



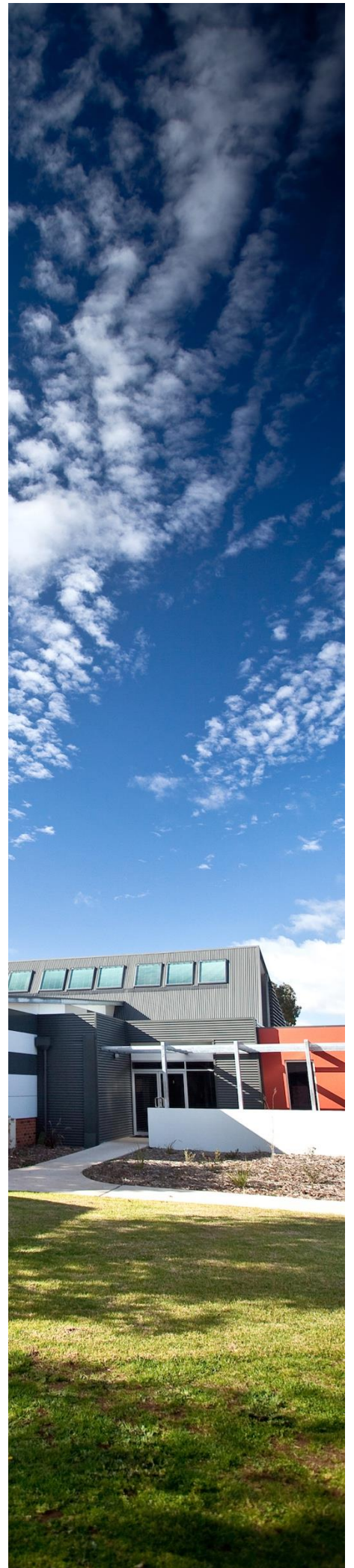
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# Bush Fire Assessment Report

**Eight Lot Subdivision  
194 Hill End Road  
Caerleon**

(Our Reference: 38156-BR01\_A)  
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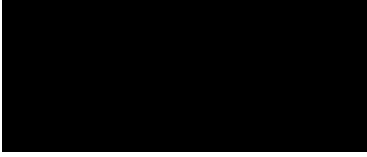

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<b>Report Title:</b>	Bush Fire Assessment Report
<b>Project Name:</b>	Subdivision
<b>Client:</b>	Darthula Pastoral Pty Ltd
<b>Project No.</b>	38156
<b>Report Reference</b>	38156-BR01_A
<b>Date:</b>	15/02/2022
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# 1 INTRODUCTION

## 1.1 Background

This Bush Fire Assessment Report (BFAR) has been prepared to accompany a Development Application (DA) for the subdivision of Lot 410 DP 1112456, Lots 22, 72, 82 & 83 DP 756897 known as part of 194 Hill End Road, Caerleon into eight (8) Lots.

## 1.2 Proposed Development

The proposed development involves the subdivision of the subject Lots into eight (8) Lots to be used for rural residential purposes. The proposed subdivision is illustrated in **Appendix A** of this report.

Rural fencing shall be established as part of this subdivision to delineate the property boundaries. All servicing and infrastructure shall be subject to and established as part of future applications for dwellings on each proposed Lot.

## 1.3 Legislative Requirements

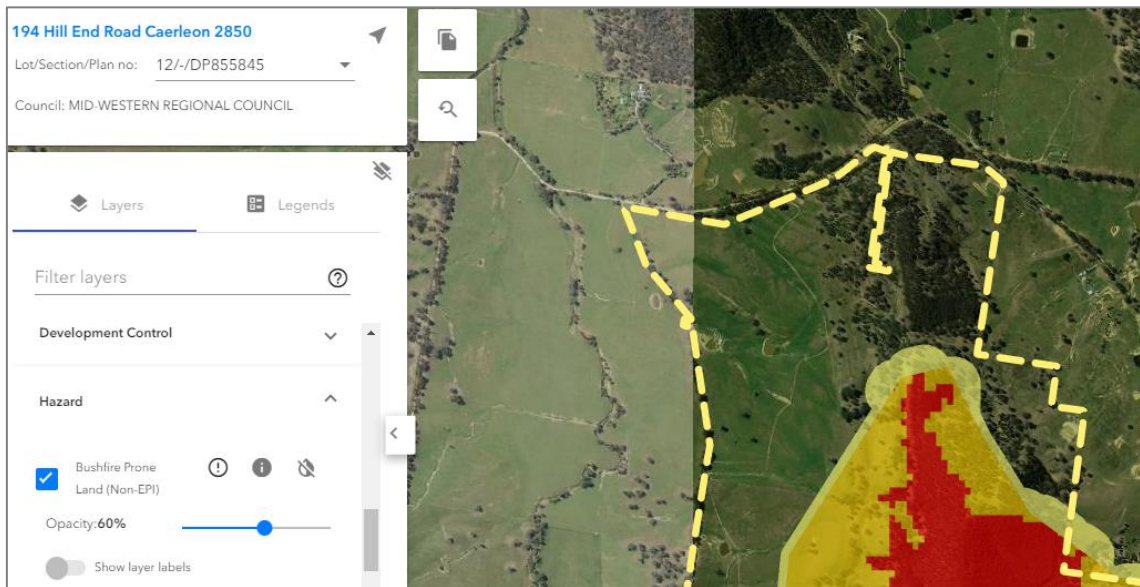
### 1.3.1 Environmental Planning and Assessment Act 1979

#### 1.3.1.1 Integrated Development

The proposed development is integrated development by virtue of Section 4.46 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as it requires both development consent and authorisation under Section 100B (Bushfire Safety Authority) of the *Rural Fires Act 1997* in order for it to be carried out.

#### 1.3.1.2 Bush Fire Prone Land

The subject site is designated as bush fire prone land, pursuant to Section 10.3 of the EP&A Act. The site is identified as containing Vegetation Buffer on the Bush Fire Prone Land Map as shown in **Figure 1**. It is also noted that Council will be amending their bushfire prone land mapping in due course, the subject site of which would be predominately mapped as bushfire prone land, Category 1, 2 or Vegetation Buffer.



Source: (NSW Planning & Environment, 2021)

**Figure 1 – Bush Fire Prone Land Map**

### 1.3.2 Rural Fires Act 1997

Section 100B of the *Rural Fires Act 1997* (RF Act) requires a Bush Fire Safety Authority to be obtained before developing bushfire prone land for certain purposes. These purposes include subdivision of land that could lawfully permit residential purposes. Given that the proposed lots are to be for residential purposes, these provisions are applicable.

Clause 44 of the *Rural Fires Regulation 2013* outlines the requirements for inclusion in any application for a Bush Fire Safety Authority. This report has been prepared to provide the information required by Clause 44. A checklist for the Clause 44 matters is provided in **Appendix B**.

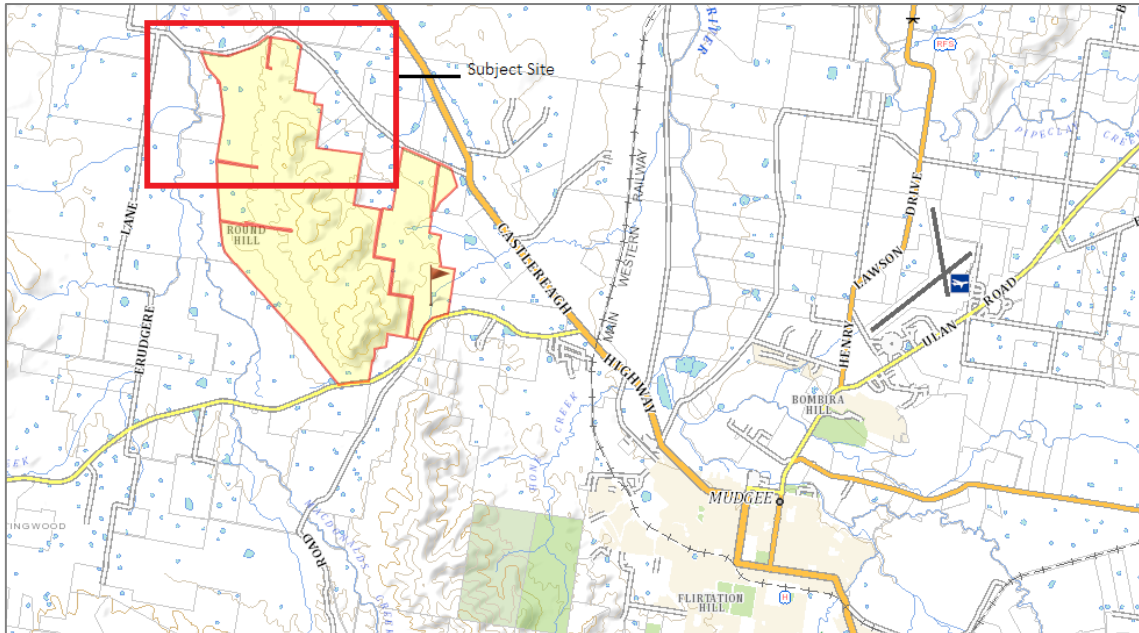
### 1.3.3 Planning for Bush Fire Protection

The New South Wales Rural Fire Service's (RFS) *Planning for Bush Fire Protection 2019* (PBP) applies to all DAs in bush fire prone land. This report has been prepared to address the requirements of the PBP and as a subdivision that could lawfully contain residential development. Specifically, Section 5 of PBP has been addressed throughout this report.

## 2 THE SITE & ITS SURROUNDS

### 2.1 Site Location

The site is located north west of Mudgee, as shown in **Figure 2** below, and is located within the Mid-Western Regional Council Local Government Area.



Source: (NSW Government Spatial Services, 2021)

**Figure 2 – Site Location**

### 2.2 Site Details

The site is comprised of Lot 410 DP 1112456, Lots 22, 72, 82 & 83 DP 756897 and has an overall area of approximately 90.7 hectares. The Deposited Plans are provided in **Appendix C** of this report.

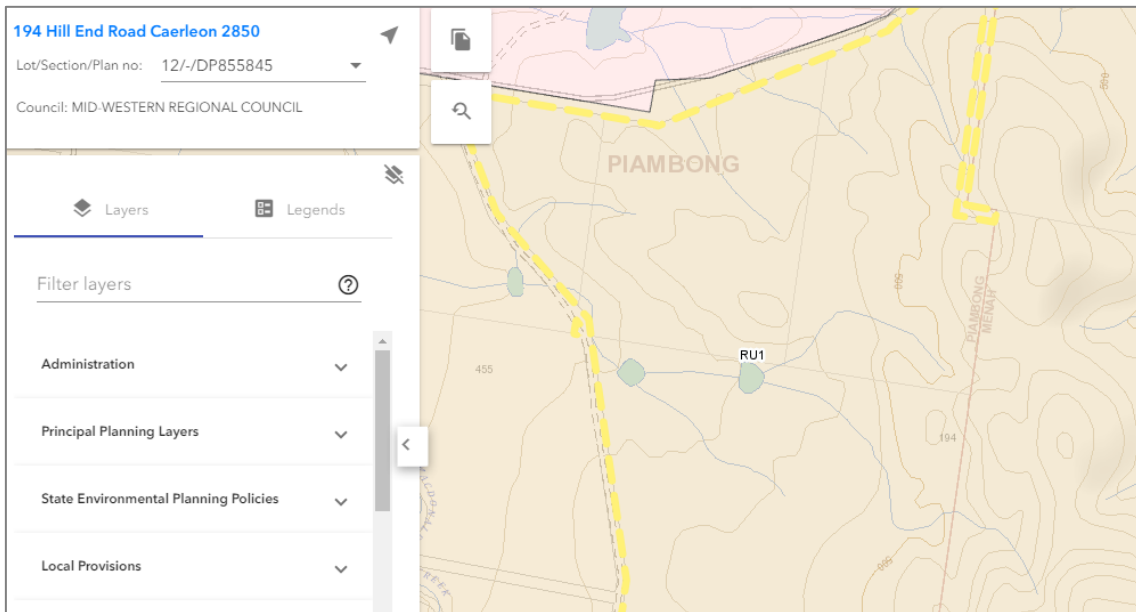
The site has direct frontage to Lower Piambong Road and Gibsons Lane within a rural locality. The property extends to the south, connecting to Hill End Road and the Castlereagh Highway to the east. There are scattered isolated trees, timbered country and grasslands throughout the site as shown in **Figure 3** below.





Source: (NearMaps, 2021)

Figure 3 – Site Aerial



Source: (NSW Planning & Environment, 2021)

Figure 4 – Zoning Map

The site is currently zoned RU1 Primary Production pursuant to the provisions under the *Mid-Western Regional Local Environmental Plan 2012*, as shown in **Figure 4** above. Gateway determination has been obtained to rezone the subject site from RU1 Primary Production to R5 Large Lot Residential. There are RU1 lands surrounding the subject site.

## **2.3 Environmental Considerations**

### **2.3.1 Environmentally Significant Features**

The subject site is not identified as containing any environmentally sensitive features under the LEP mapping.

### **2.3.2 Threatened Species, Populations and Ecological Communities**

The vegetated slopes are identified as having moderate to high biodiversity value and these areas have been avoided in determining the suitability for building envelopes within the proposed lots. Ecological Australia have identified the primary vegetation types across the site as exotic grassland. The higher slopes are dominated by Tumbledown Gum woodland interspersed with White Box – Black Cypress. These areas have also been avoided.

### **2.3.3 Indigenous Heritage**

The development area that will be impacted as a result of the subdivision is limited to land that has been historically cleared, cultivated and used for grazing. Given the highly disturbed nature of the area, an Aboriginal Archaeological Assessment was not required. An AHIMS search was undertaken and there are no known artefacts or sites recorded in the vicinity of the development.

### 3 BUSH FIRE ASSESSMENT

#### 3.1 Methodology

The methodology utilised for the bush fire assessment is outlined in A1.1 of the PBP. The following provides the required information in accordance with the methodology.

#### 3.2 Bush Fire Fuels

Pursuant to Appendix 1 of PBP, all vegetation on the site and within 140m of the site (assessment area) has been classified in accordance with *Ocean Shores to Desert Dunes* (Keith, 2004) and Figure 2.3 of AS3959. The vegetation within the assessment area has been mapped and is shown in **Figure 5** below. Photographs of the vegetation from the site inspection carried out on 2 December 2021 are provided in the following plates for each of the assessment plots.

The nominated building envelopes shown on the Subdivision Plans in **Appendix A** have been approximately positioned on the Vegetation Classification map below.

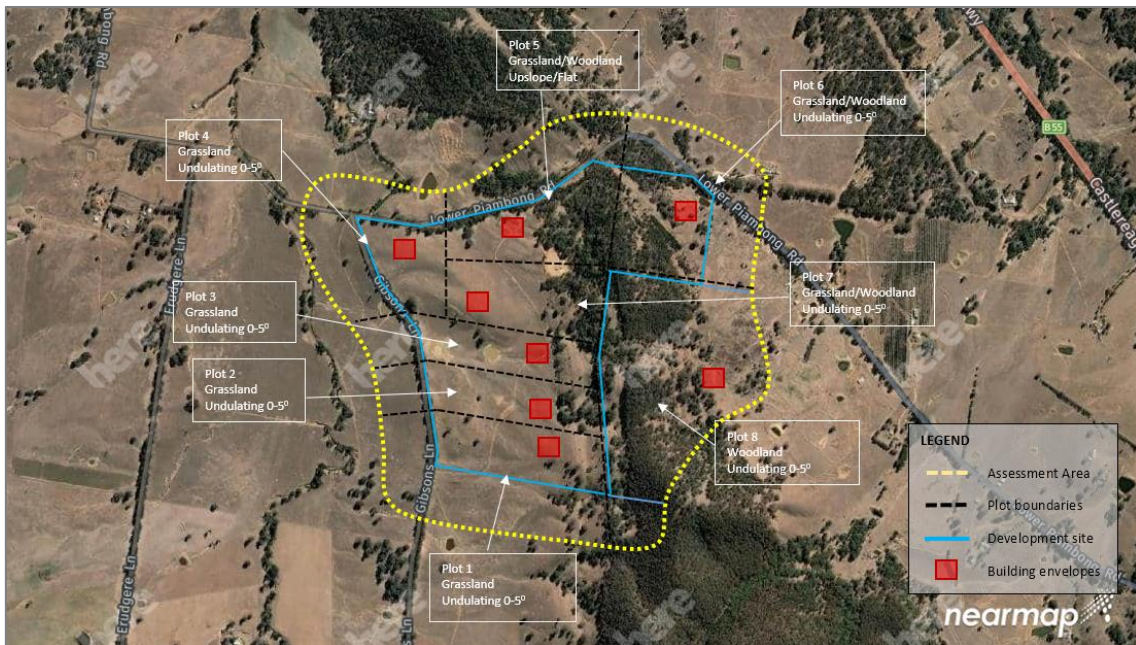









Figure 5 – Vegetation Classification

Plot 1	
Existing Classification:	Grassland
Post Development Classification:	Grassland
Description:	Grassland that is frequently managed/slashed by the property owner. Some isolated Eucalypt trees present.
	
Plate 1 – Plot 1	Plate 2 – Plot 1

Plot 2	
Existing Classification:	Grassland
Post Development Classification:	Grassland
Description:	Grassland that is frequently managed/slashed by the property owner. Some isolated Eucalypt trees present.
	
Plate 3 – Plot 2	Plate 4 – Plot 2

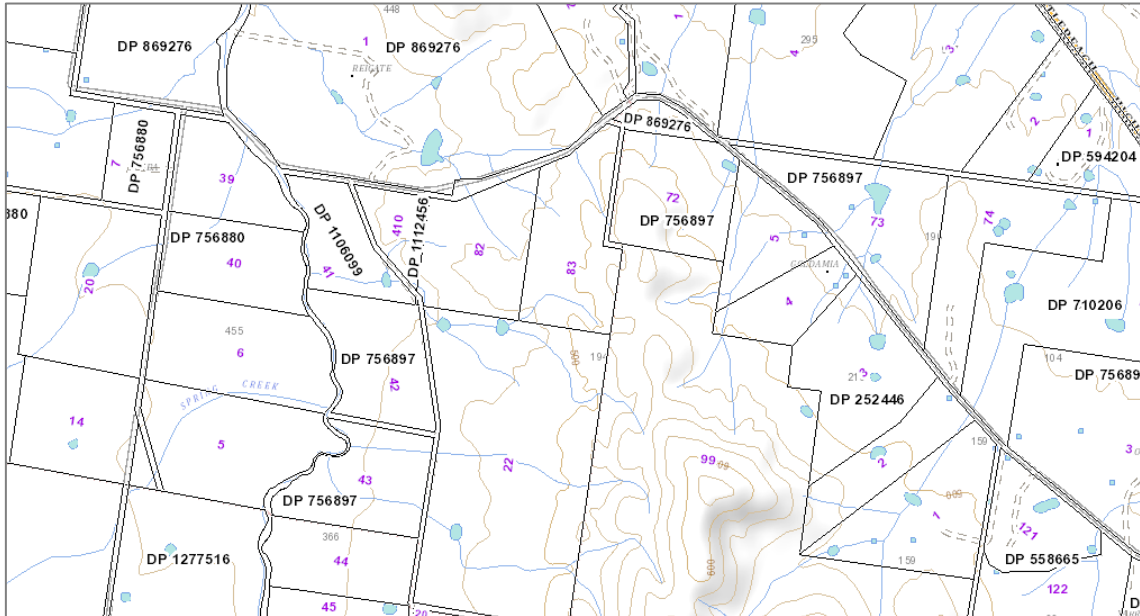
Plot 3	
Existing Classification:	Grassland
Post Development Classification:	Grassland
Description:	Grassland that is frequently managed/slashed by the property owner. Some isolated Eucalypt trees present.
	
Plate 5 – Plot 3	Plate 6 – Plot 3
Plot 4	
Existing Classification:	Grassland
Post Development Classification:	Grassland
Description:	Grassland that is frequently managed/slashed by the property owner. Some isolated Eucalypt trees present.
	
Plate 7 – Plot 4	Plate 8 – Plot 4

Plot 5	
Existing Classification:	Grassland/Woodland
Post Development Classification:	Grassland/Woodland
Description:	Grassland that is frequently managed/slashed by the property owner. Some areas of dense woodland.
	
Plate 9 – Plot 5	Plate 10 – Plot 5
Plot 6	
Existing Classification:	Grassland/Woodland
Post Development Classification:	Grassland/Woodland
Description:	Grassland that is frequently managed/slashed by the property owner. Some areas of dense woodland.
	
Plate 11 – Plot 6	Plate 12 – Plot 6

Plot 7	
Existing Classification:	Grassland/Woodland
Post Development Classification:	Grassland/Woodland
Description:	Grassland that is frequently managed/slashed by the property owner. Some areas of dense woodland.
	
Plate 13 – Plot 7	Plate 14 – Plot 7
Plot 8	
Existing Classification:	Grassland/Woodland
Post Development Classification:	Grassland/Woodland
Description:	Dense woodland consisting of established Eucalypt trees, shrubs and understory.
	
Plate 15 – Plot 8	Plate 16 – Plot 8

### 3.3 Topography

The topography for the site is shown in **Figure 6**. Pursuant to Appendix 1.4 of PBP, contour data has been sourced from the NSW Spatial Information Exchange Mapping system. The contour data was verified by ground truthing during the site inspection.



Source: (NSW Government Spatial Services, 2021)

**Figure 6 – Topography**

### 3.4 Fire Weather Area

The subject site is located within the Mid-Western Regional Council LGA. Pursuant to Table A1.6 of the PBP, the relevant Forest Fire Danger Index (FFDI) for the site is 80.

### 3.5 Asset Protection Zone Determination

The relevant Asset Protection Zones (APZ) are to be determined based on Table A1.12.3 of PBP. An assessment is provided for the site in general in accordance with PBP. They are outlined in **Table 1** below.

Table 1 – Asset Protection Zone Determination			
Plot	Vegetation Class	Effective Slope	APZ
1	Grassland	Undulating 0-5 <sup>0</sup>	11m
2	Grassland	Undulating 0-5 <sup>0</sup>	11m
3	Grassland	Undulating 0-5 <sup>0</sup>	11m
4	Grassland	Undulating 0-5 <sup>0</sup>	11m
5	Grassland/Woodland	Upslope/Flat	13m



**Table 1 – Asset Protection Zone Determination**

Plot	Vegetation Class	Effective Slope	APZ
6	Grassland/Woodland	Undulating 0-5 <sup>0</sup>	13m
7	Grassland/Woodland	Undulating 0-5 <sup>0</sup>	13m
8	Graddland/Woodland	Undulating 0-5 <sup>0</sup>	13m

### 3.6 Grassland

As there are grasslands located throughout the site and within proximity, Section A1.3 of PBP applies. This section states that if a *20m-49m APZ can be provided, the Grassland Deeming Provisions may be applicable* (subject to the requirements set out in Section 7.9).

As this APZ can be achieved, the Bushfire Protection Measures outlined in Section 7.9A of PBP shall be implemented and have been addressed later in this report.

### 3.7 Building Envelopes

Building envelopes have been nominated for each proposed Lot, as shown in **Figure 5** and the Development Plans in **Appendix A**. Each proposed Lot and its building envelope location is detailed in **Table 2** below, relevant to the vegetation classification.

**Table 2 – Building Envelope Details**

Proposed Lot	Vegetation Class	Effective Slope	APZ
1	Grassland/Woodland	Undulating 0-5 <sup>0</sup>	13m
2	Grassland/Woodland	Downslope 0-5 <sup>0</sup>	13m
3	Grassland/Woodland	Undulating 0 - 5 <sup>0</sup>	13m
4	Grassland	Undulating 0-5 <sup>0</sup>	11m
5	Grassland/Woodland	Undulating 0-5 <sup>0</sup>	13m
6	Grassland	Undulating 0-5 <sup>0</sup>	11m
7	Grassland	Undulating 0-5 <sup>0</sup>	11m
8	Grassland	Undulating 0-5 <sup>0</sup>	11m

### 3.8 Bushfire Attack Level Assessment

The Bushfire Attack Level (BAL) has been determined as per Table A1.12.6 of PBP. The Inputs used in the calculation of the BAL are as outlined in the following table.

Table 3 – BAL Inputs	
Requirement	Input Used
Relevant FDI (table 2.1 of AS3959)	80
Classified vegetation	As per <b>Section 3.2</b> of this report, Keith (2004) and Figure 2.3 of AS3959.
Separation Distance	As provided below.
Effective Slope	As per Table 1.

Using the inputs outlined above, the BAL has been calculated for each of the proposed Building Envelopes identified in **Section 3.7**.

The nominated Building Envelopes are located in areas with limited vegetation. Therefore it is assumed that at least a 40m buffer between future residential dwellings within each building envelope and any nearby bushfire threat can be achieved. The 40m separation distance has been adopted for each proposed building envelope.

Table 4 – Bushfire Attack Levels				
Proposed Lot	Vegetation Class	Separation Distance	Effective Slope	BAL
1	Grassland/woodland	40m	Undulating 0-5 <sup>0</sup>	BAL-12.5
2	Grassland/woodland	40m	Downslope 0-5 <sup>0</sup>	BAL-12.5
3	Grassland/Woodland	40m	Undulating 0-5 <sup>0</sup>	BAL-12.5
4	Grassland	40m	Undulating 0-5 <sup>0</sup>	BAL-12.5
5	Grassland/Woodland	40m	Undulating 0-5 <sup>0</sup>	BAL-12.5
6	Grassland	40m	Undulating 0-5 <sup>0</sup>	BAL-12.5
7	Grassland	40m	Undulating 0-5 <sup>0</sup>	BAL-12.5
8	Grassland	40m	Undulating 0-5 <sup>0</sup>	BAL-12.5
<b>Worst Case BAL</b>				<b>BAL-12.5</b>

The worst case and therefore the applicable BAL for the proposed development is **BAL-12.5**.

The relevant construction standards for BAL-12.5 are outlined in Sections 3 and 5 of AS3959.

## 4 BUSH FIRE PROTECTION MEASURES

### 4.1 Introduction

The proposed development, being a subdivision, is required to comply with the Bush Fire Protection Measures (BPMs) outlined in Section 5.3 of PBP. There are three key BPMs outlined by PBP for subdivisions:

- Asset Protection Zones;
- Access;
- Services – Water Electricity and gas;

The relevant BPMs are addressed throughout **Section 4** of this report.

### 4.2 Aims and Objectives of PBP

The aim of PBP is:

*to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.*

The objectives of PBP are to:

afford buildings and their occupants protection from exposure to a bush fire;

- *provide for a defensible space to be located around buildings;*
- *provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;*
- *ensure that appropriate operational access and egress for emergency service personnel and occupants is available;*
- *provide for ongoing management and maintenance of BPMs;*
- *and ensure that utility services are adequate to meet the needs of firefighters.*

The subdivision has considered radiant heat levels of less than 29kW/m<sup>2</sup> to avoid flame contact, that would provide for appropriate separation to the hazards.

The proposed subdivision has considered the relevant BPMs and safe operational access and egress for emergency services personnel and possible residents within the subdivision, as well as sufficient water supply.

### 4.3 Objectives for Subdivision

Section 5.2 of PBP contains the specific objectives for subdivisions:

- *minimise perimeters of the subdivision exposed to the bush fire hazard (hourglass shapes, which maximise perimeters and create bottlenecks should be avoided);*
- *minimise vegetated corridors that permit the passage of bush fire towards buildings;*
- *provide for the siting of future dwellings away from ridge-tops and steep slopes, within saddles and narrow ridge crests;*

- *ensure that APZs between a bush fire hazard and future dwellings are effectively designed to address the relevant bush fire attack mechanisms;*
- *ensure the ongoing maintenance of APZs;*
- *provide adequate access from all properties to the wider road network for residents and emergency services;*
- *provide access to hazard vegetation to facilitate bush fire mitigation works and fire suppression;*
- *and ensure the provision of an adequate supply of water and other services to facilitate effective firefighting.*

In complying with the BPMs, the proposed development complies with objectives for subdivisions outlined above.

#### 4.4 Asset Protection Zones

The intent of measures for the Asset Protection Zone (APZ) BPM is:

*to provide sufficient space and maintain reduced fuel loads to ensure radiant heat levels at the buildings are below critical limits and prevent direct flame contact.*

The following table outlines the Performance Criteria and associated Acceptable Solutions for the APZ BPM, and how the development responds.

Table 5 – Asset Protection Zones					
Performance Criteria	Acceptable Solution	Development Response			
		Acceptable Solution	Performance Solution	N/A	Comment
<b>The intent may be achieved where:</b>					
Potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m <sup>2</sup> on each proposed lot.	APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	APZs are capable of complying with this part. An APZ of at least 11m is recommended for lots with grassland vegetation and at least 13m for lots with woodland vegetation. To ensure adequate protection, a 20m APZ for all proposed lots is recommended for each Lot.
APZs are managed and maintained to prevent the spread of a fire towards the building.	APZs are managed in accordance with the requirements of Appendix 4.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The APZs are to be maintained in accordance with the RFS' <i>Asset Protection Zone Requirements</i> .
The APZs is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	APZs are capable of being provided wholly within the boundaries of each proposed Lot.

**Table 5 – Asset Protection Zones**

Performance Criteria	Acceptable Solution	Development Response			
The intent may be achieved where:		Acceptable Solution	Performance Solution	N/A	Comment
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZs are located on lands with a slope less than 18 degrees.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	APZs are located on lands with a slope less than 18 degrees.
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Landscaping is in accordance with Appendix 4.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Landscaping shall be provided in accordance with Appendix 4 of PBP.
	Fencing is constructed in accordance with section 7.6.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Existing fencing is made of non-combustible materials and any new fencing shall be constructed in accordance with Section 7.6 of PBP.

## 4.5 Access Standards

The intent of measures for access BPMs is:

*to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.*

The following table outlines the Performance Criteria and associated Acceptable Solutions for the Access BPM, and how the development responds.

Table 6 – Access					
Performance Criteria	Acceptable Solution	Development Response			
		Acceptable Solution	Performance Solution	N/A	Comment
<b>The intent may be achieved where:</b>					
Firefighting vehicles are provided with safe, all-weather access to structures.	Property access roads are two-wheel drive, all-weather roads.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The access driveways shall be two-wheeled drive, all-weather roads.
	Perimeter roads are provided for residential subdivisions of three or more allotments.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See performance solution in <b>Section 4.5.1</b> of this report.
	Subdivisions of three or more allotments have more than one access in and out of the development.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See performance solution in <b>Section 4.5.1</b> of this report.
	Traffic management devices are constructed to not prohibit access by emergency services vehicles.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Traffic management devices will be designed and constructed to support heavy vehicles, including emergency service vehicles.
	Maximum grades for sealed roads do not exceed 15 degrees and an average grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Driveways shall comply.

**Table 6 – Access**

Performance Criteria		Acceptable Solution		Development Response		
		Acceptable Solution	Performance Solution	N/A	Comment	
The intent may be achieved where:						
	of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient.					
	All roads are through roads.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A - No new roads proposed.	
	Dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See performance solution in <b>Section 4.5.1</b> of this report.	
	Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A - No new roads proposed.	
	Where access/egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Access is directly off the local road network and through grassland vegetated areas only.	



**Table 6 – Access**

Performance Criteria		Acceptable Solution		Development Response		
		Acceptable Solution	Performance Solution	N/A	Comment	
<b>The intent may be achieved where:</b>						
	One way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A – no new roads.	
The capacity of access roads is adequate for firefighting vehicles.	The capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/ causeways are to clearly indicate load rating.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The driveways shall have the capacity to carry fully loaded firefighting vehicles up to 23 tonnes. No bridges are required/proposed.	
There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A located outside of reticulated area.	
	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005 -	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A located outside of reticulated area.	

**Table 6 – Access**

Performance Criteria	Acceptable Solution	Development Response			
The intent may be achieved where:		Acceptable Solution	Performance Solution	N/A	Comment
			Fire hydrant installations System design, installation and commissioning.		
	There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Future residential dwellings shall be afforded with static supply via rainwater tanks.
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	Are two-way sealed roads.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Each proposed driveway shall be a two-way road.
	Minimum 8m carriageway width kerb to kerb.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Each proposed driveway shall have a minimum carriageway width of 8m.
	Parking is provided outside of the carriageway width.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not required.
	Hydrants are located clear of parking areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not required.
	Are through roads, and these are linked to the internal road system at an interval of no greater than 500m.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable to this type of subdivision.

**Table 6 – Access**

Performance Criteria	Acceptable Solution	Development Response			Comment
		Acceptable Solution	Performance Solution	N/A	
<b>The intent may be achieved where:</b>					
	Curves of roads have a minimum inner radius of 6m.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Noted .
	The maximum grade road is 15 degrees and average grade of not more than 10 degrees.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Noted.
	The road crossfall does not exceed 3 degrees.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Noted.
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The driveways shall be established and managed in accordance with this requirement.
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5m carriageway width kerb to kerb.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable to this type of subdivision.
	Parking is provided outside of the carriageway width.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable to this type of subdivision.
	Hydrants are located clear of parking areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable to this type of subdivision.

**Table 6 – Access**

Performance Criteria		Acceptable Solution		Development Response		
		Acceptable Solution	Performance Solution	N/A	Comment	
<b>The intent may be achieved where:</b>						
	Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable to this type of subdivision.	
	Curves of roads have a minimum inner radius of 6m.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable to this type of subdivision.	
	The road crossfall does not exceed 3 degrees.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable to this type of subdivision.	
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Not applicable to this type of subdivision.	
Firefighting vehicles can access the dwelling and exit the property safely.	There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fire fighting vehicles can access the proposed buildings envelopes.	

**Table 6 – Access**

Performance Criteria		Acceptable Solution		Development Response	
		Acceptable Solution	Performance Solution	N/A	Comment
The intent may be achieved where:					
	70kph) that supports the operational use of emergency firefighting vehicles.				

#### 4.5.1 Performance Solution - Access

The proposed development does not provide for a perimeter road or through road as each proposed Lot shall have its own access to the local road network. Furthermore, the driveways for each proposed Lot is in excess of 200m. Consequently, the development does not comply with the Acceptable Solutions, therefore a performance solution is required.

Pursuant to Section 1.4.5 of PBP, a performance based solution “*must provide substantiated evidence and clearly demonstrate how the specific objectives and performance criteria are to be satisfied*”.

The intent of measures for Access BPM is as follows:

*To minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.*

To achieve appropriate access for the new residential Lots, it is necessary to demonstrate that the performance solution provides an adequate solution to varying the standard. It is proposed in this instance to demonstrate this through expert judgement.

PBP articulates that the issue with long access roads in rural or semi-rural areas relates to operational difficulties including roads being cut by fire and hazardous conditions. The best approach for this type of subdivision was to provide each proposed Lot with its own access driveway and crossover that would be maintained in accordance with PBP requirements. That is, no internal roads or perimeter roads are considered necessary in this instance.

For the proposed new lots, the following measures are recommended for future dwellings:

- Provide Asset Protection Zones (APZ) in accordance with PBP;
- Construct future dwellings in accordance with the relevant Bush Fire Attack level (BAL 12.5 in this case);
- Provide property access for each Lot with an internal driveway that has a 4m carriageway, with 2m cleared of vegetation either side of the carriage and the 8m width maintained clear of overhanging vegetation;
- Provide fire trails around each dwelling within the proposed subdivision;
- Provide turn around areas where the property access/driveways meet the fire trails; and
- Ensure that there is a minimum of 20,000L of water supply made available for each proposed new lots and its dwelling, once constructed.

The abovementioned additional measures will protect trafficability of each property access road/driveway. These measures shall assist with protecting future residential dwellings and their occupants, whilst allowing fire fighting vehicles to access the site easily.

The Performance Solution, by providing improved and additional cleared access roads/driveways for each proposed Lot, is considered appropriate for providing access to each property for fire fighters and evacuating occupants. In this regard, the Performance Solution is considered to achieve both the Performance Criteria and the intent of property access under PBP.

#### 4.6 Services - Water, Electricity and Gas

The intent of measures for the Services – Water, Electricity and Gas BPMs is:

*To provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.*

The following table outlines the Performance Criteria and associated Acceptable Solutions for the Services – Water, Electricity and Gas BPM, and how the development responds.

Table 7 – Water, Electricity & Gas					
Performance Criteria	Acceptable Solution	Development Response			
		Acceptable Solution	Performance Solution	N/A	Comment
<b>The intent may be achieved where:</b>					
Adequate water supplies is provided for firefighting purposes.	Reticulated water is to be provided to the development where available.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A – The site is located within a non-reticulated area.
	A static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Each proposed Lot/future dwelling shall be provided with onsite rainwater tanks suitable for bushfire protection.
	Static water supplies shall comply with Table 5.3d.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	It is recommended that each future dwelling is improved with at least 20,000L of water storage for fire fighting purposes.

**Table 7 – Water, Electricity & Gas**

Performance Criteria	Acceptable Solution	Development Response			Comment
		Acceptable Solution	Performance Solution	N/A	
<b>The intent may be achieved where:</b>					
Water supplies are located at regular intervals; and The water supply is accessible and reliable for firefighting operations.	Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2005.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A – The site is located within a non-reticulated area.
	Hydrants are not located within any road carriageway.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A – The site is located within a non-reticulated area.
	Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A – The site is located within a non-reticulated area.
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A – The site is located within a non-reticulated area.
The integrity of the water supply is maintained.	All above-ground water service pipes are metal, including and up to any taps.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All aboveground pipe work for future dwellings shall be of metal construction.
	Above-ground water storage tanks shall be of concrete or metal.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aboveground water storage tanks are to be metal or concrete.
Location of electricity services limits the possibility of ignition	where practicable, electrical transmission lines are underground.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All electricity lines to each proposed Lot shall be underground.



**Table 7 – Water, Electricity & Gas**

Performance Criteria	Acceptable Solution	Development Response			Comment
		Acceptable Solution	Performance Solution	N/A	
<b>The intent may be achieved where:</b>					
of surrounding bush land or the fabric of buildings.	<p>where overhead, electrical transmission lines are proposed as follows:</p> <ul style="list-style-type: none"> <li>lines are installed with short pole spacing of 30m, unless crossing gullies, gorges or riparian areas; and</li> <li>no part of a tree is closer to a power line than the distance set out in ISSC3 Guideline for Managing Vegetation Near Power Lines.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A – recommended that all electricity lines are to be underground.
Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 - The storage and handling of LP Gas, the requirements of relevant authorities, and metal piping is used.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Future dwellings connected to gas shall comply with this part.
	All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Future dwellings connected to gas shall comply with this part.

**Table 7 – Water, Electricity & Gas**

Performance Criteria		Acceptable Solution		Development Response		
		Acceptable Solution	Performance Solution	N/A	Comment	
<b>The intent may be achieved where:</b>						
	Connections to and from gas cylinders are metal.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Noted.	
	Polymer-sheathed flexible gas supply lines are not used.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Noted.	
	Above-ground gas service pipes are metal, including and up to any outlets.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Noted.	
<b>Water Supply requirements for non-reticulated developments</b>						
Large rural/lifestyle lots (>10,000m <sup>2</sup> )	20,000L/lot	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is has been recommended that future dwellings be afforded with at least 20,000L of rainwater storage for fire fighting purposes.	

## 4.7 Grassland

Grassland Deeming Provisions (as per Table 7.9a of PBP).

Table 8 – Grassland					
Performance Criteria	Deeming Provision	Development Response			
The intent may be achieved where:		Acceptable Solution	Performance Solution	N/A	Comment
APZ	Limited to a maximum of 15 degrees downslope; Minimum APZ of 20m to be provided between the building and the hazard; The APZ is wholly within the boundaries of the development site; The APZ is maintained as a mown area with grass heights less than 100mm.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	These APZs are considered appropriate for future residential development.
Construction	Construction in accordance with BAL 12.5 of AS3959 and Section 7.5 of PBP.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	BAL 12.5 has been recommended.
Access	Comply with the property access provisions in Table 5.3b.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Property access is suitable considering the nature of the proposed subdivision.
Water Supply	Comply with the water supply provisions in Table 7.4a.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Suitable onsite rainwater tanks are to be provided for firefighting purposes.

**Table 8 – Grassland**

Table 8 – Grassland					
Performance Criteria	Deeming Provision	Development Response			
The intent may be achieved where:		Acceptable Solution	Performance Solution	N/A	Comment
Landscaping	Comply with the relevant provisions in Appendix 4, noting that other vegetation bush fire hazards cannot be present if these provisions are to apply.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Landscaping shall comply with this part.

#### 4.8 Emergency Management Arrangements

PBP does not provide any specific Emergency Management Arrangement requirements for residential subdivisions or residential developments. Nevertheless, it is strongly recommended that a Bush Fire Survival Plan be prepared by the future residents of the new Lots in accordance with the NSW RFS' guidelines located on the following webpage <http://www.rfs.nsw.gov.au/resources/bush-fire-survival-plan>.

#### 4.9 Landscaping

Landscaping measures are detailed within **Table 5** of this report, as required under Table 5.3A of PBP 2019.

## 5 RECOMENDATIONS

The assessment of the proposed development carried out in this report has assumed the development will be carried out in accordance with a number of bush fire protection measures (BPMs). The following provides a summary of the BPMs that must be incorporated into the development to ensure it best protects the development from the effects of bushfire in accordance with the requirements of PBP and other best practice guidelines.

- Asset Projection Zone/Defendable Space:
  - It is recommended that a minimum Asset Protection Zone of 20m is adopted for future dwellings. The APZ's are to be managed in accordance with the guidelines provided in **Appendix D**:
- Construction Standards:
 

*Subject to future applications.*

  - Any future dwellings on the proposed new Lots shall be constructed to at least a BAL 12.5 standard in accordance with AS3959-2009.
- Access
  - Access roads (driveways) are to be two-wheel drive, all-weather roads.
  - Access roads (driveways) shall not prohibit access by emergency vehicles.
  - The internal access roads (driveways) shall be constructed in accordance with the Performance Solution stipulated in **Section 4.5.1** of this report;
  - Driveways are to have the capacity to carry fully loaded firefighting vehicles up to 23 tonnes.
  - Turning circles around future dwellings are to be established for fire trucks to be able to manoeuvre to and from the site easily. Access to the water tanks shall be kept clear.
  - Passing bays and parking bays are to be established.
- Services
  - Water:
    - Future dwellings shall be afforded with at least 20,000L of rainwater storage to be retained at all times for firefighting purposes.
    - The tanks are to be provided with connections for firefighting purposes including a 65mm Storz outlet with gate/ball valve;
    - Valves and pipes are to be metal and adequate for water flow;
    - All above ground pipes and taps are to be metal; and
    - Pumps are to be shielded.
  - Electricity and Gas:

- Vegetation around existing/new transmission lines are to be maintained in accordance with the specifications in *ISSC3 Guideline for Managing Vegetation Near Powerlines*;
- Any proposed gas bottles shall be installed and maintained in accordance with AS/NZS 1596:2004 with metal piping used;
- All fixed cylinders are to be kept clear of flammable materials to a distance of 10m (or appropriately shielded);
- All connections are to be of metal construction.
- Landscaping:
  - For future dwellings, the applied Asset Protection Zones shall be established and maintained in accordance with Appendix 4 of PBP and the applicable *Asset Protection Zone Standards*;
  - There shall be no branches overhanging the roof of any future structures and new plantings shall be established to ensure that there are no continuous tree canopies.
- Grassland
  - The APZs shall be adopted and well managed in accordance with the Grassland Deeming Provisions under PBP.
- Emergency Evacuation Plans
  - Preparation of a Bush Fire Survival Plan for each future dwelling, in accordance with RFS requirements.

## 6 CONCLUSION

The proposed eight lot subdivision, on completion, will ensure that all future habitable development is located in an area that has a low to moderate bushfire hazard level. With the implementation of the recommendations, as outlined in **Section 5**, the proposed development is considered to be appropriately protected from bushfire and complies with the requirements of PBP. The proposed development is not expected to increase the bushfire risk.



## 7 REFERENCES

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NSW Rural Fire Service. (nd). *Guidelines for Single Dwelling Development Applications*. Lidcombe: NSW RFS.

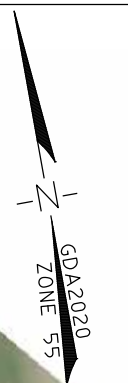
## Appendix A - Subdivision Plans



DIAGRAM NOT TO SCALE

- A) RESTRICTIONS AND COVENANTS HAVE NOT BEEN INVESTIGATED BY O'RYAN GEOSPATIAL PTY. LTD FOR THE PURPOSES OF THIS SURVEY.
- B) FINAL DIMENSIONS AND AREAS SUBJECT TO SURVEY. DO NOT SCALE.
- C) IT IS ADVISABLE TO CALL 1100, "DIAL BEFORE YOU DIG" BEFORE CARRYING OUT ANY BUILDING WORKS
- D) THESE NOTES ARE PART OF THIS PLAN AND CANNOT BE REDACTED

NO PART OF THIS PLAN MAY BE REPRODUCED, COMMUNICATED, STORED OR TRANSMITTED IN ANY FORM WITHOUT PRIOR WRITTEN PERMISSION OF THE COPYRIGHT OWNER EXCEPT AS PERMITTED BY THE COPYRIGHT ACT 1968



THIS PLAN IS NOT EXAMINED FOR REGISTRATION BY LAND REGISTRY SERVICES. NO RESPONSIBILITY CAN THEREFORE BE ACCEPTED FOR ANY FUTURE DIFFERENCE IN BOUNDARY DEFINITION WHICH MAY RESULT FROM RE-SURVEY OF ADJOINING LANDS OR SUBSEQUENT REGISTRATION OF NEW SURVEY PLANS.

- ▨ - PROPOSED HOUSE SITE (1000m)
- ⊗ - PROPOSED GATEWAY

No.	DATE	REVISION	DETAILS
2	28/1/22	LOT 2 HOUSE SITE MOVED	
1	19/1/22	LOT 2 HOUSE SITE MOVED	


PREPARED BY  
O'RYAN GEOSPATIAL

CLIENT:  
SHEARMAN BROTHERS  
194 HILL END ROAD  
CAERLEON

SCALE: 1:9000 @ A3  
CONTOUR INTERVAL N/A  
LGA & LOCALITY  
MID-WESTERN REGIONAL, MENAH

DATUM: AHD	TITLE: SKETCH SHOWING PROPOSED SUBDIVISION OF LOTS 22, 72, 83 & 89 IN DP756897 AND LOT 410 IN DP1112456	REVISION: 0
DRAWN: JJB	CHECKED: DSR	
DWG No: 21-803-DA	JOB No: 21-803	SHEET 1 OF 3 SHEETS

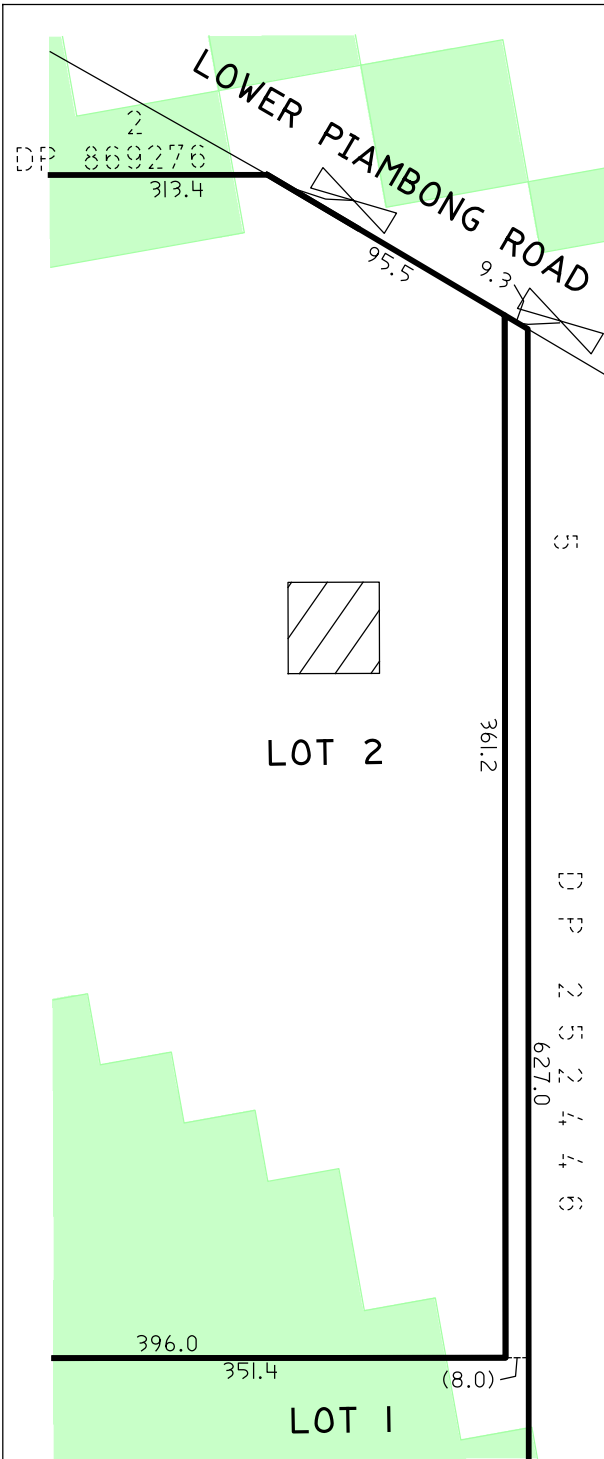


DIAGRAM NOT TO SCALE

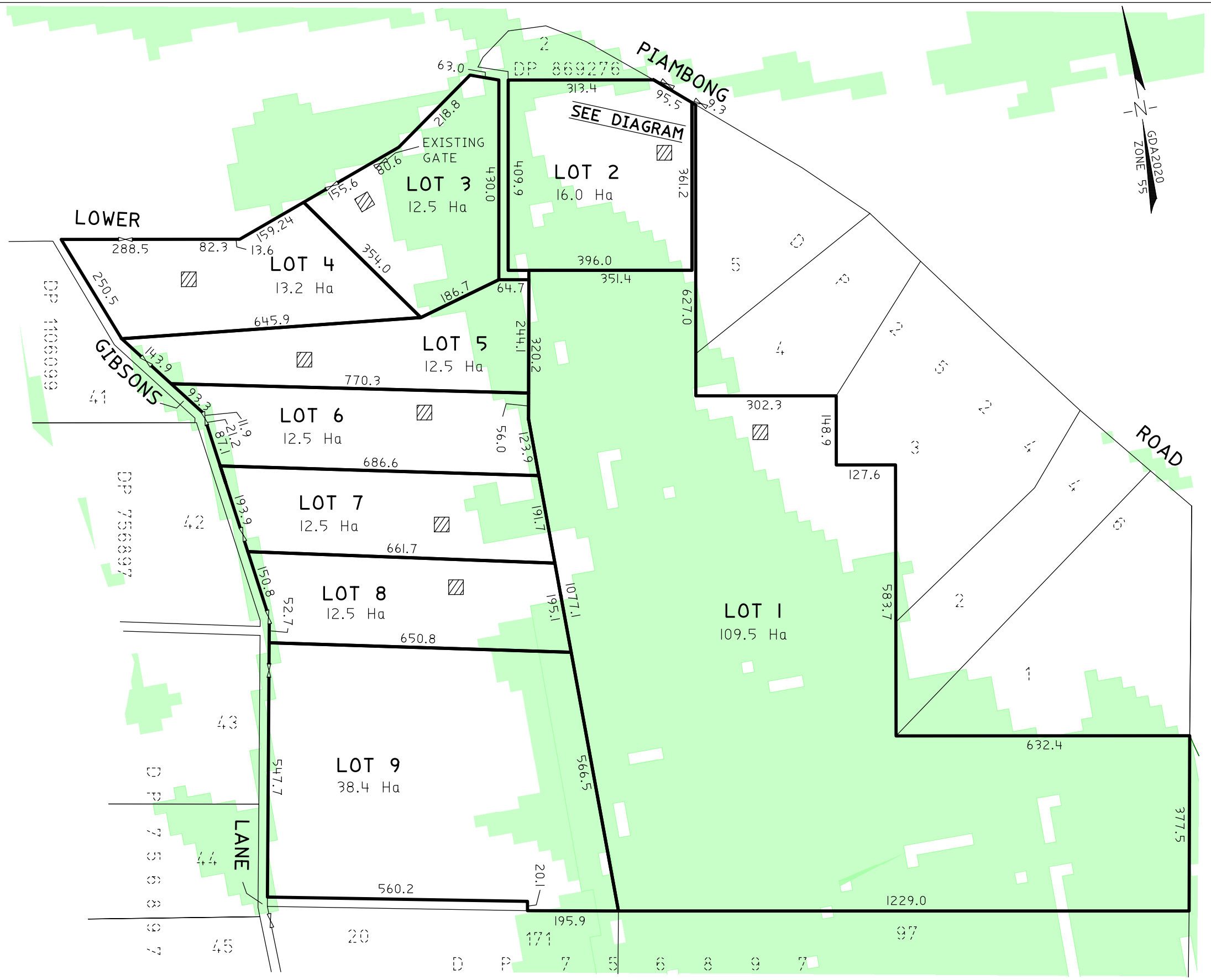
A) RESTRICTIONS AND COVENANTS HAVE NOT BEEN INVESTIGATED BY O'RYAN GEOSPATIAL PTY. LTD FOR THE PURPOSES OF THIS SURVEY.

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- TERRESTRIAL BIODIVERSITY VALUES
- PROPOSED HOUSE SITE (1000m<sup>2</sup>)
- PROPOSED GATEWAY

THIS PLAN IS NOT EXAMINED FOR REGISTRATION BY LAND REGISTRY SERVICES. NO RESPONSIBILITY CAN THEREFORE BE ACCEPTED FOR ANY FUTURE DIFFERENCE IN BOUNDARY DEFINITION WHICH MAY RESULT FROM RE-SURVEY OF ADJOINING LANDS OR SUBSEQUENT REGISTRATION OF NEW SURVEY PLANS.

No.	DATE	REVISION	DETAILS
2	28/1/22	LOT 2 HOUSE SITE MOVED	
1	19/1/22	LOT 2 HOUSE SITE MOVED	

PREPARED BY  
O'RYAN GEOSPATIAL

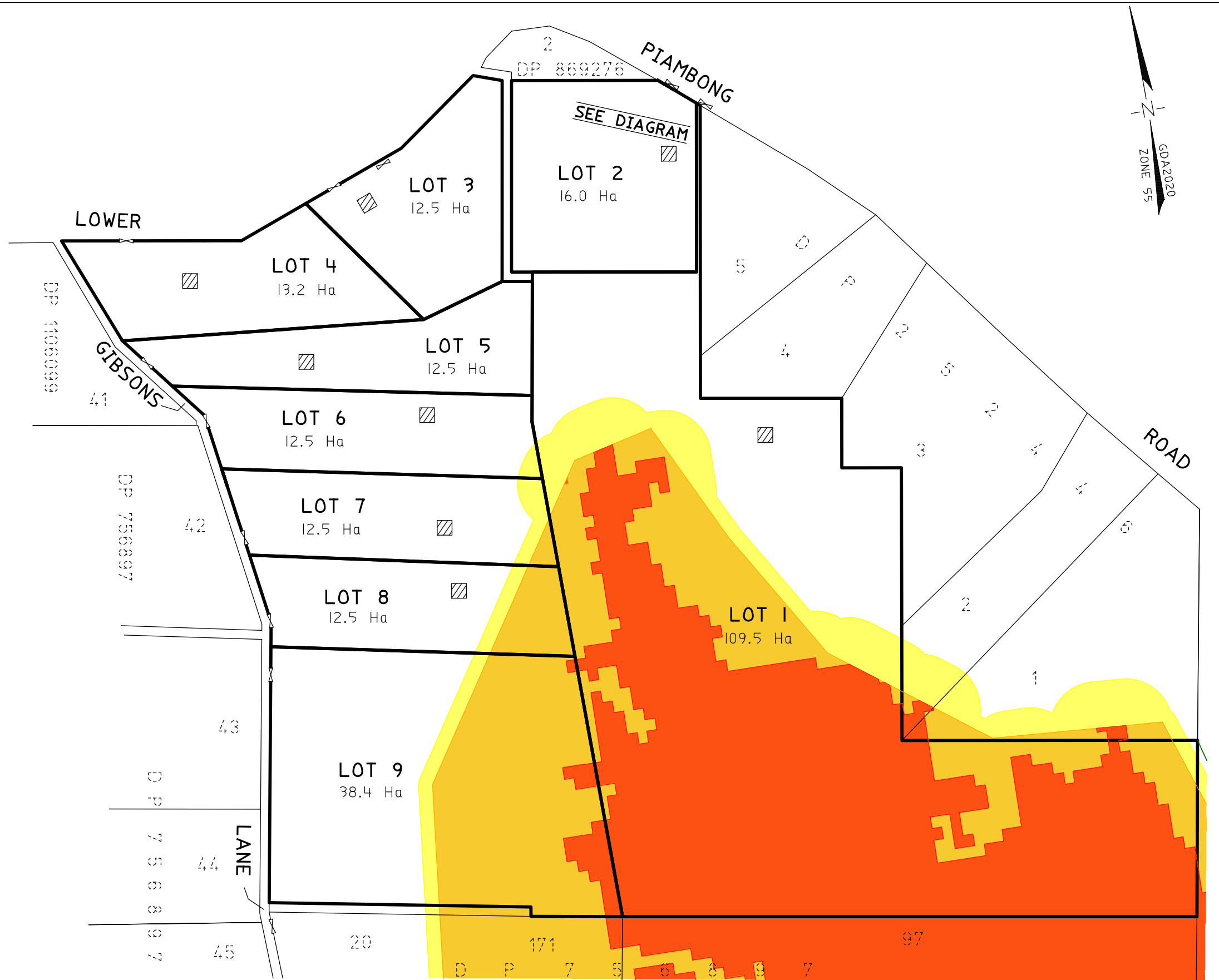
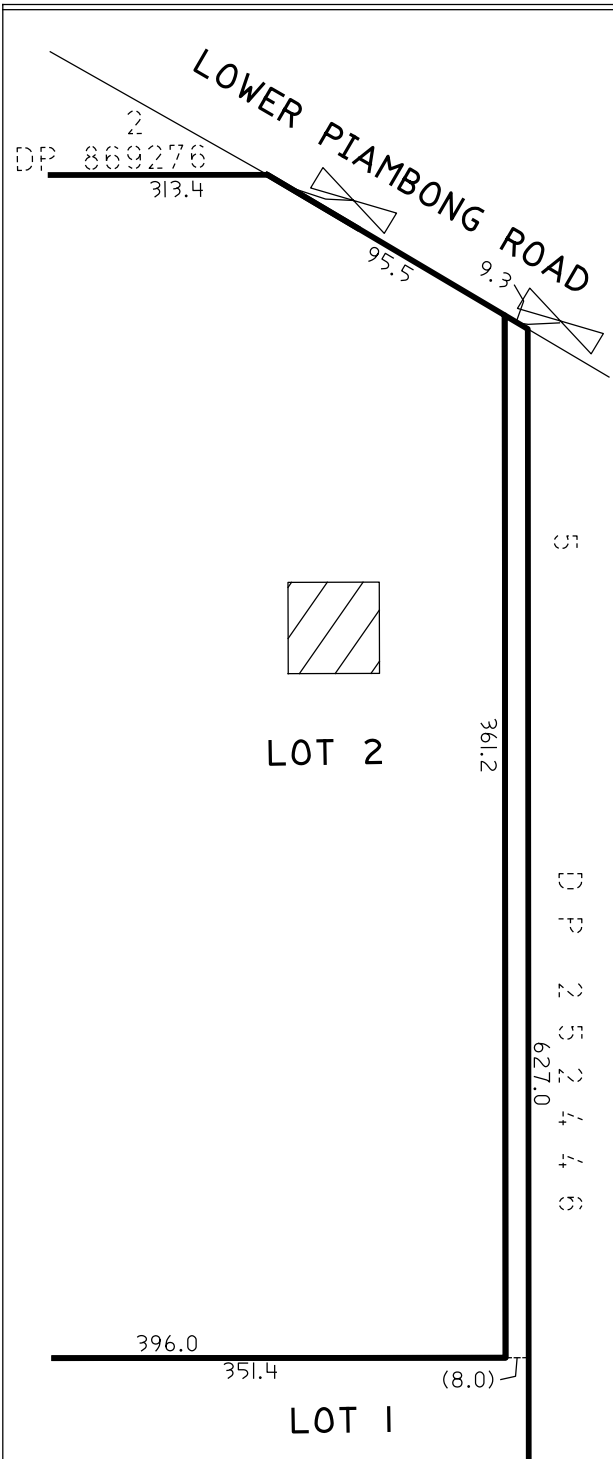


CLIENT:  
SHEARMAN BROTHERS  
194 HILL END ROAD  
CAERLEON

SCALE: 1:9000 @ A3	DATUM: AHD
CONTOUR INTERVAL N/A	DRAWN JJB
LGA & LOCALITY MID-WESTERN REGIONAL, MENAH	CHECKED DSR

TITLE  
SKETCH SHOWING PROPOSED SUBDIVISION  
OF LOTS 22, 72, 82, 83 & 89 IN  
DP756897 AND LOT 410 IN DP112456

DWG No 21-803-DA	JOB No 21-803	REVISION 0
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A) RESTRICTIONS AND COVENANTS HAVE NOT BEEN INVESTIGATED BY O'RYAN GEOSPATIAL PTY. LTD FOR THE PURPOSES OF THIS SURVEY.

B) FINAL DIMENSIONS AND AREAS SUBJECT TO SURVEY. DO NOT SCALE.

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- ▣ - PROPOSED HOUSE SITE (1000m<sup>2</sup>)
- ⚡ - PROPOSED GATEWAY
- - BUSHFIRE PRONE VALUES
- - VEGETATION BUFFER
- - VEGETATION CATEGORY 2
- - VEGETATION CATEGORY 1

THIS PLAN IS NOT EXAMINED FOR REGISTRATION BY LAND REGISTRY SERVICES. NO RESPONSIBILITY CAN THEREFORE BE ACCEPTED FOR ANY FUTURE DIFFERENCE IN BOUNDARY DEFINITION WHICH MAY RESULT FROM RE-SURVEY OF ADJOINING LANDS OR SUBSEQUENT REGISTRATION OF NEW SURVEY PLANS.

No.	DATE	REVISION	DETAILS
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PREPARED BY  
O'RYAN GEOSPATIAL



CLIENT:  
SHEARMAN BROTHERS  
194 HILL END ROAD  
CAERLEON

SCALE: 1:9000 @ A3  
CONTOUR INTERVAL N/A  
LGA & LOCALITY  
MID-WESTERN REGIONAL, MENAH

DATUM: AHD  
DRAWN: JJB  
CHECKED: DSR  
TITLE  
SKETCH SHOWING PROPOSED SUBDIVISION  
OF LOTS 22, 72, 82, 83 & 89 IN  
DP756897 AND LOT 410 IN DP1112456  
DWG No 21-803-DA  
JOB No 21-803  
SHEET 3 OF 3 SHEETS

REVISION  
0

## Appendix B - Clause 44 Matters

**Table 7 – Section 100B Bushfire Safety Authority Requirements Checklist (cl.44 Rural Fires Regulation 2013)**

Requirement	Section of Report where addressed	Compliance		
		Yes	No	N/A
(1) For the purposes of section 100B (4) of the Act, an application for a bush fire safety authority must be made in writing and must include the following:				
(a) a description (including the address) of the property on which the development the subject of the application is proposed to be carried out,	Section 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) a classification of the vegetation on and surrounding the property (out to a distance of 140 metres from the boundaries of the property) in accordance with the system for classification of vegetation contained in <i>Planning for Bush Fire Protection</i> ,	Section 3.2 and Figure 5.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) an assessment of the slope of the land on and surrounding the property (out to a distance of 100 metres from the boundaries of the property),	Section 3.3 and Figure 5.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) identification of any significant environmental features on the property,	Section 2.3.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) the details of any threatened species, population or ecological community identified under the <i>Threatened Species Conservation Act 1995</i> that is known to the applicant to exist on the property,	Section 2.3.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Table 7 – Section 100B Bushfire Safety Authority Requirements Checklist (cl.44 Rural Fires Regulation 2013)**

Requirement	Section of Report where addressed	Compliance		
		Yes	No	N/A
(f) the details and location of any Aboriginal object (within the meaning of the <i>National Parks and Wildlife Act 1974</i> ) or Aboriginal place (within the meaning of that Act) that is known to the applicant to be situated on the property,	Section 2.3.3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) a bush fire assessment for the proposed development (including the methodology used in the assessment) that addresses the following matters:	Section 3.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) the extent to which the development is to provide for setbacks, including asset protection zones,	Section 3.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) the siting and adequacy of water supplies for fire fighting,	Section 6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) the capacity of public roads in the vicinity to handle increased volumes of traffic in the event of a bush fire emergency,	Section 4.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) whether or not public roads in the vicinity that link with the fire trail network have two-way access,	No fire trail network.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(v) the adequacy of arrangements for access to and egress from the development site for the purposes of an emergency response,	Section 4.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**Table 7 – Section 100B Bushfire Safety Authority Requirements Checklist (cl.44 Rural Fires Regulation 2013)**

Requirement	Section of Report where addressed	Compliance		
		Yes	No	N/A
(vi) the adequacy of bush fire maintenance plans and fire emergency procedures for the development site,	Section 4.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vii) the construction standards to be used for building elements in the development,	No built form proposed.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(viii) the adequacy of sprinkler systems and other fire protection measures to be incorporated into the development,	No built form proposed, however, BPMs addressed in Section 4.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) an assessment of the extent to which the proposed development conforms with or deviates from the standards, specific objectives and performance criteria set out in Chapter 4 (Performance Based Controls) of Planning for Bush Fire Protection.	Section 4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(2) An application for a bush fire safety authority must also be accompanied by the prescribed information if:				
(a) the proposed development is subdivision for the purposes of dwelling houses, dual occupancies or secondary dwellings on property that is in an urban release area, and	N/A – not for subdivision	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(b) the application specifies that the applicant wishes the Commissioner, when determining the application, to consider whether it would be appropriate for the future erection of the dwelling houses, dual occupancies or secondary dwellings		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Table 7 – Section 100B Bushfire Safety Authority Requirements Checklist (cl.44 Rural Fires Regulation 2013)**

Requirement	Section of Report where addressed	Compliance		
		Yes	No	N/A
concerned to be excluded from the application of section 79BA of the <i>Environmental Planning and Assessment Act 1979</i> .				
(3) The prescribed information is:				
(a) a plan of subdivision that shows:				
(i) the bush fire attack levels that will apply to the property on completion of any clearing of vegetation proposed to be carried out as part of any subdivision work (within the meaning of the <i>Environmental Planning and Assessment Act 1979</i> ), and		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(ii) proposed setbacks of any buildings that are, or may in future, be erected on the property, including asset protection zones, and		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(b) any further information concerning the proposed development that the Commissioner may require.		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## Appendix C - Deposited Plan

**DP 1112456**

Registered:  15.5.2007

Title System: OLD SYSTEM

Purpose: LIMITED FOLIO CREATION

Ref. Map: PARISH #

Last Plan: -----

PLAN OF PART OF THE LAND  
 COMPRISED IN DEED BK. 2711 NO. 962  
 BEING PART PORTION 41

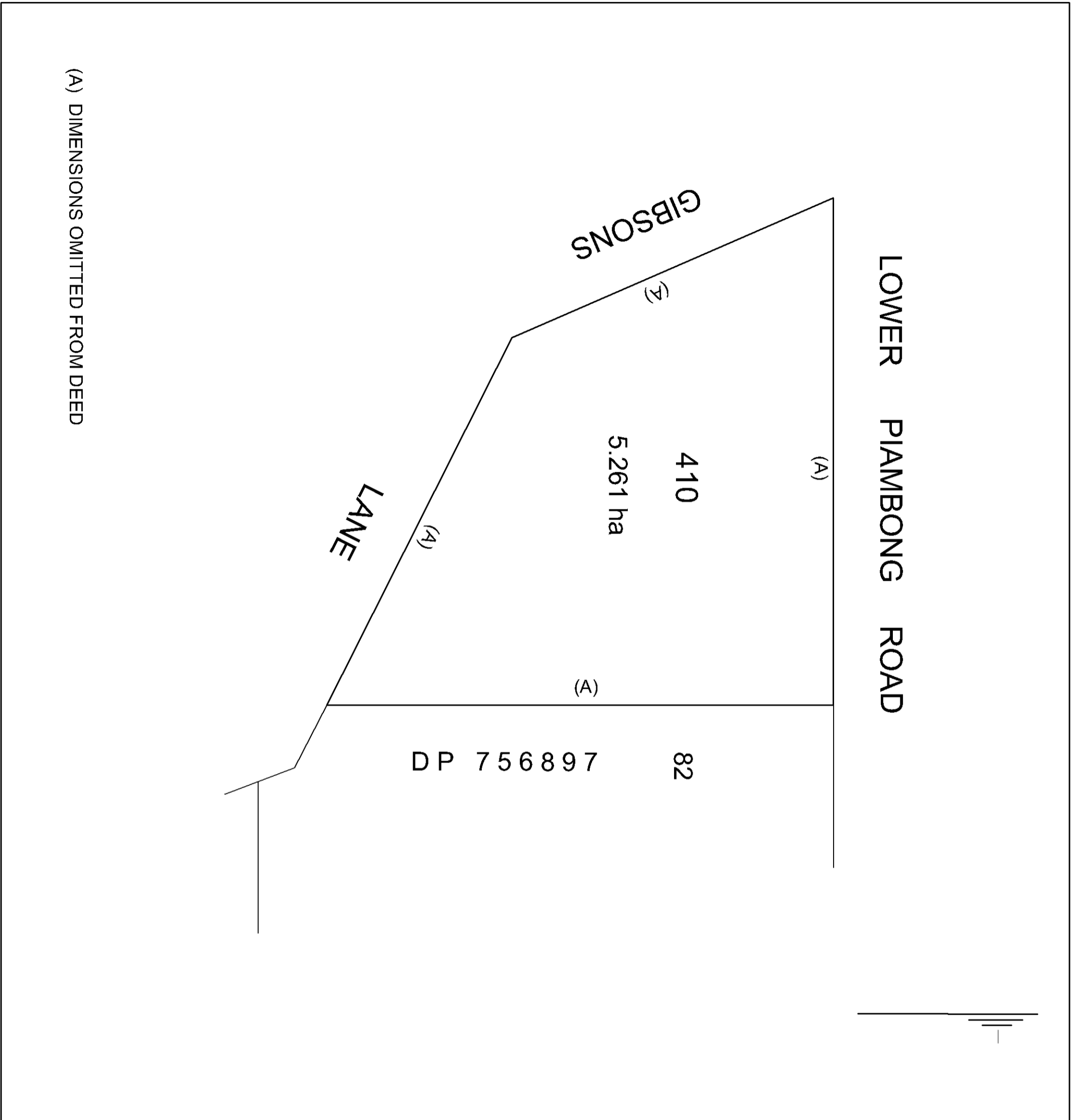
Lengths are in metres. Reduction Ratio - NTS

Sheet 1 of 1 sheet

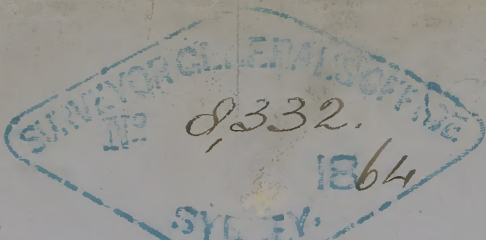
L.G.A.: MID WESTERN REGIONAL  
 LOCALITY: ERUDGERE  
 PARISH: MUNNA  
 COUNTY: WELLINGTON (35)

THIS PLAN WAS PREPARED SOLELY TO  
 IDENTIFY THE LAND IN THE ABOVE DEED  
 AND THE BOUNDARIES HAVE NOT BEEN  
 INVESTIGATED BY THE REGISTRAR GENERAL  
 THIS PLAN IS NOT A CURRENT PLAN IN TERMS OF  
 S.7A CONVEYANCING ACT 1919.

LPI Ref.: TCB2/12



(A) DIMENSIONS OMITTED FROM DEED



*Mudgee*

PLAN

of 150 acres near

MCDONALD'S CREEK

PARISH OF MUNNA

C<sup>o</sup> of WELLINGTON

applied for to put under Clause 13 by C. McKenna

CORNERS

DET	BEARING	FROM	AKS	N <sup>o</sup>
a	W 8° 30' N	Gum	32	7
b	W 24° N	Do Apple	27	7
c	N 39° 30' E	Box	34	7
d	N 36° 45' W	J Box	8	7
e	S 0° 30' E	Apple	50	↑

The Unit N<sup>o</sup> is 4  
 Circumferential Survey  
 M<sup>ch</sup> accord<sup>d</sup> to Cir 60/12



*Scp.*  
*large portion*  
*NOTE*  
 There is a hut on this portion  
 value about £20 & a little clearing  
 There is no water hole on this  
 portion.

Scale 20 chs to 1 in

*Area p<sup>d</sup> & charted on Wellington  
 with M<sup>ch</sup> 23/18/54*

PLAN MICROFILMED

NO ADDITIONS OR AMENDMENTS TO BE MADE

*Transmitted to the Survey General with letter Dated July 4<sup>th</sup> 1864*

307-1527

W307

## Appendix D - APZ Standards



## 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.

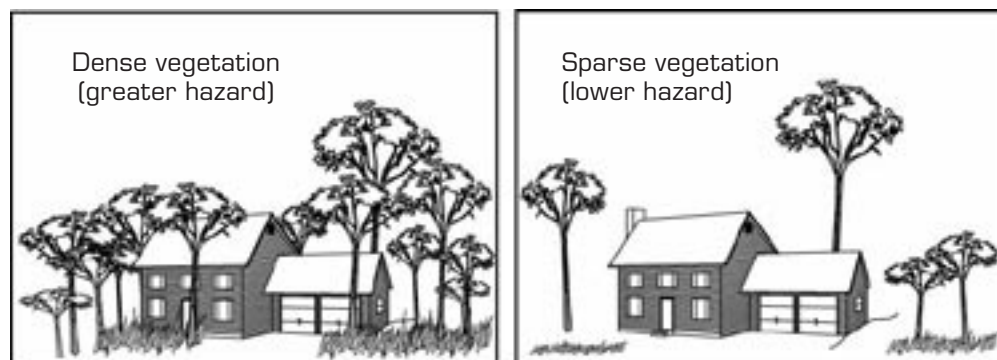
## STEP 1. DETERMINE IF AN APZ IS REQUIRED

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.

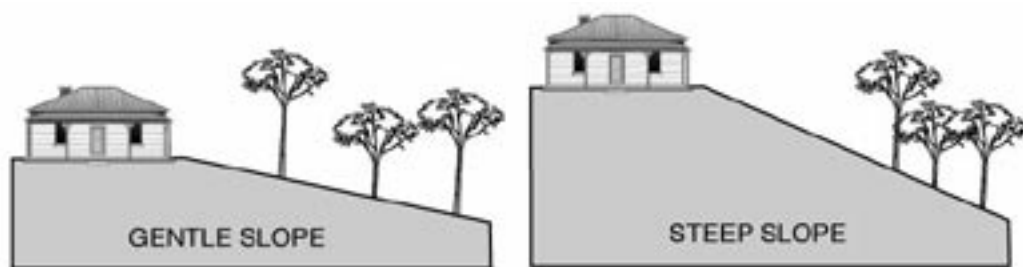
If your current development consent provides for an APZ, you do not need further approvals for works that are consistent with this consent.

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.

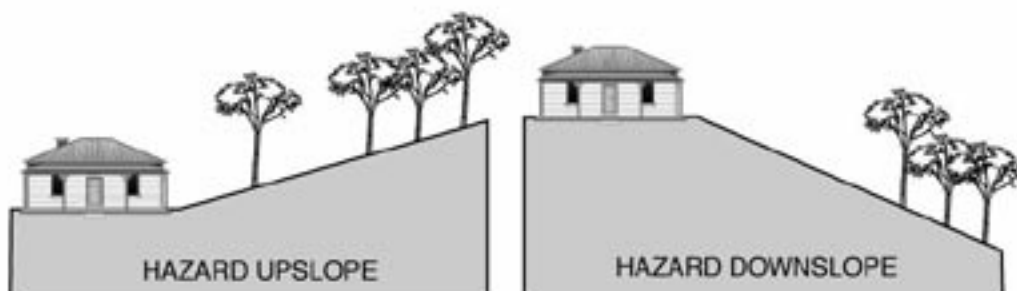
## STEP 3. DETERMINE THE APZ WIDTH

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.



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.

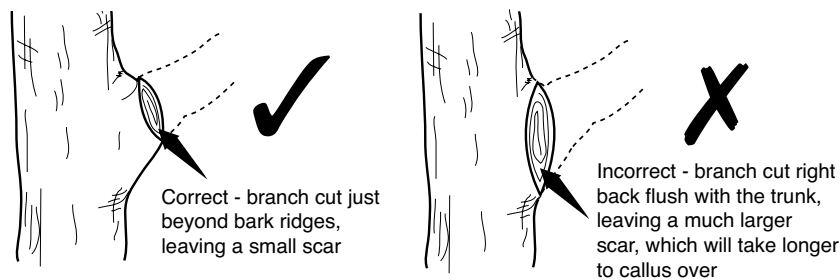
When choosing plants for removal, the following basic rules should be followed:

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 understory 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

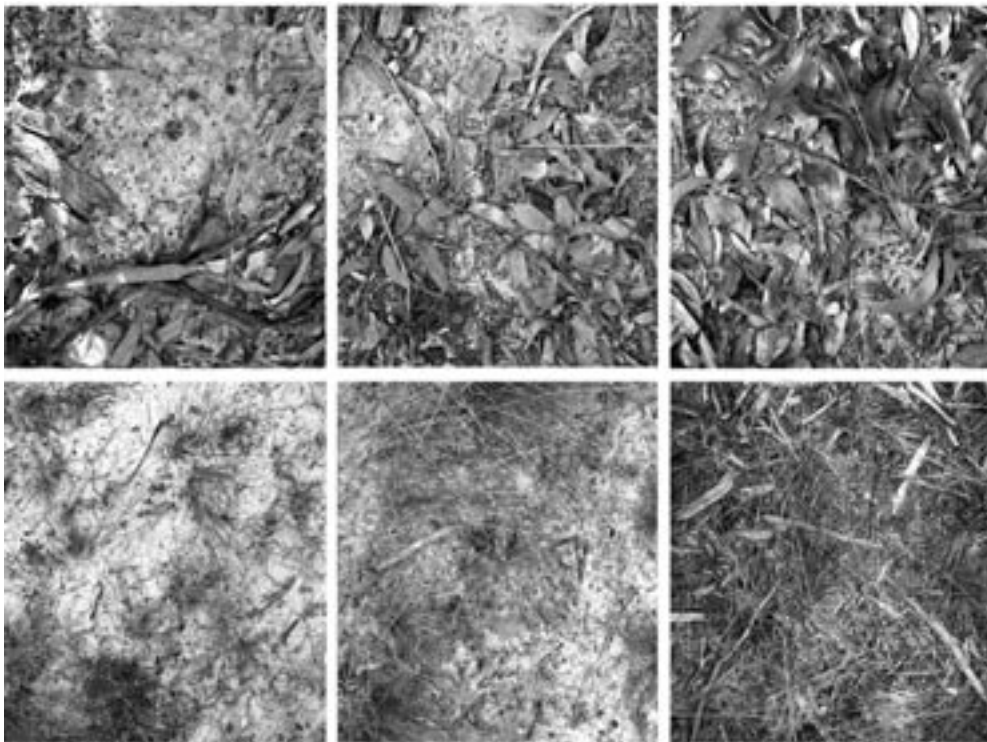
While the removal of fuel is necessary to reduce a bush fire hazard, you also need to consider soil stability, particularly on sloping areas.

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.



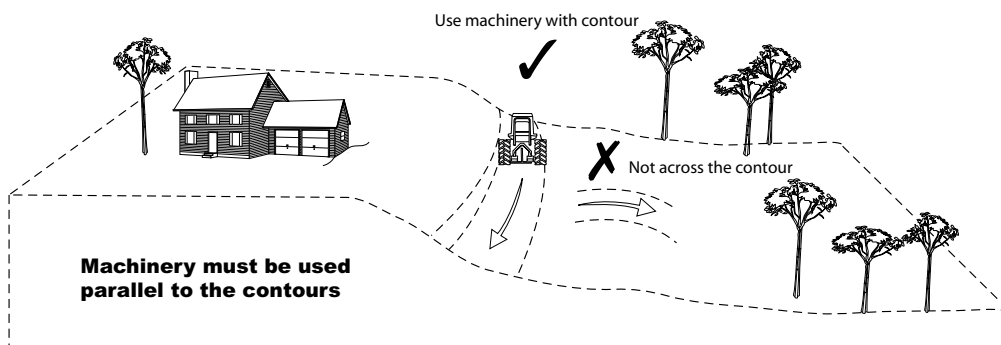
50%

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.



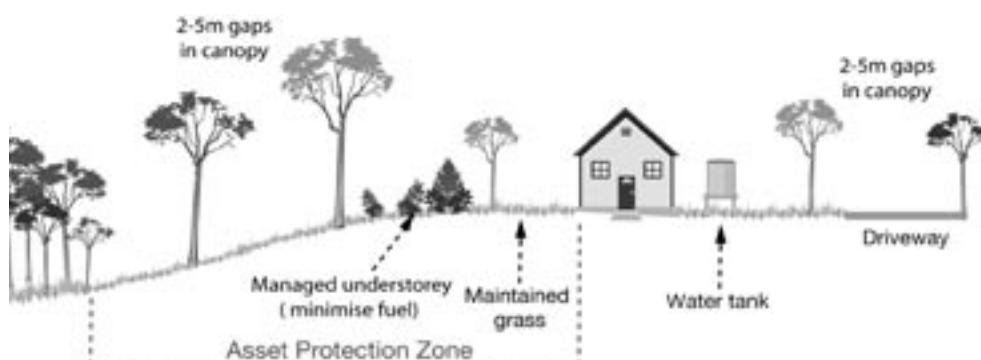
## STEP 6. ONGOING MANAGEMENT AND LANDSCAPING

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*.

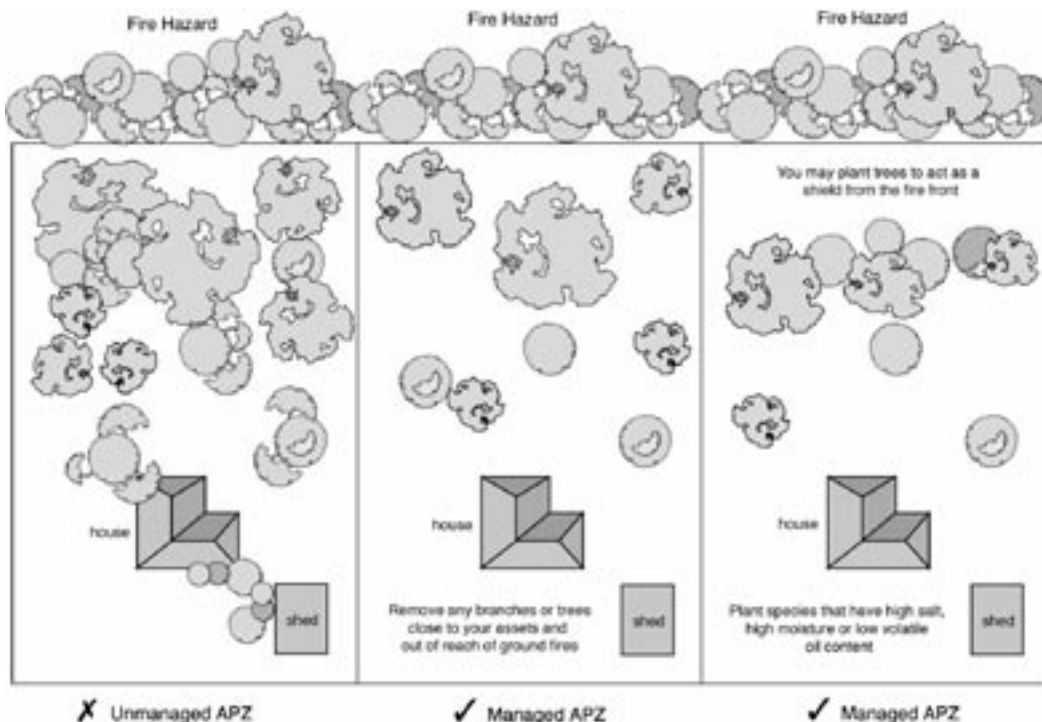
## WIND BREAKS

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).

