

**BUSH FIRE  
ASSESSMENT  
REPORT**

**Two (2) x Lot  
Subdivision**

**Lot 1 DP 842144  
Beranghi Road  
Crescent Head**

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## 1.0 INTRODUCTION

A Bush Fire Assessment has been carried out for a proposed two (2) x lot subdivision of Lot 1 DP 842144 Beranghi Road, Crescent Head.

The subdivision is part of a rezoning application being prepared to be submitted to Council.

This report is based on a site assessment carried out on 27<sup>th</sup> September 2022 and provides a basis for compliance with respect to NSW Rural Fire Services, Planning for Bush Fire Protection 2019 (PBP, 2019) and AS3959 (2018).

The subdivision would be an integrated development and has a requirement for a Bushfire Safety Authority under Section 100B of the *Rural Fires Act 1997*.

### NOTE

The report has been prepared with all reasonable skill, care and diligence.

The information contained in this report has been gathered from field survey, experience and has been completed in consideration of the following legislation.

1. Rural Fires Act 1997.
2. Environmental Planning and Assessment Act 1979 No 203.
3. Building Code of Australia.
4. Council Local Environment Plans and Development Control Plans where applicable.
5. NSW Rural Fire Services, Planning for Bushfire Protection, 2019 (PBP, 2019).
6. AS 3959-2018 Construction of Buildings in Bushfire Prone Areas.

The report recognizes the fact that no property and lives can be guaranteed to survive a bushfire attack.

The report examines ways the risk of bushfire attack can be reduced where the subdivision site falls within the scope of the legislation.

The report is confidential and the writer accepts no responsibility of whatsoever nature, to third parties who use this report or part thereof is made known.

Any such party relies on this report at their own risk.

### 1.1 Objectives

The objectives of this report are to:

- Ensure that the proposed subdivision meets the aims and objectives of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019 and has measures sufficient to minimize the impact of bushfires; and
- Reduce the risk to property and the community from bushfire; and
- Comply where applicable with AS3959 – 2018.

### 1.2 Legislative Framework

In NSW, the bushfire protection provisions of the BCA are applied to Class 1, 2, 3, Class 4 parts of buildings, some Class 10 and Class 9 buildings that are Special Fire Protection Purposes (SFPPs).

The BCA references AS3959 – 2018 as the deemed-to-satisfy (DTS) solution for construction requirements in bushfire prone areas for NSW.

All development on bushfire prone land in NSW should comply with the requirements of the bushfire protection measures identified within NSW Rural Fire Service, Planning for Bushfire Protection, 2019.

The proposed subdivision is required to obtain a bushfire safety authority from the NSW Rural Fire Service.

### 1.3 Location

The site is located at Lot 1 DP 842144 Beranghi Road Crescent Head.

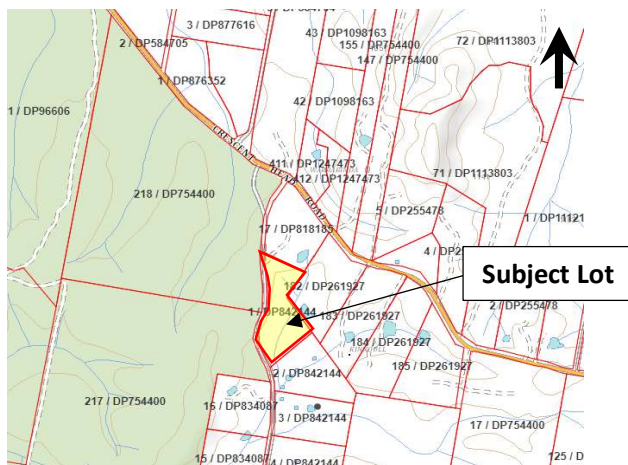
Locality – Crescent Head

Local Government Area – Kempsey Shire Council

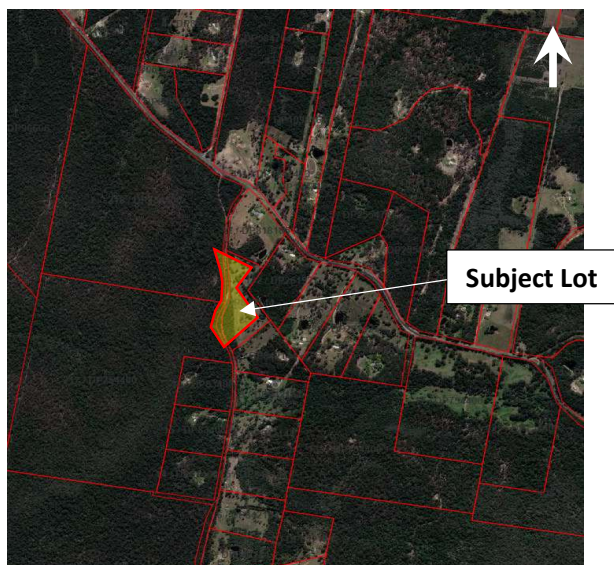
Closest Rural Fire Service – Crescent Head

Closest Fire Control Centre – Kempsey

**Figure 1 – Topographic Map**



**Figure 2 – Aerial View**



## 1.4 Development Proposal and History

The subject site is approximately 8 hectares which allows a Planning Proposal for a two (2) x lot subdivision.

The existing lot is vacant.

The subdivision layout can be seen in **Appendix 1**.

## 2.0 BUSH FIRE ASSESSMENT

### 2.1 Assessment Methodology

Several factors need to be considered in determining the bushfire hazard.

These factors are slope, vegetation type, and distance from hazard, access/egress and fire weather.

Each of these factors has been reviewed in determining the bushfire protection measures.

The assessment of slope and vegetation being carried out in accordance with NSW Rural Fire Service, Planning for Bushfire Protection, 2019.

### 2.2 Slope Assessment

Slope is a major factor to consider when assessing the bushfire risk.

The slopes were measured using a RangeFinder Tru Pulse 200.

The hazard vegetation on adjacent land was also identified and the slopes within the vegetation measured.

The following table shows the results:

**Table 1 – Hazard Vegetation Slopes for possible dwelling on Lot 1A**

Hazard Aspect	Slope
North	0° Upslope
South	0-5° Downslope
East	0-5° Downslope
West	0° Upslope

**Hazard Vegetation Slopes for possible dwelling on Lot 1B**

Hazard Aspect	Slope
North	0° Upslope
South	0-5° Downslope
East	0-5° Downslope
West	0° Upslope

## **2.3 Vegetation Assessment**

The vegetation on and surrounding the subject site was assessed over a distance of 140m.

The vegetation formations were classified using the vegetation formation as detailed in Planning for Bush Fire Protection, 2019.

### **2.3.1 Vegetation on the Subject Lot**

There are no existing dwellings located on the subject lot.

The majority of the subject lot is grassland vegetation.

There is a strip of forest vegetation that runs along the western boundary which also follows Beranghi Road.

### **2.3.2 Vegetation adjacent and adjoining the Subject Lot**

To the north of the lot there is an area of forest (approx. 1.5ha) then the mostly managed grassland of the adjoining, which has a rezoning application approved and a Development Application for a subdivision being prepared. To the south of the lot is a mixture of forest and grassland.

Directly to the east of the lot is grassland that then extends into the grassland of the lots further to the east. To the west is the Maria State Forest.

#### **Photo 1 – To the south of the possible dwelling location for Lot 1A**



#### **Photo 2 - To the north of the possible dwelling location for Lot 1A**





**Photo 3 – To the east of the possible dwelling location for Lot 1A**



**Photo 4 - 20m Strip of forest vegetation to the south of the possible dwelling location for Lot 1A**



**Photo 5 – To the east of the possible dwelling location Lot 1B**



**Photo 6 – To the south of the possible dwelling location Lot 1B**



**Photo 7 – To the north of the possible dwelling location Lot 1B**



**Photo 8 – To the south of the possible dwelling location Lot 1B**



**Table 2 – Hazard Vegetation for proposed dwelling on Lot 1A**

Hazard Aspect	Vegetation
North	Forest
South	Grassland and Similar to Rainforest (see further reporting)
East	Forest
West	Forest

**Hazard Vegetation for proposed dwelling on Lot 1B**

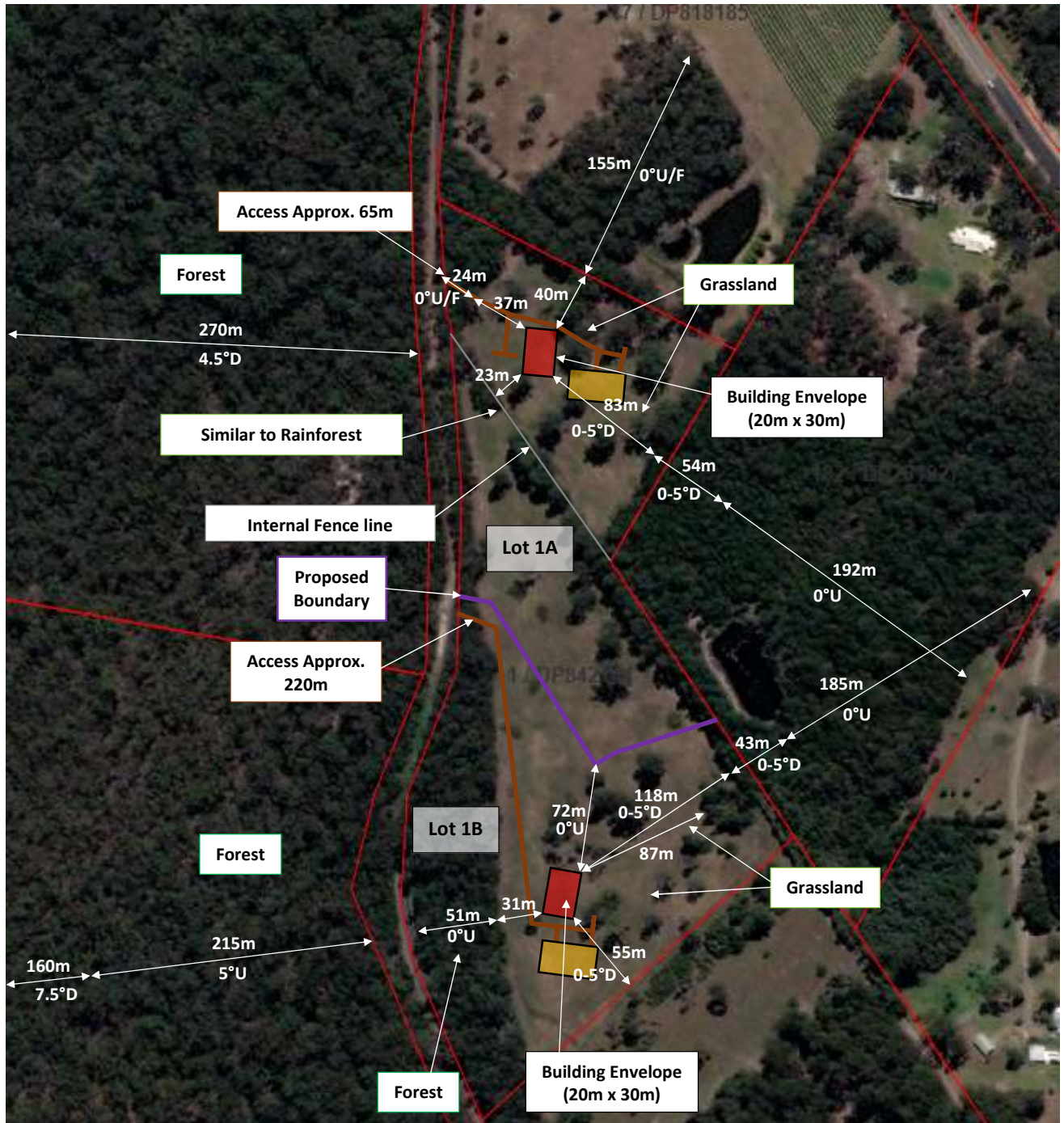
Hazard Aspect	Vegetation
North	Grassland
South	Grassland
East	Grassland then Forest
West	Forest



## 2.4 Hazard

The hazards are located to the north, south, east and west of the proposed dwellings. With respect to the dwelling and shed locations they are indicative only as it is likely that the locations will change once the owners are ready to build.

**Figure 3: Hazards**

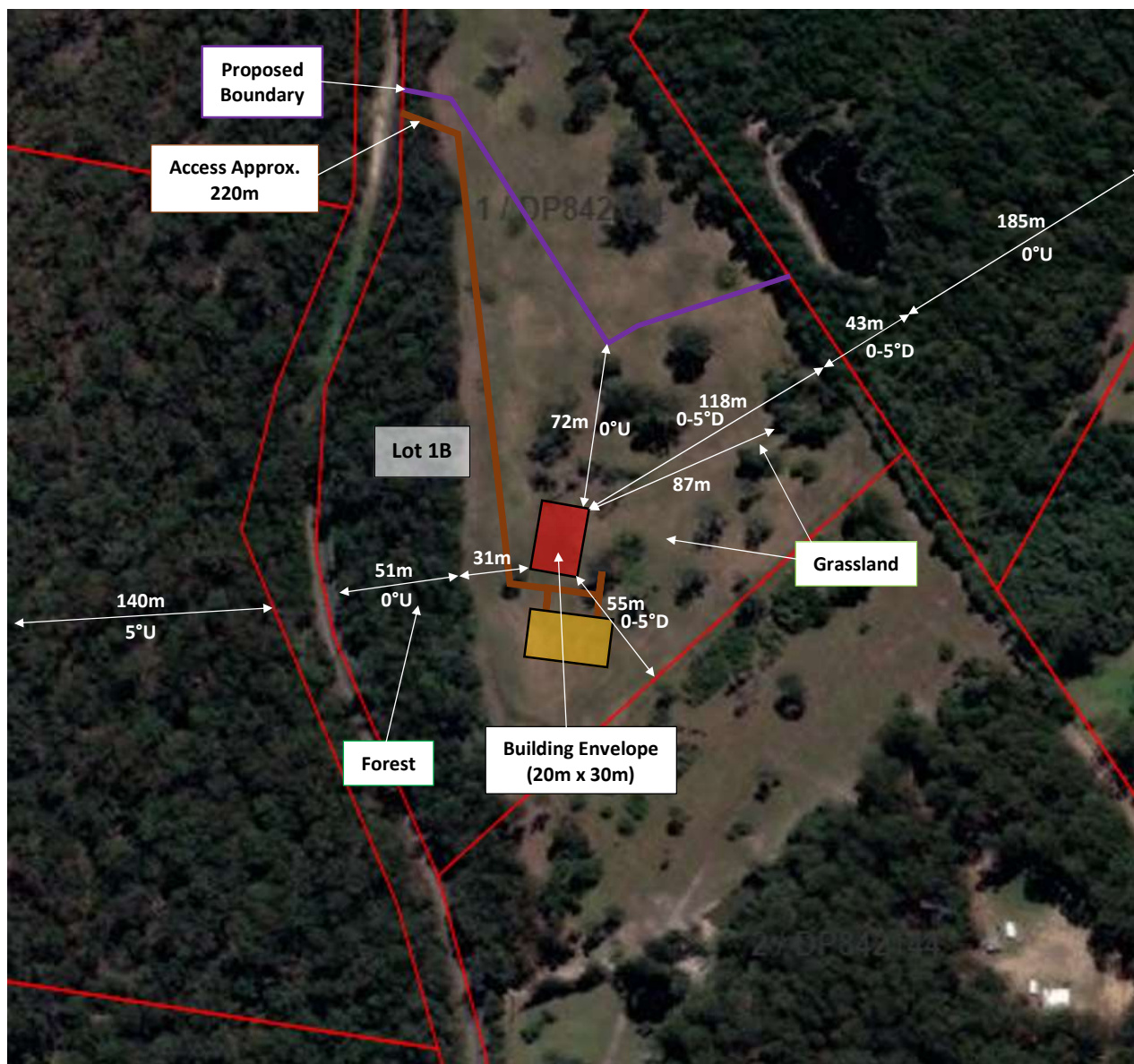




**Lot 1A**



**Lot 1B**



**Table 3 – Summary of Hazard Characteristics for possible dwelling location on Lot 1A**

Hazard Aspect	Hazard	Slope
North	Forest	0° Upslope
South	Grassland	0-5° Downslope
East	Grassland then Forest	0-5° Downslope 0-5° Downslope
West	Grassland Forest	0° Upslope 0° Upslope

**Summary of Hazard Characteristics for the proposed dwelling on Lot 1B**

Hazard Aspect	Hazard	Slope
North	Grassland	0° Upslope
South	Forest	0-5° Downslope
East	Grassland then Forest	0-5° Downslope 0-5° Downslope
West	Grassland then Forest	0° Upslope 0° Upslope

## **2.5 Fire Danger Index**

The fire weather for the site is assumed on the worst-case scenario. In accordance with NSW Rural Fire Service the fire weather for the site is based upon the 1:50 year fire weather scenario and has a Fire Danger Index (FDI) of 80.

## **2.6 Isolated Rural Development**

In consideration of the travel distance, consideration has been given to 5.1.1 of Planning for Bush Fire Protection (Isolated Subdivision).

In regards to the requirements of Isolated Subdivision, the following provisions have been considered:

- Larger APZs outside the range prescribed in PBP and increased Bush Fire Attack Level (BAL) to proposed buildings to create a safer area for occupants and fire fighters remaining on site.
- Firefighting water supply and associated firefighting equipment (ie. pump and hose) for each dwelling in addition to any reticulated water supply.

## **3.0 BUSHFIRE THREAT REDUCTION MEASURES**

### **3.1 NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019**

The following provisions of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2019 have been identified:

#### **3.1.1 Asset Protection Zone (APZ)**

To ensure that the aims and objectives of NSW Rural Fire Services, PBP, 2019, an Asset Protection Zone between the asset and the hazard should be provided. The Asset Protection Zone provides for, minimal separation for safe firefighting, reduced radiant heat, reduced influence of convection driven winds, reduced ember viability and dispersal of smoke.

The proposed subdivision is not considered to be subject to the Special Fire Protection Purpose requirements which are applicable to schools, (the proposed development is not a school).

It is recommended that the Asset Protection Zone can be based upon the minimum requirements for Asset Protection Zones as set out in Planning for Bush Fire Protection, 2019.

**Table 4 - APZ Requirements (PBP 2019) for the proposed dwelling on Lot 1A**

Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)	Nominated APZ
North	Forest	0-5° Downslope	16m	15m	31m	40m
South	Grassland Hazard similar to Rainforest	0-5° Downslope 0° Upslope	11m 11m	- -	11m 11m	Min 30m 23m See <b>Note 1</b>
East	Forest	0-5° Downslope	15m	10m	25m	Min 83m (To boundary)
West	Forest	0° Upslope	15m	10m	25m	Approx 37mm

**Note 1** - Directly to the south of the dwelling location there is an existing fence line with a thin strip of forest vegetation approximately 15m wide. To the south of this strip is grassland vegetation. It is not considered that this thin strip of forest will generate a forest fire therefore this vegetation hazard has been considered similar to a rainforest hazard. An 11m APZ has been adopted for the rainforest.

**Table 5 - APZ Requirements (PBP 2019) for the Possible dwelling on Lot 1B**

Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)	Nominated APZ
North	Grassland	0° Upslope	11m	-	11m	30m
South	Forest	0-5° Downslope	15m	10m	25m	Min approx. 55m (To boundary)
East	Grassland then Forest	0-5° Downslope 0-5° Downslope	11m 15m	- 10m	11m 25m	40m See <b>Note 2</b>
West	Forest	0° Upslope	10m	10m	20m	Approx 30m

**Note 2** – The forest vegetation is located approximately 80m from the possible dwelling location.

### **3.1.2 Inner (IPAs) and Outer (OPAs) Protection Area Requirements**

**Inner:** 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**

- The creation of 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.

**Outer:** 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 bushfires. Maintenance of the IPA and the OPA as described above should be undertaken regularly, particularly in advance of the bushfire season.

### **3.1.3 Operational Access and Egress**

Access to the dwellings will be from Beranghi Road.

With respect to Lot 1B the access has been located to minimize tree loss. Full access lengths have been calculated for the purposes of nominating total cleared areas for the Bio-Diversity threshold requirements.

The access to 1B is greater than 200m, therefore a performance analysis has been completed and the performance analysis also relates to both dwellings as there is travel through bushfire prone areas to get to the main centres of Crescent Head or Kempsey.

**Figure 4: Aerial Showing Proposed Access for both lots – Lot 1A**



### **Lot 1B**



**1. The Acceptable Solution in PBP, 2019 states:**

*“At least one alternate property access road is provided for individual dwellings or groups of dwellings that are located more than 200m from the public road system”.*

**2. The Performance Criteria of PBP, 2019 states:**

*“Firefighting vehicles can access the dwelling and exit the property safely.”*

**3. Discussion**

Both dwellings are to be located in the grassland area of the property.

The subject properties are located an approximate 15 minute (approx. 12.5 kilometres) drive from Kempsey or a 5 minute (approx. 3.5 kilometres) drive to Crescent Head.

Both driveways are located within 750m of Beranghi Road with both Crescent Head Road and Beranghi Road subject to Bushfire attack with travel to a safe place through the public road system is problematic.

Having an area with greater APZs and other built-in redundancies will provide for a safer environment if an early evacuation has not been an option.

#### 4. Recommendations

It is recommended that the requirements of Isolated Subdivision (5.1.1) of PBP, 2019 be adopted, early evacuation in these areas is critical however if evacuation has not been possible then a safer area should be provided for both the owners/occupants and any attending brigade.

It is further recommended that the access road complies with the requirements of Table 5.3b of PBP, 2019, (See **Table 6**).

**Table 6**

Table 5.3b			
Performance criteria		Acceptable Solution	Comment
A C C E S S - G E N E R A L  R E Q U I R E M E N T S	The intent may be achieved where:		
	Firefighting vehicles are provided with safe, all weather access to structures	• Property access roads are two-wheel drive, all weather roads.	Existing
		• Perimeter roads are provided for residential subdivisions of three or more allotments.	N/A
		• Subdivision of three or more allotments have more than one access in and out of the development.	N/A
		• Traffic management devices are constructed to not prohibit access by emergency services vehicles.	N/A
		• Maximum grades for sealed roads do not exceed 15° and an average grade of not more than 10 ° or other gradient specified by road design standards, whichever is the lesser gradient.	N/A
		• All roads are through roads.	See Reporting
		• Dead end roads are not recommended, but if avoidable, 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.	See Reporting
		• Where kerb and guttering are provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.	N/A
		• 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.	N/A
		• 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.	N/A



	The capacity of access roads is adequate for firefighting vehicles	<ul style="list-style-type: none"> <li>The capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23tonnes) bridges/causeways are to clearly indicate load rating.</li> </ul>	To comply
	There is appropriate access to water supply	<ul style="list-style-type: none"> <li>Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.</li> </ul>	N/A
		<ul style="list-style-type: none"> <li>Hydrants are provided in accordance with the relevant clauses of AS2419.1:2005 – Fire Hydrant Installations Systems design, installation and commissioning; and</li> </ul>	N/A
		<ul style="list-style-type: none"> <li>There is suitable access for a Category 1 fire appliance to within 4 metres of the static water supply where no reticulated supply is available.</li> </ul>	N/A

Table 5.3b

Performance criteria		Acceptable Solution		Comment	
P R O P E R T Y  A C C E S S	The intent may be achieved where:				
	Firefighting vehicles can access the dwelling and exit the property safely.	<ul style="list-style-type: none"><li>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 70kph) that supports the operational use of emergency firefighting vehicles.</li></ul>		N/A	
		In circumstances where this cannot occur the following requirements apply:			
		<ul style="list-style-type: none"><li>Minimum 4m carriageway width;</li><li>In forest, woodland and heath situations, rural property access roads have passing bays at every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay;</li><li>A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;</li><li>Provide a suitable turning area in accordance with Appendix 3;</li></ul>		To comply	

		<ul style="list-style-type: none"> <li>Curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>The minimum distance between inner and outer curves is 6m;</li> </ul>	To comply
		<ul style="list-style-type: none"> <li>The crossfall is not more than 10 degrees;</li> </ul>	Can comply
		<ul style="list-style-type: none"> <li>Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and</li> </ul>	Can comply
		<ul style="list-style-type: none"> <li>A development comprising more than three dwellings has access by dedication of a road and not by right of way.</li> </ul>	Will comply

See **Appendix 2** for Turning Head Options.

### **3.1.5 Services - Water, Gas and Electricity**

As set out in Section 6.8.3 of NSW Rural Fire Services, Planning for Bushfire Protection, 2019, developments in bushfire prone areas must maintain a water supply for firefighting purposes.

Reticulated water supply is not available to the site. A tank supply of 30,000 litres is required to be provided in accordance with PBP, 2019.

Electricity supply is available. The electrical supply for the proposed dwellings is required to comply with PBP, 2019. To assist in providing protection in a bushfire event, in consideration of the possible loss of electricity, a secondary power supply or a petrol/diesel pump is to be provided. This secondary supply is to be adequately shielded from the fire.

Reticulated gas services are not available to the site however any reticulated or bottled gas is to be installed and maintained in accordance with AS 1596 and the requirements of the relevant authorities. Metal piping is to be used. All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side of the installation.

If gas cylinders need to be kept close to a building, the release valves are to be directed away from the building and at least two (2) metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders need to be metal. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

**Table 7**

Table 5.3c			
	Performance Criteria	Acceptable Solutions	Comment
WATER SUPPLIES	<b>The intent may be achieved where:</b>		
	Inadequate water supplies is provided for firefighting purposes	<ul style="list-style-type: none"> <li>Reticulated water supply is to be provided to the development where available.</li> <li>A static water and hydrant supply are provided for non-reticulated developments or where reticulated water supply cannot be guaranteed.</li> </ul>	N/A

		<ul style="list-style-type: none"> <li>Static water supplies shall comply with Table 5.3d of the NSW Planning for Bushfire Protection 2019.</li> </ul>	30,000 litre water supply is recommended.
	Water supplies are located at regular intervals	<ul style="list-style-type: none"> <li>Fire hydrant, spacing, design and sizing complies with the relevant clauses of the Australian Standard AS 2419.1 – 2005.</li> </ul>	N/A
	The water supply is accessible and reliable for firefighting operations	<ul style="list-style-type: none"> <li>Hydrants are not located within any road carriageway.</li> <li>Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter road.</li> </ul>	N/A
	Flows and pressures are appropriate	<ul style="list-style-type: none"> <li>Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.</li> </ul>	N/A
	The integrity of the water supply is maintained	<ul style="list-style-type: none"> <li>All above ground water service pipes are metal, including and up to any taps.</li> <li>Above ground water storage tanks shall be of concrete or metal.</li> </ul>	N/A To comply
<b>ELECTRICITY SERVICES</b>	<p>Location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings</p> <p>Regular inspection of lines is undertaken to ensure they are not fouled by branches</p>	<ul style="list-style-type: none"> <li>Where practical, electrical transmission lines are underground.</li> <li>Where overhead electrical transmission lines are proposed: <ol style="list-style-type: none"> <li>Lines are installed with short pole spacing (30 metres) 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> </ol> </li> </ul>	To comply
<b>GAS SERVICES</b>	Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	<ul style="list-style-type: none"> <li>Reticulated or bottle gas is installed and maintained in accordance with AS 1596:2014 – The storage and handling of LP Gas, the requirements of relevant authorities and metal piping is to be used.</li> <li>All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation.</li> <li>Connections to and from gas cylinders are metal.</li> <li>Polymer-sheathed flexible gas supply lines are not used.</li> <li>Above ground gas service pipes are metal, including and up to any outlets.</li> </ul>	To comply

**Table 8**

<b>Table 7.4a</b>			
	<b>Performance Criteria</b>	<b>Acceptable Solutions</b>	<b>Comment</b>
W A T E R	The integrity of the water supply is maintained.	<ul style="list-style-type: none"> <li>All above ground water service pipes external to the building are metal, including and up to the taps.</li> </ul>	To comply
	A static water supply is provided for firefighting purposes in areas where reticulated water is not available.	<ul style="list-style-type: none"> <li>Where no reticulated water supply is available, water for firefighting purposes is provided in accordance with Table 5.3d;</li> <li>A connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure; 65mm Storz outlet with a ball valve is fitted to the outlet;</li> <li>Ball valve and pipes are adequate for water flow and are metal;</li> <li>Supply pipes from tank to ball valve have the same bore size to ensure flow volume;</li> <li>Underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank;</li> <li>A hardened ground surface for truck access is supplied within 4m;</li> <li>Above ground tanks are manufactured from concrete or metal;</li> <li>Raised tanks have their stands constructed from non-combustible material or bush fire resisting timber (See Appendix F of AS3959);</li> <li>Unobstructed access can be provided at all times;</li> <li>Underground tanks are clearly marked;</li> <li>Tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters;</li> <li>All exposed water pipes external to the building are metal, including any fittings;</li> <li>Where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bushfire attack; any hose and reel for firefighting connected to the pump shall be 19mm internal diameter; and</li> <li>Fire hose reels are constructed in accordance with AS/NZS 1221:1997, and installed in accordance with the relevant clauses of AS 2441:2005.</li> </ul>	<p>To comply</p> <p>To comply</p> <p>To comply</p> <p>To comply</p> <p>To comply if applicable</p> <p>To comply</p> <p>To comply</p> <p>To comply if applicable</p> <p>To comply if applicable</p> <p>To comply</p> <p>To comply</p> <p>To comply</p>
S U P P L I E S			



E L E C T R I C I T Y	Location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings.	<ul style="list-style-type: none"> <li>Where practicable, electrical transmission lines are underground; and</li> <li>Where overhead, electrical transmission lines are proposed as follows; <ul style="list-style-type: none"> <li>✓ Lines are installed with short pole spacing (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 accordance with the specifications in <i>ISSC3 Guideline for Managing Vegetation Near Power Lines</i></li> </ul> </li> </ul>	To comply  To comply
G A S	Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	<ul style="list-style-type: none"> <li>Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used;</li> <li>All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side</li> <li>Connections to and from gas cylinders are metal;</li> <li>Polymer-sheathed flexible gas supply lines are not used; and</li> <li>Above ground gas service pipes are metal, including and up to any outlets.</li> </ul>	To comply  To comply  To comply  To comply

It is considered that the relevant acceptable solutions as provided for by 4.1.3 of NSW Rural Fire Services, PBP, 2019 are capable of being complied with and as such the intent for the provision of services can be achieved.

### **3.1.6 Landscaping**

Landscaping is a major cause of fire spreading to buildings, and therefore any landscaping will need consideration when planning, to produce gardens that do not contribute to the spread of a bushfire.

When planning any future landscaping surrounding any proposed building or subdivision, consideration should be given to the following:

- The choice of vegetation – consideration should be given to the flammability of the plant and the relation of their location to their flammability and on-going maintenance to remove flammable fuels.
- Trees as windbreaks/firebreaks – Trees in the landscaping can be used as windbreaks and also firebreaks by trapping embers and flying debris.
- Vegetation management – Maintain a garden that does not contribute to the spread of bushfire.

- Maintenance of property – Maintenance of the property is an important factor in the prevention of losses from bushfire.

Appendix 4 of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019, contains standards that are applicable to the provision and maintenance of Asset Protection Zones.

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

### 3.2 Construction of Buildings

#### 3.2.1 General

The deemed-to-satisfy provisions for construction requirements are detailed in AS 3953-2018.

The relevant Bushfire Attack Level and construction requirements have been determined in accordance with PBP, 2019 and AS 3959-2018.

#### 3.2.2 AS3959 – 2018 Construction of Buildings in Bushfire Prone Areas

The following construction requirements in accordance with AS 3959 – 2018 Construction of Buildings in Bushfire Prone Areas is required for the bushfire attack categories.

**Table 9**

Bushfire Attack Level (BAL)
BAL - LOW No construction requirements under AS 3959-2018
BAL - 12.5
BAL - 19
BAL - 29
BAL - 40
BAL - FZ

The following table indicates the Bushfire Attack Levels applicable once the recommended APZs have been established:

**Table 10 - Categories of Attack/Construction Standard Assessment for possible dwelling location Lot 1A**

Aspect	Hazard Vegetation	Slope	Min Distance to Hazard once APZ Applied	AS 3959-2018 Bushfire Attack Level (BAL)
North	Forest	0-5° Downslope	40m	BAL 19
South	Grassland Hazard similar to Rainforest	0-5° Downslope 0° Upslope	30m 23m	BAL 12.5 BAL 12.5
East	Forest	0-5° Downslope	Min 83m (to boundary)	BAL 12.5
West	Forest	0° Upslope	Approx 37m	BAL 29

**Table 11 - Categories of Attack/Construction Standard Assessment for possible dwelling location Lot 1B**

Aspect	Hazard Vegetation	Slope	Min Distance to Hazard once APZ Applied	AS 3959-2018 Bushfire Attack Level (BAL)
North	Grassland	0° Upslope	30m	BAL 12.5
South	Forest	0-5° Downslope	Min 55m (To boundary)	BAL 12.5
East	Grassland then Forest	0-5° Downslope 0-5° Downslope	40m Approx. 80m	BAL 12.5 BAL 12.5
West	Forest	0° Upslope	Approx. 30m	BAL 29

It is recommended in consideration of the requirements of Isolated Subdivision (5.11 OF PBP, 2019) that both dwellings be constructed to **BAL 29**.

The report assumes that the sheds will be located greater than six (6) metres from the proposed dwellings.

### **3.2.3 Fences and Gates**

Fences and gates may play a significant role in the vulnerability of structures during a bushfire.

With regards to new fences and gates:

- All new fences in bush fire prone areas should be made of either hardwood or non-combustible material.
- Where the fence is within 6m of the building or in areas of BAL 29, they should only be made of non-combustible material.

## **4.0 EMERGENCY EVACUATION PLANNING**

It is recommended that the owners develop a bushfire survival plan with respect to the site.

The decision to stay and defend or to leave should be made well in advance of the arrival of the bushfire.

Any bush fire survival plan should consider the advice offered by the RFS website [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au).

## **5.0 ISOLATED RURAL DEVELOPMENT**

In consideration of the travel distance consideration has been given to 5.1.1 of Planning for Bush Fire Protection (Isolated Subdivision).

In regards to Isolated Subdivision the following:

- Larger APZs outside of the range prescribed for in PBP and increased Bush Fire Attack Level (BAL) to proposed buildings to create a safer area for occupants and fire fighters remaining on site.

Additional Asset Protection Zones have been provided above the minimum. The dwellings are recommended to be constructed to **BAL 29**.

- Firefighting water supply and associated firefighting equipment (i.e pump and hose for each dwelling) in addition to any reticulated supply.

A 30,000 litre water supply is recommended with a pump and hose reel, as detailed above to ensure a water supply in times of fire.

## 6.0 REQUIREMENTS

The following requirements are considered to be integral to this bushfire risk assessment:

1. An Asset Protection Zones as detailed in Section 3.1.1 of this report are to be provided.
2. The proposed subdivision is to comply with the relevant performance criteria/acceptable solutions as provided for by PBP, 2019.
3. Adopt landscaping principals in accordance with NSW Rural Fire Services, PBP, 2019.
4. Any future dwellings are to be constructed in accordance with Section 3.2 of this report.

## 7.0 CLAUSE 44 CONSIDERATIONS

**Table 12**

Environmental/Heritage Feature	Comment
Riparian Corridor	Not considered in this report
SEPP 14 – Coastal Wetland	Not considered in this report
SEPP 26 – Littoral	Not considered in this report
SEPP 44 – Koala Habitat	Not considered in this report
Areas of geological interest	Not considered in this report
Environment protection zones	Not considered in this report
Land slip	Not considered in this report
Flood prone land	Not considered in this report
National Park Estate or other reserves	Not considered in this report
Threatened Species, populations, endangered ecological communities and critical habitat	Not considered in this report
Aboriginal Heritage	Not considered in this report

## 8.0 CONCLUSION

It is suggested that with the implementation of this report, and its recommendations, that the bushfire risk is manageable and will be consistent with the acceptable bushfire protection measure solutions, provided for in NSW Rural Fire Services, PBP, 2019.

The report provides that the required APZ's can be achieved and that the proposed dwellings in the subdivision, can be constructed so as to comply with the requirements of AS 3959-2018 and PBP, 2019.

This report is however contingent upon the following assumptions and limitations:

### Assumptions

1. For a satisfactory level of bushfire safety to be achieved, regular inspection and testing of proposed measures, building elements and methods of construction, specifically nominated in this report, is essential and is assumed in the conclusion of this assessment.



2. There are no re-vegetation plans in respect to hazard vegetation and therefore the assumed fuel loading will not alter.
3. It is assumed that the building works will comply with the DTS provisions of the BCA including the relevant requirements of Australian Standard 3959 – 2018.
4. The proposed subdivision is constructed and maintained in accordance with the risk reduction strategy in this report.
5. The vegetation characteristics of the subject site and surrounding land remains unchanged from that observed at the time of inspection.

### Limitations

1. The data, methodologies, calculations and conclusions documented within this report specifically relate to the proposed subdivision and must not be used for any other purpose.
2. A reassessment will be required to verify consistency with this assessment if there are any alterations and/or additions, or changes to the risk reduction strategy contained in this report.

Regards



Tim Mecham  
Midcoast Building and Environmental

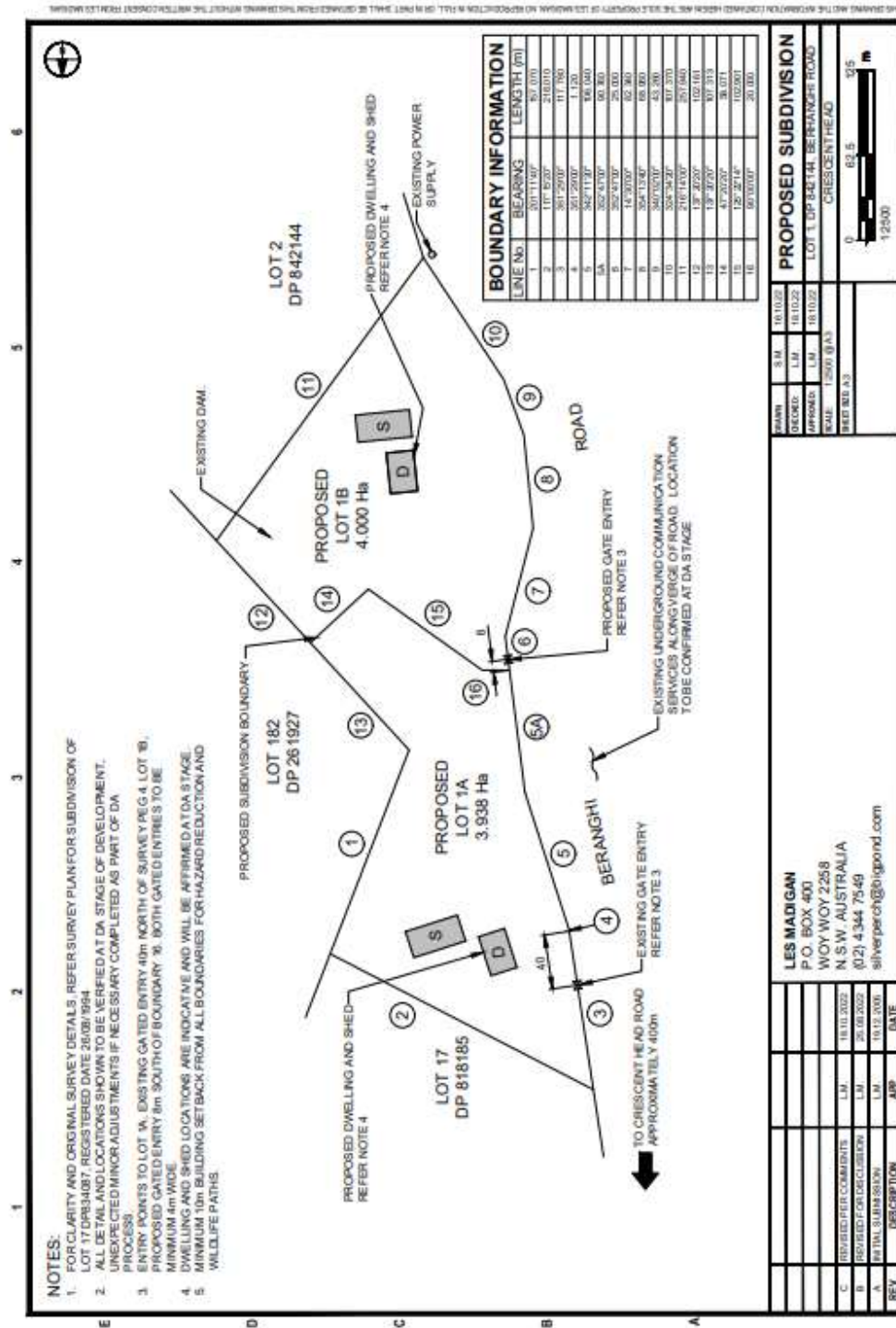
### 9.0 DISCLAIMER

This report is not intended for or to be used where aluminium composite panels are proposed. The report is not to be construed as an assessment of the building material or compliance with the recommended bushfire attack level/s.

### 10.0 REFERENCES

NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019  
AS 3959-2018 *Construction of Buildings in Bushfire Prone Areas*  
Keith David 2004, Ocean *Shores to Desert Dunes, The Native Vegetation of New South Wales and the ACT*, Department of Environment and Conservation  
**NSW State Government** (1997) Rural Fires Act 1997  
NSW Rural Fire Service – *Guideline for Bushfire Prone Land Mapping 2002*

APPENDIX 1



## APPENDIX 2 – Turning Head Options

**Figure A3.3**

Multipoint turning options.

