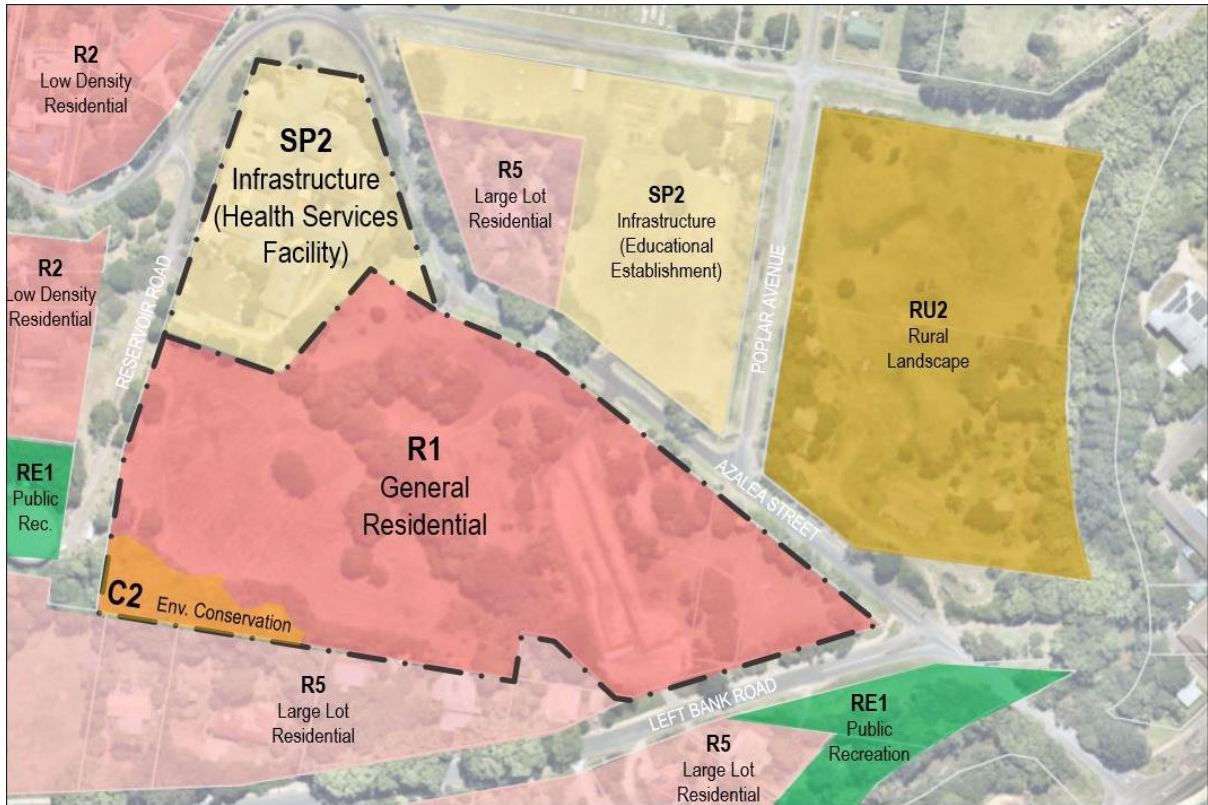


Figure 5: Proposed R1 rezoning and C2 environment conservation zone.

## 4.0 BUSHFIRE ASSESSMENT

### 4.1 Overview

The bushfire threat assessment has determined the asset protection zone setbacks for residential development and Special Fire Protection Purpose development pursuant to Table A1.12.3 and Table A1.12.1 of Planning for Bushfire Protection 2019. The recommendations will provide information to allow other consultants to assess impediments to achieving these requirements.

The report provides recommendations to achieve the acceptable solutions bushfire protection measures required by Planning for Bushfire Protection 2019 which include the following -

- Setbacks from bushfire hazard vegetation (Asset Protection Zones). It is noted all land has been identified by the ecologist as being managed within the R1 zone apart for the C2 environmental conservation area in the southwest precinct which will not be managed as a fuel reduction area.
- Fuel management requirements within APZs.

- Access and egress requirements from the future allotments via an appropriate well designed road system to support evacuation and fire fighting demands.
- Underground electricity and gas services.
- Compliant water supplies.

To demonstrate compliance as required by s4.4.1 of Planning for Bushfire Protection 2019 will require a concept lot layout for future residential development and community infrastructure. This will allow accurate assessment of required APZs, road requirements, evacuation, and landscaping provisions to achieve compliance with standards for subdivisions in NSW. It is noted there may be opportunities to provide performance solutions to arrive at varied acceptable outcomes.

## 4.2 Bushfire Prone Land Map

Bushfire prone land mapping identifies the subject allotment as bushfire prone land as shown in Figure 6. The mapping is considered reasonably accurate in respect to the current bushfire hazard, except the Category 2 remnant hazard in the southwest precinct of the property is overstated, and the off-site mapped Category 2 hazard to the east of Poplar Avenue is Category 3 grassland.

The Category 2 vegetation to the southwest will however encompass the proposed C2 environmental conservation zone as shown in Figure 5.

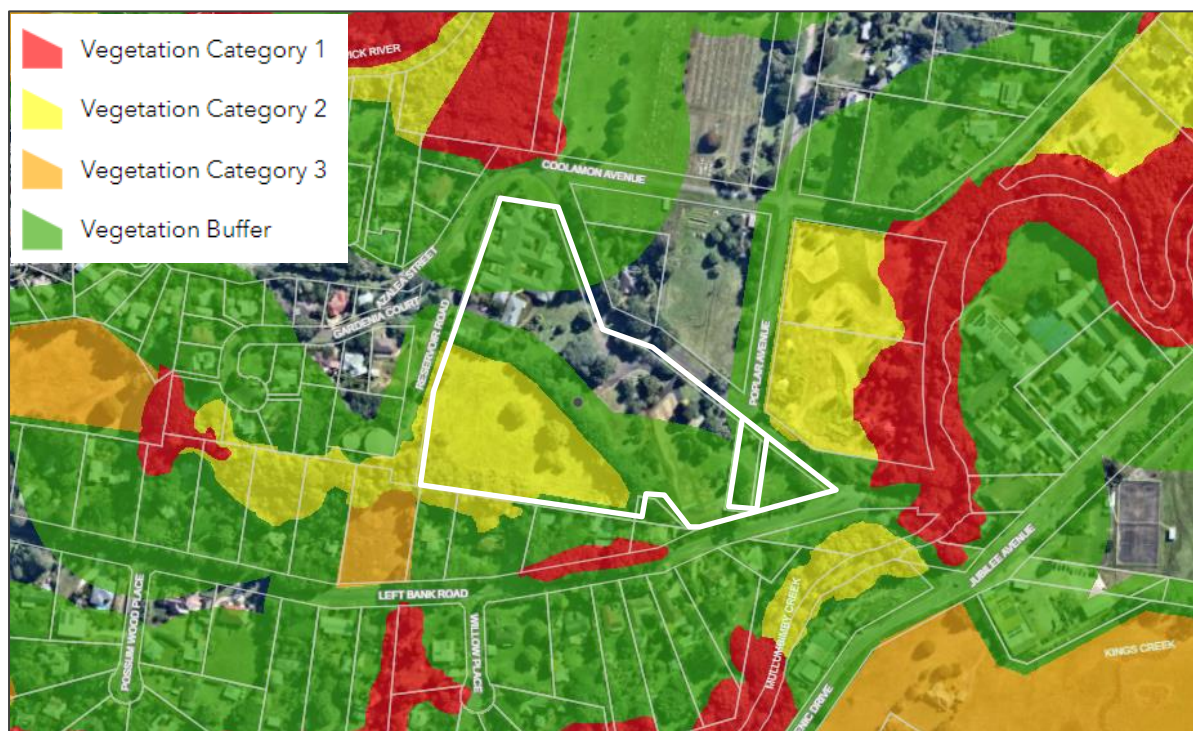


Figure 6: Bushfire prone land map

Source: Byron SC online mapping

### 4.3 Vegetation Classification and Slope Analysis

Identification of vegetation formations (Keith 2004) within 140 metres of the site was undertaken together with slope assessment. Figure 7 indicates vegetation formations from Byron Council mapping. Figure 8 indicates vegetation formations and slope analysis for the purposes of bushfire assessment.

The bushfire threat vegetation and slopes are described below.

- To the northwest is the existing aged care facility and managed grounds. Beyond the aged care facility at a distance of approximately 125m from the future rezoned land is closed forest.
- To the northeast and east on the far side of Azalea Street is grassland located on a 0-5° downslope. Further to the southeast is remnant vegetation and a narrow strip of vegetation (<50m width) along either side of Mullumbimby Creek which has been assessed as flat when measured across the vegetation. This methodology is and has been considered previously by NSW RFS as being acceptable to determine the slope most likely to influence the bushfire behaviour.
- To the south is managed land including a row of trees along Left Bank Road which does not pose a significant bushfire hazard.
- To the west/southwest is remnant vegetation located on an upslope to the water tower then 15-20° downslope beyond the water tower. It is noted there is a narrow strip of remnant trees located along the southern boundary in the southwestern corner located on a 15-20° downslope.
- It is understood that most of the vegetation onsite will remain with the proposed C2 zone in the southwest being a continuation of the rainforest hazard. Advice received confirmed all other areas within the proposed R1 zoning will be capable of being managed at surface and near surface level to an Inner Protection Area standard with existing canopy generally remaining. On this basis, these internal areas are not considered to pose a significant bushfire hazard is considered Low-threat vegetation (non-bushfire hazard).
- The assessment does not consider revegetation works as it is understood none are being proposed as part of the future rezoning.

NB: The assessment has not considered performance solution, it being noted there is merit to further reduce the nominated asset protection zones when detailed concept subdivision plans have been prepared, subject to NSW RFS concurrence.



Figure 7: Council vegetation classifications

Source: Byron SC online mapping

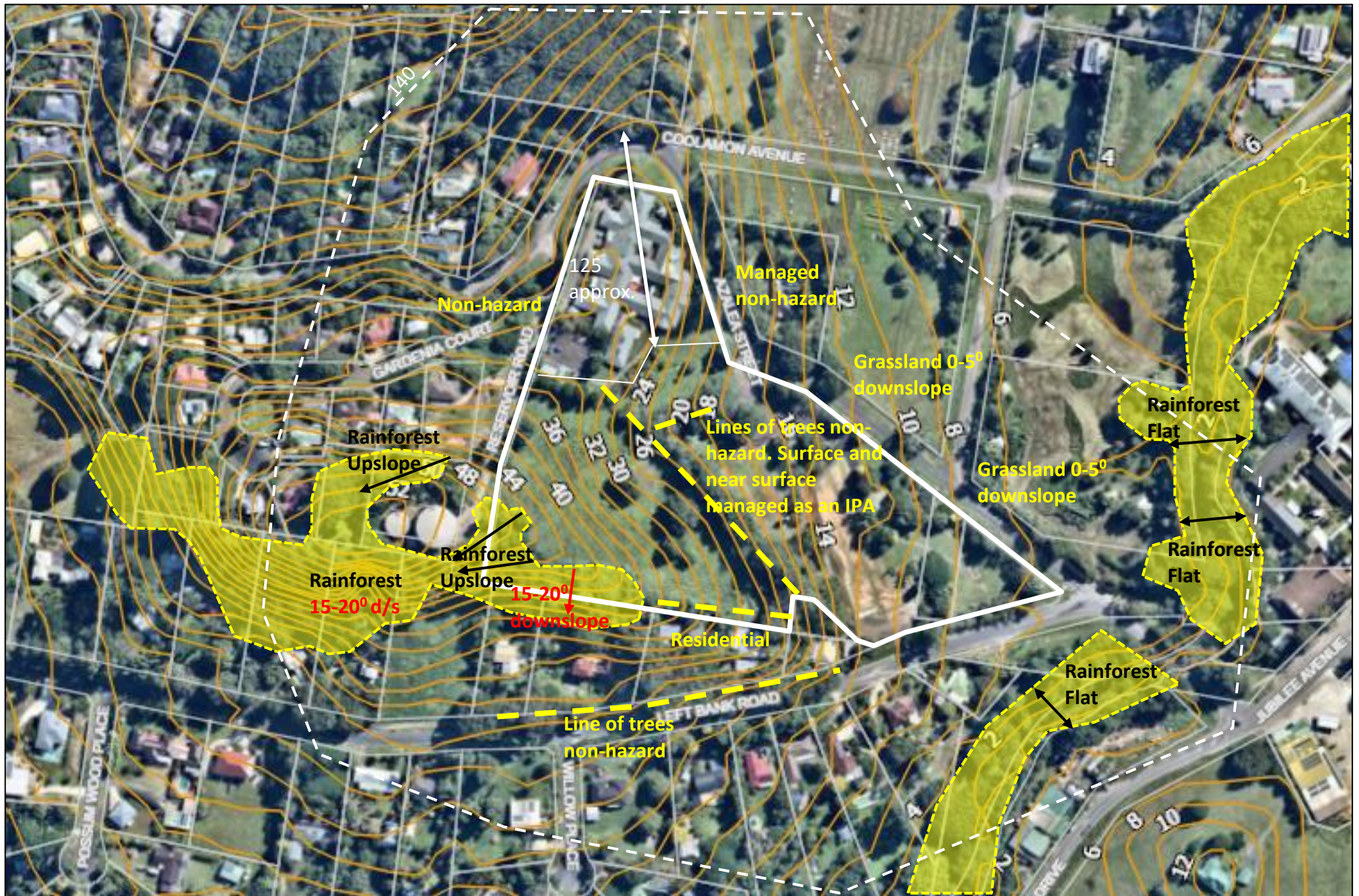


Figure 8: Bushfire threat analysis

Base map: BSC online mapping





Photo 1 – Rainforest hazard to the southwest.



Photo 2 -Subject site viewed from Azalea Street to the south. Row of Eucalypts in the centre of the site in the distance.

## 5.0 ASSET PROTECTION ZONES AND CONSTRUCTION STANDARDS

The site is considered suitable for single or multi dwelling housing which with sufficient asset protection zone widths provided in accordance with Table A1.12.3 PBP2019 or Table A.1.12.1 Planning for Bushfire Protection 2019 for Special Fire Protection Purpose (SFPP) development. Class 9 SFPP uses will require specific assessment to the NCC BCA with detailed information, and has not been considered as part of this report. Required APZ's are indicated Figures 9, 10, and Table 1.

There are several areas on the site where compliance is capable of being achieved if such uses were proposed at the development application subdivision stage. It is noted there is merit to reduce the demonstrated asset protection zones in some areas with a performance solution report at development application stage for subdivision for future non-SFPP uses, subject to NSW RFS concurrence.

**Table A1.12.1**Minimum distances for APZs – SFPP developments ( $\leq 10\text{kW/m}^2$ , 1200K)

KEITH VEGETATION FORMATION	EFFECTIVE SLOPE				
	Up slopes and flat	>0°-5°	>5°-10°	>10°-15°	>15°-20°
	Distance (m) from the asset to the predominant vegetation formation				
Rainforest	38	47	57	69	81
Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	67	79	93	100	100
Grassy and Semi-Arid Woodland (including Mallee)	42	50	60	72	85
Forested Wetland (excluding Coastal Swamp Forest)	34	42	51	62	73
Tall Heath	50	56	61	67	72
Short Heath	33	37	41	45	49
Arid-Shrublands (acacia and chenopod)	24	27	30	34	37
Freshwater Wetlands	19	22	25	28	30
Grassland	36	40	45	50	55

Figure 9: Table A 1.12.1 PBP2019 (Special Fire Protection Purpose developments).

**Table A1.12.3**Minimum distances for APZs – residential development, FFDI 80 areas ( $\leq 29\text{kW/m}^2$ , 1090K)

KEITH VEGETATION FORMATION	EFFECTIVE SLOPE				
	Up slopes and flat	>0°-5°	>5°-10°	>10°-15°	>15°-20°
	Distance (m) from the asset to the predominant vegetation formation				
Rainforest	9	12	15	20	25
Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	20	25	31	39	48
Grassy and Semi-Arid Woodland (including Mallee)	11	13	17	21	27
Forested Wetland (excluding Coastal Swamp Forest)	8	10	13	17	22
Tall Heath	16	18	20	22	25
Short Heath	9	10	12	13	15
Arid-Shrublands (acacia and chenopod)	6	7	8	9	10
Freshwater Wetlands	5	6	6	7	8
Grassland	10	11	12	14	16

Figure 10: Table A1.12.3 PBP2019 residential development.

The assessment establishes that future residential and community infrastructure development will require asset protection zone setbacks with the entire site managed as an Inner Protection Area (IPA) apart from the small amount of remnant vegetation in the southwest corner which is to remain and zoned C2 (environmental conservation). Advice received from the ecological assessment does not require setbacks from other existing trees on the site.

Asset protection zones will be required in locations that do not compromise the “Biodiversity Assessment” report prepared by EarthScapes Consulting 2023.

*‘Threatened Ecological Communities (includes Critically Endangered, Endangered or Vulnerable listed under State or Commonwealth legislation) which can be ‘mowed grass or a natural buffer planting with consideration of bush fire requirements and any adverse effects on the natural vegetation’.*

<b>Table 1: Summary of Required Asset Protection Zones Setbacks</b>				
<b>ASPECT</b>	<b>VEGETATION</b>	<b>SLOPE</b>	<b>REQUIRED APZ SETBACK (SFPP – Table A1.12.1 PBP2019) <math>\leq 10\text{kW/m}^2</math></b>	<b>REQUIRED APZ SETBACK (NON-SFPP Table A 1.12.3 PBP2019) <math>\leq 29\text{kW/m}^2</math></b>
North	Managed land	n/a	n/a	n/a
Northeast	Grassland	0-5° d/s	40m (20m onsite & 20m low hazard within the road reserve)	11m of low hazard available within the road reserve.
East	Grassland	0-5° d/s	40m (20m onsite & 20m low hazard within the road reserve).	11m of low hazard available within the road reserve.
	Remnant	Flat	38m (18m onsite & 20m low hazard within the road reserve)	9m of low hazard available within the road reserve.
Southeast	Remnant	Flat	38m (18m onsite & 20m low hazard within the road reserve)	9m of low hazard available within the road reserve.
South	Managed land	n/a	n/a	n/a
Southwest	Remnant	15-20° d/s	81m	25m
West	Remnant	Upslope	38m (can be partially incorporated in the managed Reservoir Rd reserve).	9m (can be incorporated partially in the managed Reservoir Rd reserve.)

It is understood that most of the vegetation onsite will remain. In this regard, the site inspection identified the existing vegetation on site, apart from the small area of mapped remnant vegetation within the proposed C2 zone, is considered to not pose a significant bushfire hazard and will be required to have surface and near surface fuels managed within the criteria for an IPA.

In addition to the required APZ setbacks, to ensure individual future dwellings and community infrastructure can meet the maximum radiant requirement, the entire site, excluding the remnant vegetation to the south east, would be required to be managed and maintained as an Inner Protection Area (IPA) except where noted above.

The IPA management to be in accordance with Appendix 4 of Planning for Bushfire Protection 2019 and the requirements of 'Standards for Asset Protection Zones' RFS 2005, see attached Appendix B & Appendix C, except for the small area of onsite remnant vegetation located in the southwest corner as shaded yellow in Figure 8, and other existing vegetation where noted.



Figure 11: Preliminary asset protection zones residential non-SFPP



Figure 12: Preliminary asset protection zones residential SFPP – merit to reduce the APZs with future performance solution subject to NSW RFS concurrence.

## 6.0 CONSTRUCTION STANDARDS AND OTHER PLANNING CONTROLS

With the land available for the required asset protection zones, future dwellings will be able to be constructed in accordance with Table A1.12.6 of Planning for Bushfire Protection 2019 with a forecast radiant heat of less than or equal to  $29\text{kW/m}^2$ , and SFPP developments to receive forecast radiant heat of less than or equal to  $10\text{kW/m}^2$ .

The future use of the rezoned land for residential purposes will require approval with an 'integrated' development application for subdivision requiring the issue of a s100B Rural Fires Act bushfire safety authority and development application/s for any dwellings under s4.14 of the EP&A Act 1979.

## 7.0 ACCESS AND UTILITY SERVICES

The existing public road network in the vicinity of the site is to be assessed by a competent person (traffic consultant) and confirmation provided via a traffic report demonstrating the existing public road network can support the increased volumes of traffic in the event of a bush fire emergency. The traffic report should acknowledge the scenario of medium rigid vehicles (fire appliances) passing by other vehicles.

As shown in the Concept Structure Plan (CSP) in Figure 13, the primary access and egress to the subject area is to and from Azalea Street to the east and Left Bank Road to the south. As shown in the CSP, there is likely to be some form of access also provided to Reservoir Road.

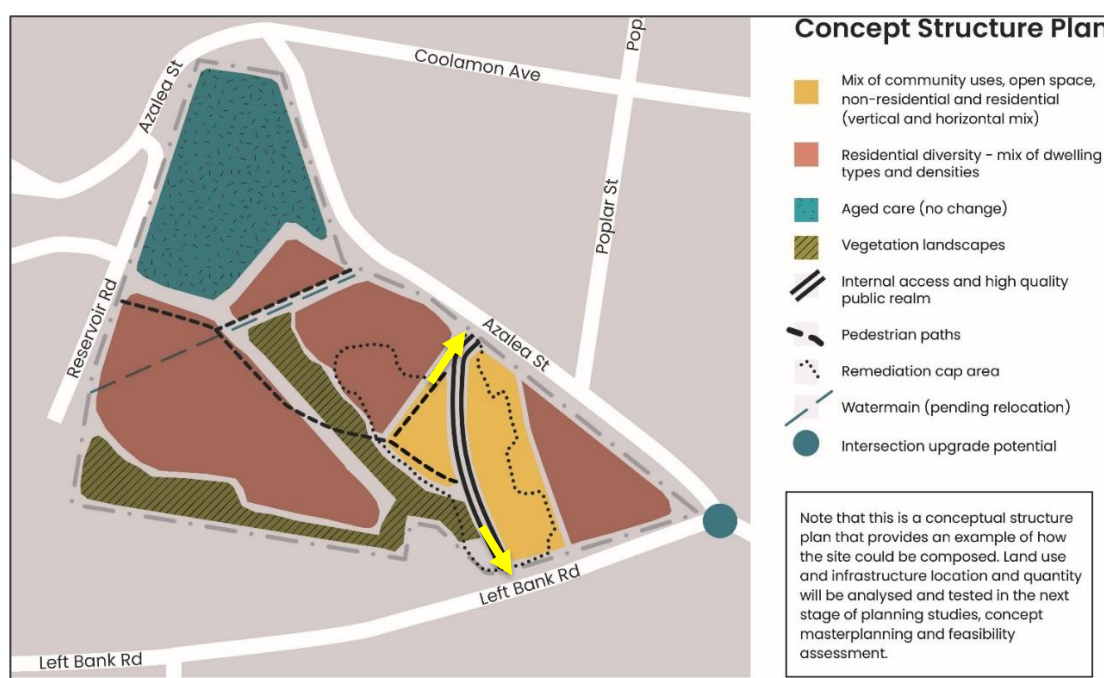


Figure 13 – Concept Structure Plan identifies points of access/egress from the site.

An initial assessment of the public road network has been undertaken by this office, primarily in relation to network formation and evacuation options rather than a more detailed assessment of capability and capacity. It is noted, the rezoning will potentially increase the population density than that of the previous health care facility use. As shown in Figure 13, the Concept Structure Plan is accessed and egressed from Azalea Street and Left Bank Road, subject to final design plans. There may also be access from Reservoir Road.

Access and egress to and from the subject site will be predominantly through non-bushfire prone land although there are some potential pinch points where the egress passes through remnant/riparian vegetation as shown in Figure 14 and photos 3, 4 and 5.

Azalea Street leads to a dead-end road public road network to the west as shown in Figure 14. Egress to the east via Azalea Street and Left Bank Road is not significantly impacted by bushfire. It is noted there are other potential reasons for a road to be obstructed such as car accident, however this should be considered in the traffic report.

The direct egress to Left Banks road as shown in the CSP will be directly to a two-way road although the alternate egress is through numerous residential streets (Figure 14) requiring further assessment for adequacy. The new internal public and property access road networks are required to comply with PBP2019 and is to be assessed by the Traffic Consultant as required.



Photo 3 -Left bank Road adjacent to the southern site boundary.



Photo 4 – Azalea Street bridge crossing adjacent to Jubilee Avenue



Photo 5– Azaleas Street junction with Jubilee Avenue.

The subject site is serviced by a reticulated water supply. New water, electricity and gas services will be required to comply with Section 5.3.3 and Table 5.3c of Planning for Bushfire Protection 2019 and AS 3959-2018 for future non-SFPP development.

For SFPP development, these services are to comply with Section 6.8.3 and Table 6.8c of PBP2019. In this regard, the rezoning application is to be supported by capability designs and/or statements by a competent person certifying that existing infrastructure can support a compliant fire hydrant design for reticulated water supply pursuant to these requirements of Planning for Bushfire Protection 2019.

Utility services are to be capable of complying with the requirements for future development applications e.g. subdivision, construction and community infrastructure.



Figure 14 – Red = dead end road, Blue and White = alternate egress and access routes.



## 8.0 CONCLUSION

The report establishes that compliant asset protection zones can be achieved for future residential development and associated community infrastructure on the land to be rezoned. Although with the absence of an indicative plan of subdivision a specific assessment demonstrating compliance with Planning for Bushfire Protection 2019 could not be fully demonstrated.

Access recommendations have been provided; however a traffic report will be required to demonstrate the internal roads and wider public road network will comply with the assessment considerations of Table 4.2.1 PBP2019.

Capability statements should be provided stating that water supply and utilities are capable of complying with the requirements of Planning for Bushfire Protection 2019 as outlined in this report.

Generally, from a bushfire perspective the proposed rezoning is not considered to have an adverse impact on the surrounding land uses and will not increase pressure on existing land use although impact of increased traffic in a bushfire event (evacuation) is unknown at this stage and will need to be demonstrated.

## DISCLAIMER

This report was prepared for the purposes and exclusive use of the stated client relating to the proposed rezoning of the subject property, and is not to be used for any other purpose or by any other person or Corporation. BCA Check Pty Ltd accepts no responsibility for any loss or damage suffered howsoever arising to any person or Corporation who may use or rely on this report in contravention of the terms of this clause.

The report provides information and recommendations to be addressed satisfying the requirements for rezoning and has been based on the relevant Council and Rural Fire Service Guidelines however recommendations or suggestions given in this report are based on our site investigation at the time of reporting. In some cases site conditions may change dramatically within a few years due to rapid vegetation re-growth and invading weed species.

## REFERENCES

NSW Rural Fire Service and Planning NSW (2019), *Planning for bushfire protection, A guide for councils planners fire authorities and developers*. Rural Fire Service NSW Australia.

Standards Australia, (2018), *AS3959 Construction of buildings in bushfire prone areas*, Australian Standards, Sydney.

## LEGISLATION

Environmental Planning and Assessment Act 1979 and Regulations 2021. *New South Wales*. Parliamentary Counsel's Office, NSW Government Information Service.









Rural Fires Act 1997. *New South Wales*. Parliamentary Counsel's Office, NSW Government Information Service.

Rural Fires Regulation 2022. *New South Wales*. Parliamentary Counsel's Office, NSW Government Information Service.

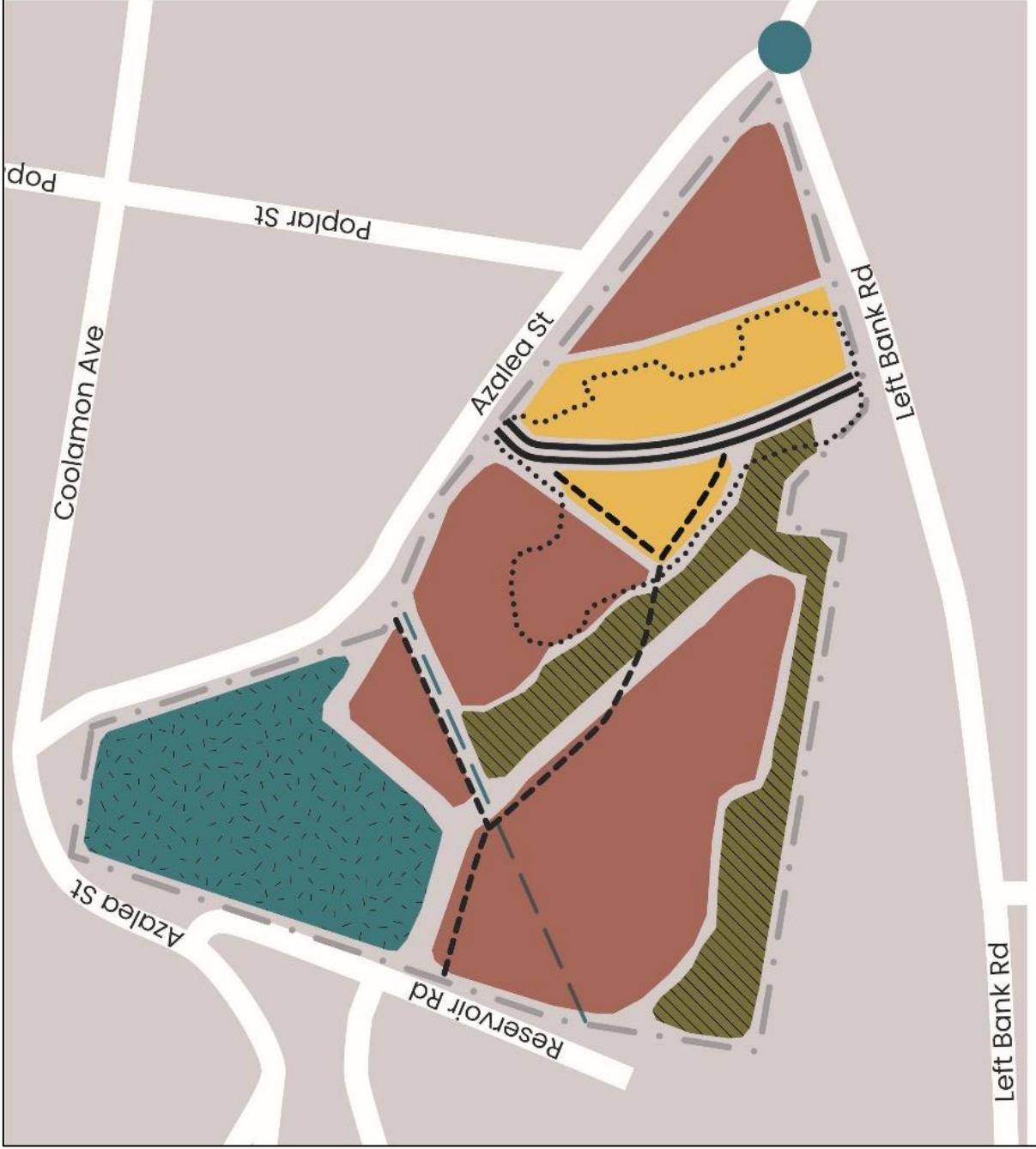
## APPENDIX A

### Concept structure plan

# Concept Structure Plan

-  Mix of community uses, open space, non-residential and residential (vertical and horizontal mix)
-  Residential diversity - mix of dwelling types and densities
-  Aged care (no change)
-  Vegetation landscapes
-  Internal access and high quality public realm
-  Pedestrian paths
-  Remediation cap area
-  Watermain (pending relocation)
-  Intersection upgrade potential

Note that this is a conceptual structure plan that provides an example of how the site could be composed. Land use and infrastructure location and quantity will be analysed and tested in the next stage of planning studies, concept masterplanning and feasibility assessment.



**APPENDIX B**

**Asset Protection Zone Requirements - Appendix 4 PBP 2019**

# APPENDIX 4

## ASSET PROTECTION ZONE REQUIREMENTS

In combination with other BPMs, a bush fire hazard can be reduced by implementing simple steps to reduce vegetation levels. This can be done by designing and managing landscaping to implement an APZ around the property.

Careful attention should be paid to species selection, their location relative to their flammability, minimising continuity of vegetation (horizontally and vertically), and ongoing maintenance to remove flammable fuels (leaf litter, twigs and debris).

This Appendix sets the standards which need to be met within an APZ.

### A4.1 Asset Protection Zones

An APZ is a fuel-reduced area surrounding a building or structure. It is located between the building or structure and the bush fire hazard.

For a complete guide to APZs and landscaping, download the NSW RFS document *Standards for Asset Protection Zones* at the NSW RFS Website [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au).

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Bush fire fuels should be minimised within an APZ. This is so that the vegetation within the zone does not provide a path for the spread of fire to the building, either from the ground level or through the tree canopy.

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- direct flame contact on the building;
- damage to the building asset from intense radiant heat; and
- ember attack.

The methodology for calculating the required APZ distance is contained within Appendix 1. The width of the APZ required will depend upon the development type and bush fire threat. APZs for new development are set out within Chapters 5, 6 and 7 of this document.

In forest vegetation, the APZ can be made up of an Inner Protection Area (IPA) and an Outer Protection Area (OPA).

#### A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defensible space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

##### Trees

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

##### Shrubs

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

##### Grass

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.

#### A4.1.2 Outer Protection Areas (OPAs)

An OPA is located between the IPA and the unmanaged vegetation. It is an area where there is maintenance of the understorey and some separation in the canopy. The reduction of fuel in this area aims to decrease the intensity of an approaching fire and restricts the potential for fire spread from crowns; reducing the level of direct flame, radiant heat and ember attack on the IPA.

Because of the nature of an OPA, they are only applicable in forest vegetation.

When establishing and maintaining an OPA the following requirements apply:

##### Trees

- tree canopy cover should be less than 30%; and
- canopies should be separated by 2 to 5m.

##### Shrubs

- shrubs should not form a continuous canopy; and
- shrubs should form no more than 20% of ground cover.

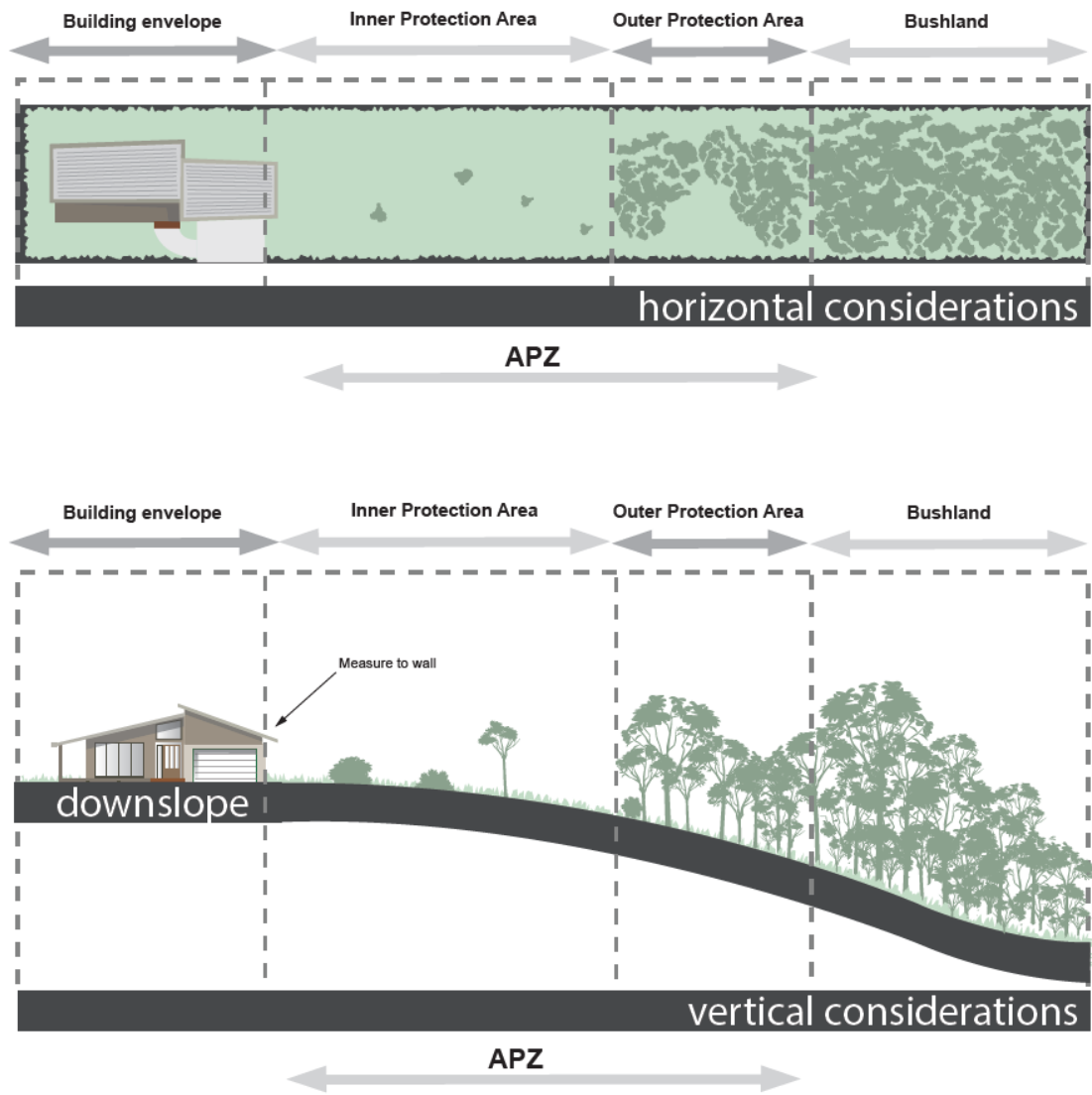
##### Grass

- grass should be kept mown to a height of less than 100mm; and
- leaf and other debris should be removed.

An APZ should be maintained in perpetuity to ensure ongoing protection from the impact of bush fires. Maintenance of the IPA and OPA as described above should be undertaken regularly, particularly in advance of the bush fire season.

**Figure A4.1**

Typical Inner and Outer Protection Areas.





## **APPENDIX C**

**: Standards for Asset Protection Zones RFS 2005**



## STANDARDS FOR ASSET PROTECTION ZONES

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## INTRODUCTION

For thousands of years bush fires have been a natural part of the Australian landscape. They are inevitable and essential, as many Australian plants and animals have adapted to fire as part of their life cycle.

In recent years developments in bushland areas have increased the risk of bush fires harming people and their homes and property. But landowners can significantly reduce the impact of bush fires on their property by identifying and minimising bush fire hazards. There are a number of ways to reduce the level of hazard to your property, but one of the most important is the creation and maintenance of an Asset Protection Zone (APZ).

A well located and maintained APZ should be used in conjunction with other preparations such as good property maintenance, appropriate building materials and developing a family action plan.

## WHAT IS AN ASSET PROTECTION ZONE?

An Asset Protection Zone (APZ) is a fuel reduced area surrounding a built asset or structure. This can include any residential building or major building such as farm and machinery sheds, or industrial, commercial or heritage buildings.

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows suppression of fire;
- an area from which backburning may be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Potential bush fire fuels should be minimised within an APZ. This is so that the vegetation within the planned zone does not provide a path for the transfer of fire to the asset either from the ground level or through the tree canopy.

## WHAT WILL THE APZ DO?

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- direct flame contact on the asset;
- damage to the built asset from intense radiant heat; and
- ember attack on the asset.

## WHERE SHOULD I PUT AN APZ?

An APZ is located between an asset and a bush fire hazard.

The APZ should be located wholly within your land. You cannot undertake any clearing of vegetation on a neighbour's property, including National Park estate, Crown land or land under the management of your local council, unless you have written approval.

If you believe that the land adjacent to your property is a bush fire hazard and should be part of an APZ, you can have the matter investigated by contacting the NSW Rural Fire Service (RFS).

There are six steps to creating and maintaining an APZ. These are:

1. Determine if an APZ is required;
2. Determine what approvals are required for constructing your APZ;
3. Determine the APZ width required;
4. Determine what hazard reduction method is required to reduce bush fire fuel in your APZ;
5. Take measures to prevent soil erosion in your APZ; and
6. Landscape and regularly monitor in your APZ for fuel regrowth.

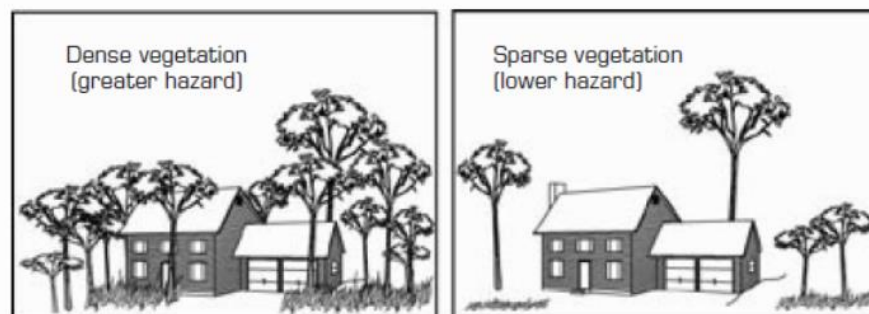
### STEP 1. DETERMINE IF AN APZ IS REQUIRED

Recognising that a bush fire hazard exists is the first step in developing an APZ for your property.

If you have vegetation close to your asset and you live in a bush fire prone or high risk area, you should consider creating and maintaining an APZ.

Generally, the more flammable and dense the vegetation, the greater the hazard will be. However, the hazard potential is also influenced by factors such as slope.

- A large area of continuous vegetation on sloping land may increase the potential bush fire hazard.
- The amount of vegetation around a house will influence the intensity and severity of a bush fire.
- The higher the available fuel the more intense a fire will be.



Isolated areas of vegetation are generally not a bush fire hazard, as they are not large enough to produce fire of an intensity that will threaten dwellings.

This includes:

- bushland areas of less than one hectare that are isolated from large bushland areas; and
- narrow strips of vegetation along road and river corridors.

If you are not sure if there is a bush fire hazard in or around your property, contact your local NSW Rural Fire Service Fire Control Centre or your local council for advice.

## STEP 2. DETERMINE WHAT APPROVALS ARE REQUIRED FOR CONSTRUCTING YOUR APZ

If you intend to undertake bush fire hazard reduction works to create or maintain an APZ you must gain the written consent of the landowner.

### Subdivided land or construction of a new dwelling

If you are constructing an APZ for a new dwelling you will need to comply with the requirements in *Planning for Bushfire Protection*. Any approvals required will have to be obtained as part of the Development Application process.

### Existing asset

If you wish to create or maintain an APZ for an existing structure you may need to obtain an environmental approval. The RFS offers a free environmental assessment and certificate issuing service for essential hazard reduction works. For more information see the RFS document *Application Instructions for a Bush Fire Hazard Reduction Certificate* or contact your local RFS Fire Control Centre to determine if you can use this approval process.

Bear in mind that all work undertaken must be consistent with any existing land management agreements (e.g. a conservation agreement, or property vegetation plan) entered into by the property owner.

If your current development consent provides for an APZ, you do not need further approvals for works that are consistent with this consent.

If you intend to burn off to reduce fuel levels on your property you may also need to obtain a Fire Permit through the RFS or NSW Fire Brigades. See the RFS document *Before You Light That Fire* for an explanation of when a permit is required.

## STEP 3. DETERMINE THE APZ WIDTH

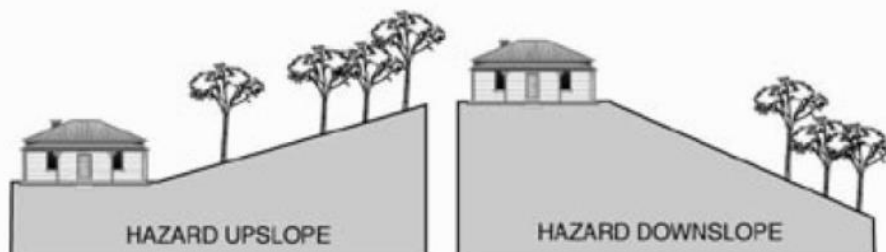
The size of the APZ required around your asset depends on the nature of the asset, the slope of the area, the type and structure of nearby vegetation and whether the vegetation is managed.

Fires burn faster uphill than downhill, so the APZ will need to be larger if the hazard is downslope of the asset.

5



Gentle slopes require a smaller APZ distance than steep slopes



A hazard downslope will require a greater APZ distance than a hazard upslope of the asset

Different types of vegetation (for example, forests, rainforests, woodlands, grasslands) behave differently during a bush fire. For example, a forest with shrubby understorey is likely to result in a higher intensity fire than a woodland with a grassy understorey and would therefore require a greater APZ width.

A key benefit of an APZ is that it reduces radiant heat and the potential for direct flame contact on homes and other buildings. Residential dwellings require a wider APZ than sheds or stockyards because the dwelling is more likely to be used as a refuge during bush fire.

#### **Subdivided land or construction of a new dwelling**

If you are constructing a new asset, the principles of *Planning for Bushfire Protection* should be applied. Your Development Application approval will detail the exact APZ distance required.

#### **Existing asset**

If you wish to create an APZ around an existing asset and you require environmental approval, the Bush Fire Environmental Assessment Code provides a streamlined assessment process. Your Bush Fire Hazard Reduction Certificate (or alternate environmental approval) will specify the maximum APZ width allowed.

For further information on APZ widths see *Planning for Bushfire Protection* or the *Bush Fire Environmental Assessment Code* (available on the RFS website), or contact your local RFS Fire Control Centre.

## **STEP 4. DETERMINE WHAT HAZARD REDUCTION METHOD IS REQUIRED TO REDUCE BUSH FIRE FUEL IN YOUR APZ**

The intensity of bush fires can be greatly reduced where there is little to no available fuel for burning. In order to control bush fire fuels you can reduce, remove or change the state of the fuel through several means.

Reduction of fuel does not require removal of all vegetation, which would cause environmental damage. Also, trees and plants can provide you with some bush fire protection from strong winds, intense heat and flying embers (by filtering embers) and changing wind patterns. Some ground cover is also needed to prevent soil erosion.

#### **Fuels can be controlled by:**

##### **1. raking or manual removal of fine fuels**

Ground fuels such as fallen leaves, twigs (less than 6 mm in diameter) and bark should be removed on a regular basis. This is fuel that burns quickly and increases the intensity of a fire.

Fine fuels can be removed by hand or with tools such as rakes, hoes and shovels.

##### **2. mowing or grazing of grass**

Grass needs to be kept short and, where possible, green.

##### **3. removal or pruning of trees, shrubs and understorey**

The control of existing vegetation involves both selective fuel reduction (removal, thinning and pruning) and the retention of vegetation.

Prune or remove trees so that you do not have a continuous tree canopy leading from the hazard to the asset. Separate tree crowns by two to five metres. A canopy should not overhang within two to five metres of a dwelling.

Native trees and shrubs should be retained as clumps or islands and should maintain a covering of no more than 20% of the area.

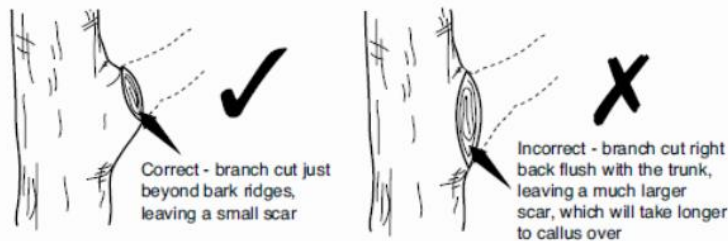
When choosing plants for removal, the following basic rules should be followed:

1. Remove noxious and environmental weeds first. Your local council can provide you with a list of environmental weeds or 'undesirable species'. Alternatively, a list of noxious weeds can be obtained at [www.agric.nsw.gov.au/noxweed/](http://www.agric.nsw.gov.au/noxweed/);
2. Remove more flammable species such as those with rough, flaky or stringy bark; and
3. Remove or thin understorey plants, trees and shrubs less than three metres in height

The removal of significant native species should be avoided.

Prune in accordance with the following standards:

- Use sharp tools. These will enable clean cuts and will minimise damage to the tree.
- Decide which branches are to be removed before commencing work. Ensure that you maintain a balanced, natural distribution of foliage and branches.
- Remove only what is necessary.
- Cut branches just beyond bark ridges, leaving a small scar.
- Remove smaller branches and deadwood first.



There are three primary methods of pruning trees in APZs:

#### 1. Crown lifting (skirting)

Remove the lowest branches (up to two metres from the ground). Crown lifting may inhibit the transfer of fire between the ground fuel and the tree canopy.

#### 2. Thinning

Remove smaller secondary branches whilst retaining the main structural branches of the tree. Thinning may minimise the intensity of a fire.

#### 3. Selective pruning

Remove branches that are specifically identified as creating a bush fire hazard (such as those overhanging assets or those which create a continuous tree canopy). Selective pruning can be used to prevent direct flame contact between trees and assets.

Your Bush Fire Hazard Reduction Certificate or local council may restrict the amount or method of pruning allowed in your APZ.

See the *Australian Standard 4373 (Pruning of Amenity Trees)* for more information on tree pruning.

#### 4. Slashing and trittering

Slashing and trittering are economical methods of fuel reduction for large APZs that have good access. However, these methods may leave large amounts of slashed fuels (grass clippings etc) which, when dry, may become a fire hazard. For slashing or trittering to be effective, the cut material must be removed or allowed to decompose well before summer starts.

If clippings are removed, dispose of them in a green waste bin if available or compost on site (dumping clippings in the bush is illegal and it increases the bush fire hazard on your or your neighbour's property).

Although slashing and trittering are effective in inhibiting the growth of weeds, it is preferable that weeds are completely removed.

Care must be taken not to leave sharp stakes and stumps that may be a safety hazard.



### **5. Ploughing and grading**

Ploughing and grading can produce effective firebreaks. However, in areas where this method is applied, frequent maintenance may be required to minimise the potential for erosion. Loose soil from ploughed or graded ground may erode in steep areas, particularly where there is high rainfall and strong winds.

### **6. Burning (hazard reduction burning)**

Hazard reduction burning is a method of removing ground litter and fine fuels by fire. Hazard reduction burning of vegetation is often used by land management agencies for broad area bush fire control, or to provide a fuel reduced buffer around urban areas.

Any hazard reduction burning, including pile burns, must be planned carefully and carried out with extreme caution under correct weather conditions. Otherwise there is a real danger that the fire will become out of control. More bush fires result from escaped burning off work than from any other single cause.

**It is YOUR responsibility to contain any fire lit on your property. If the fire escapes your property boundaries you may be liable for the damage it causes.**

Hazard reduction burns must therefore be carefully planned to ensure that they are safe, controlled, effective and environmentally sound. There are many factors that need to be considered in a burn plan. These include smoke control, scorch height, frequency of burning and cut off points (or control lines) for the fire. For further information see the RFS document *Standards for Low Intensity Bush Fire Hazard Reduction Burning*, or contact your local RFS for advice.

### **7. Burning (pile burning)**

In some cases, where fuel removal is impractical due to the terrain, or where material cannot be disposed of by the normal garbage collection or composted on site, you may use pile burning to dispose of material that has been removed in creating or maintaining an APZ.

For further information on pile burning, see the RFS document *Standards for Pile Burning*.

In areas where smoke regulations control burning in the open, you will need to obtain a Bush Fire Hazard Reduction Certificate or written approval from Council for burning. During the bush fire danger period a Fire Permit will also be required. See the RFS document *Before You Light that Fire* for further details.

## STEP 5. TAKE MEASURES TO PREVENT SOIL EROSION

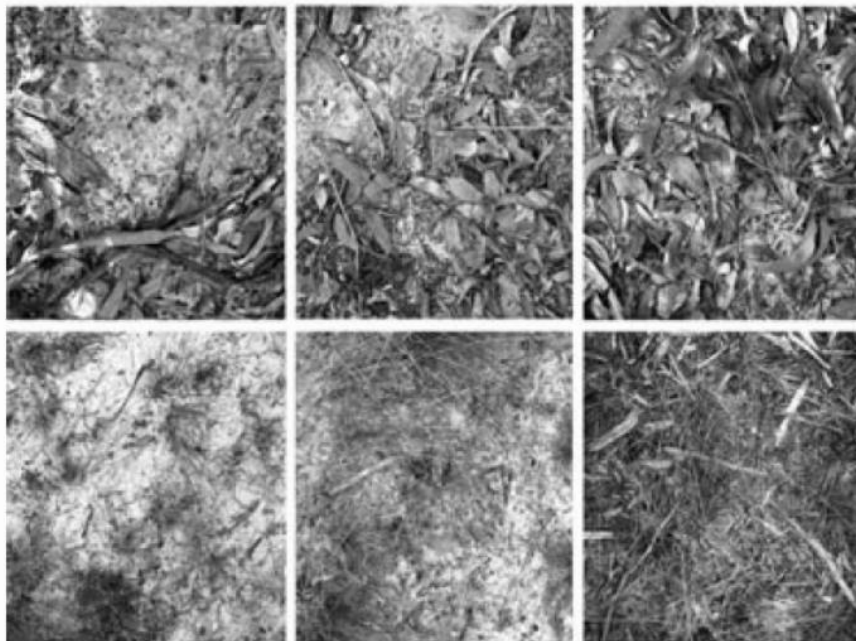
While the removal of fuel is necessary to reduce a bush fire hazard, you also need to consider soil stability, particularly on sloping areas.

Soil erosion can greatly reduce the quality of your land through:

- loss of top soil, nutrients, vegetation and seeds
- reduced soil structure, stability and quality
- blocking and polluting water courses and drainage lines

A small amount of ground cover can greatly improve soil stability and does not constitute a significant bush fire hazard. Ground cover includes any material which directly covers the soil surface such as vegetation, twigs, leaf litter, clippings or rocks. A permanent ground cover should be established (for example, short grass). This will provide an area that is easy to maintain and prevent soil erosion.

When using mechanical hazard reduction methods, you should retain a ground cover of at least 75% to prevent soil erosion. However, if your area is particularly susceptible to soil erosion, your Hazard Reduction Certificate may require that 90% ground cover be retained.



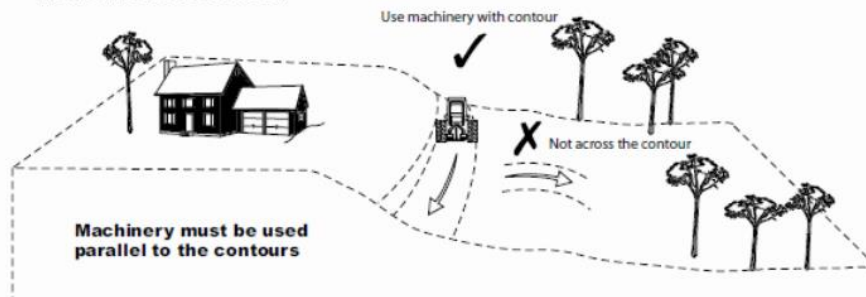
50%

75%

100%

Ground Cover

To reduce the incidence of soil erosion caused by the use of heavy machinery such as ploughs, dozers and graders, machinery must be used parallel to the contours. Vegetation should be allowed to regenerate, but be managed to maintain a low fuel load.



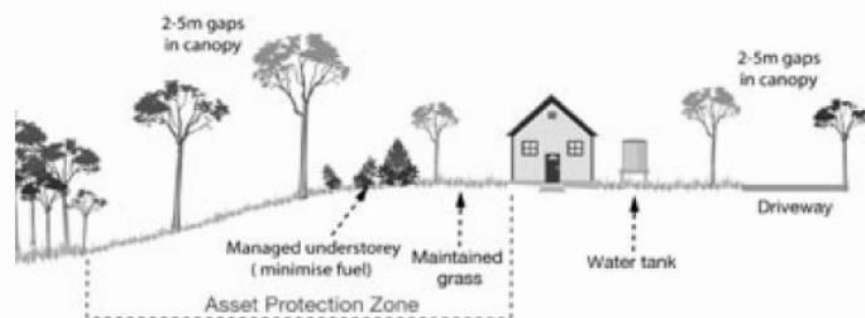
## STEP 6. ONGOING MANAGEMENT AND LANDSCAPING

Your home and garden can blend with the natural environment and be landscaped to minimise the impact of fire at the same time. To provide an effective APZ, you need to plan the layout of your garden to include features such as fire resistant plants, radiant heat barriers and windbreaks.

### Layout of gardens in an APZ

When creating and maintaining a garden that is part of an APZ you should:

- ensure that vegetation does not provide a continuous path to the house;
- remove all noxious and environmental weeds;
- plant or clear vegetation into clumps rather than continuous rows;
- prune low branches two metres from the ground to prevent a ground fire from spreading into trees;
- locate vegetation far enough away from the asset so that plants will not ignite the asset by direct flame contact or radiant heat emission;
- plant and maintain short green grass around the house as this will slow the fire and reduce fire intensity. Alternatively, provide non-flammable pathways directly around the dwelling;
- ensure that shrubs and other plants do not directly abut the dwelling. Where this does occur, gardens should contain low-flammability plants and non flammable ground cover such as pebbles and crush tile; and
- avoid erecting brush type fencing and planting "pencil pine" type trees next to buildings, as these are highly flammable.



### Removal of other materials

Woodpiles, wooden sheds, combustible material, storage areas, large quantities of garden mulch, stacked flammable building materials etc. should be located away from the house. These items should preferably be located in a designated cleared location with no direct contact with bush fire hazard vegetation.

### Other protective features

You can also take advantage of existing or proposed protective features such as fire trails, gravel paths, rows of trees, dams, creeks, swimming pools, tennis courts and vegetable gardens as part of the property's APZ.

## PLANTS FOR BUSH FIRE PRONE GARDENS

When designing your garden it is important to consider the type of plant species and their flammability as well as their placement and arrangement.

Given the right conditions, all plants will burn. However, some plants are less flammable than others.

Trees with loose, fibrous or stringy bark should be avoided. These trees can easily ignite and encourage the ground fire to spread up to, and then through, the crown of the trees.

Plants that are less flammable, have the following features:

- high moisture content
- high levels of salt
- low volatile oil content of leaves
- smooth barks without "ribbons" hanging from branches or trunks; and
- dense crown and elevated branches.

When choosing less flammable plants, be sure not to introduce noxious or environmental weed species into your garden that can cause greater long-term environmental damage.

For further information on appropriate plant species for your locality, contact your local council, plant nurseries or plant society.

If you require information on how to care for fire damaged trees, refer to the Firewise brochure *Trees and Fire Resistance; Regeneration and care of fire damaged trees*.

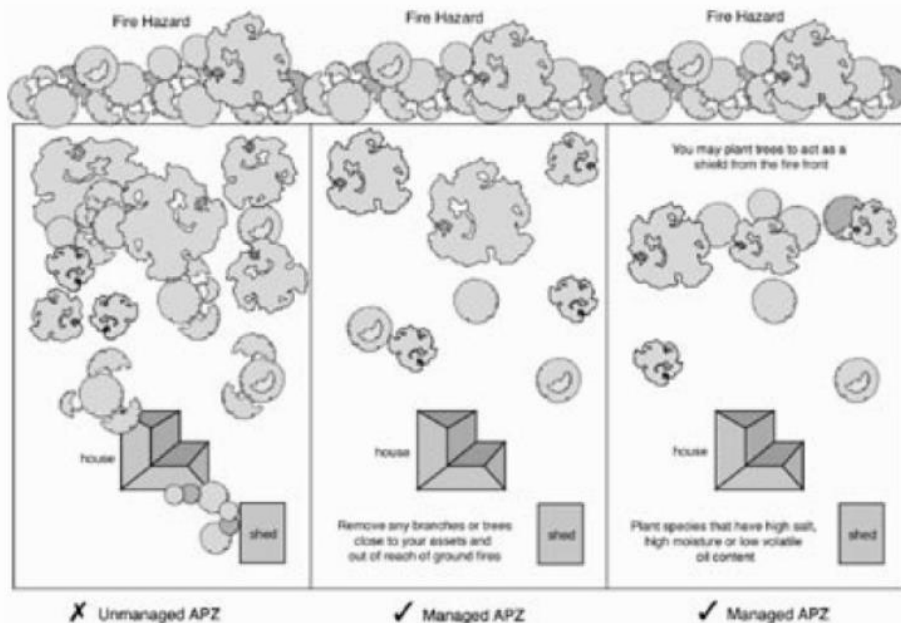
## WIND BREAKS

Rows of trees can provide a wind break to trap embers and flying debris that could otherwise reach the house or asset.

You need to be aware of local wind conditions associated with bush fires and position the wind break accordingly. Your local RFS Fire Control Centre can provide you with further advice.

When choosing trees and shrubs, make sure you seek advice as to their maximum height. Their height may vary depending on location of planting and local conditions. As a general rule, plant trees at the same distance away from the asset as their maximum height.

When creating a wind break, remember that the object is to slow the wind and to catch embers rather than trying to block the wind. In trying to block the wind, turbulence is created on both sides of the wind break making fire behaviour erratic.



## HOW CAN I FIND OUT MORE?

The following documents are available from your local Fire Control Centre and from the NSW RFS website at [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au).

- Before You Light That Fire
- Standards for Low Intensity Bush Fire Hazard Reduction Burning
- Standards for Pile Burning
- Application Instructions for a Bush Fire Hazard Reduction Certificate

If you require any further information please contact:

- your local NSW Rural Fire Service Fire Control Centre. Location details are available on the RFS website or
- call the NSW RFS Enquiry Line 1800 679 737 (Monday to Friday, 9am to 5pm), or
- the NSW RFS website at [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au).

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