

# BUSH FIRE ASSESSMENT

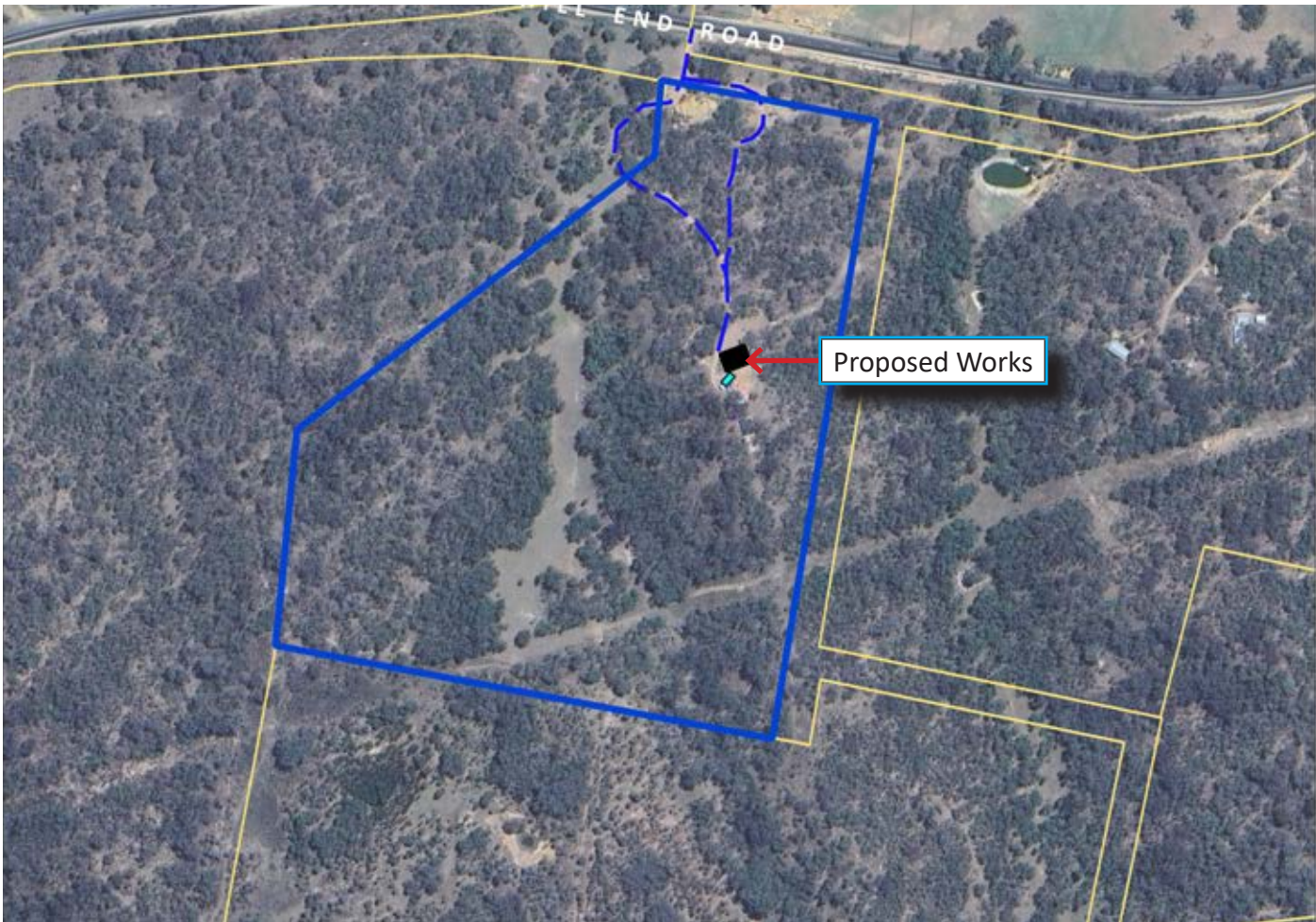
## 839 Hill End Road Erudgere 2850

Assessed as: Infill Development

Prepared by: Matthew Noone | BPAD Accreditation Number: BPAD-25584

Site Address: 839 Hill End Road Erudgere 2850 | Lot / DP: (Lot 22/-/DP1163342)

Project Description: Sole Occupancy Dwelling



# BAL ASSESSMENT CERTIFICATION

Provided to support the Development Application

839 Hill End Road Erudgere 2850

Prepared by: Matthew Noone | BPAD Accreditation Number: BPAD-25584



Site Address: 839 Hill End Road Erudgere 2850 | Lot / DP: (Lot 22/-/DP1163342)

Project Description: Sole Occupancy Dwelling

PBP Development Type: Infill Development | Alternate Solutions: Yes

I hereby certify that:

1	I (Matthew Noone) am a person recognised by the NSW Rural Fire Service as a qualified consultant in bushfire risk assessment holding accreditation with the Fire Protection Association (BPAD-PD 25584).
2	Subject to the recommendations contained in the attached Bushfire Risk Assessment Report the proposed development conforms to the relevant specifications and requirements *.
	* The relevant specifications and requirements being; specifications and requirements of the document entitled Planning for Bush Fire Protection prepared by the NSW Rural Fire Service in co-operation with the Department of Planning and any other document as prescribed by s.4.14 of the Environmental Planning and Assessment Act 1979.
	* The site deviates from the deemed to satisfy provisions. RFS referral is required.
3	I am aware that the Bushfire Assessment Report, prepared for the above mentioned site is to be submitted in support of a development application for this site and will be relied upon by Council as the basis for ensuring that the bushfire risk management aspects of the proposed development have been addressed in accordance with Planning for Bushfire Protection (2019).

CERTIFICATE NUMBER BR-800124-D			FPAA Accreditation Number BPAD-25584
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## DOCUMENT TRACKING

Issue Date	Issued to	Description	Version
12/08/2024	Terry Turner	Issued for DA.	D

## **DISCLAIMER and TERMS OF USE**

*"It should be borne in mind that the measures contained in this Standard cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature of behaviour of fire, and extreme weather conditions." (AS3959 2018).*

Bushfire Planning & Design cannot be held liable for the loss of life or property caused by a bushfire event. This report has considered the relevant planning instruments, bushfire constructions codes and practices applicable at the time of writing. Should additional information be provided after this report has been issued, we reserve the right to review and if necessary modify our report. Bushfire Planning and Design has no control over workmanship, buildings degrade over time and vegetation if not managed will regrow. In addition legislation and construction standards are subject to change. Due to significant variance of bushfire behaviour, we do not guarantee that the dwelling will withstand the passage of bushfire even if this development is constructed to the prescribed standards.

This report has been based on our interpretation of Planning for Bushfire Protection (2019), AS3959 (2018) and the methodology for site specific bushfire assessment. As a consultant, our view can be subjective. Our opinions may differ from the opinions provided by you the Client (or Client Representative), the Council, the RFS or another bushfire consultant. The Rural Fire Service (RFS) has a higher authority and can upon their review, increase a nominated BAL-rating or entirely reject a development proposal. Any such recommendations made by the RFS take precedence. Our role is intermediary between our Client (or Client Representative) and the consenting authority. We apply our knowledge of the relevant bushfire protection standards to provide the best possible outcome for our Client (or Client Representative), both from a bushfire safety and financial perspective. Should the RFS modify our recommendations or reject the proposal to which this report relates to we will not be held liable for any financial losses as a result. By using this document, you the Client (or Client Representative) agree to and acknowledge the above statements

Bushfire Planning and Design accepts no liability or responsibility for any use or reliance upon this report and its supporting material by any unauthorized third party. The validity of this report is nullified if used for any other purpose than for which it was commissioned. Unauthorized use of this report in any form is deemed an infringement of our intellectual property. By using this document to support your development you the Client (or Client representative) agree to these terms.

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## GLOSSARY

The abbreviations that are commonly used are explained below. Not all are present in this report.

APZ	Asset Protection Zone
AS3959	Australian Standard for the Construction of a Building in a Bushfire Prone Area
BAL	Bushfire Attack Level
BCA	Building Code of Australia
BFPL	Bush Fire Prone Land
BFPLM	Map Bush Fire Prone Land Map
BFDB	Bush Fire Design Brief
BPM	Bush Fire Protection Measure
DA	Development Application
DCP	Development Control Plan
DPIE	Department Of Planning, Industry And Environment
DTS	Deemed to Satisfy
EPA ACT	Environmental Planning And Assessment Act 1979
FDI	Fire Danger Index
FFDI	Forest Fire Danger Index
GFDI	Grassland Fire Danger Index
IPA	Inner Protection Area
LEP	Local Environmental Plan
NASH	National Association of Steel Framed Housing
NCC	National Construction Code
OPA	Outer Protection Area
PBP	Planning for Bush Fire Protection
RF ACT	Rural Fires Act
RF REG	Rural Fires Regulation
NSW RFS	New South Wales Rural Fire Service
SEPP	State Environmental Planning Policy
SFPP	Special Fire Protection Purpose
SFR	Short Fire Run
SSD	State Significant Development

## PART A - BACKGROUND AND BRIEFING NOTES

Prior to establishing the Bushfire Attack Level and compliance with Planning for Bushfire Protection and AS3959, it is necessary to discuss the following items.

A.01 BUSHFIRE PRONE LAND

A.02 DEVELOPMENT PROPOSAL

A.03 REGULATORY FRAME WORK

A.04 SITE LOCATION, DESCRIPTION AND POTENTIAL BUSHFIRE THREATS

A.05 LAND USE, ZONING AND PERMISSIBILITY

A.06 SIGNIFICANT ENVIRONMENTAL FEATURES

A.07 DETAILS OF ABORIGINAL HERITAGE

A.08 THREATENED SPECIES, COMMUNITIES AND CRITICAL HABITATS

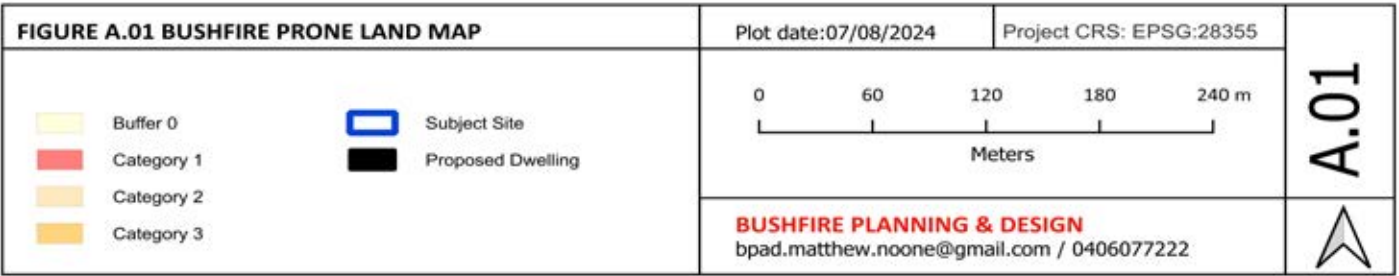
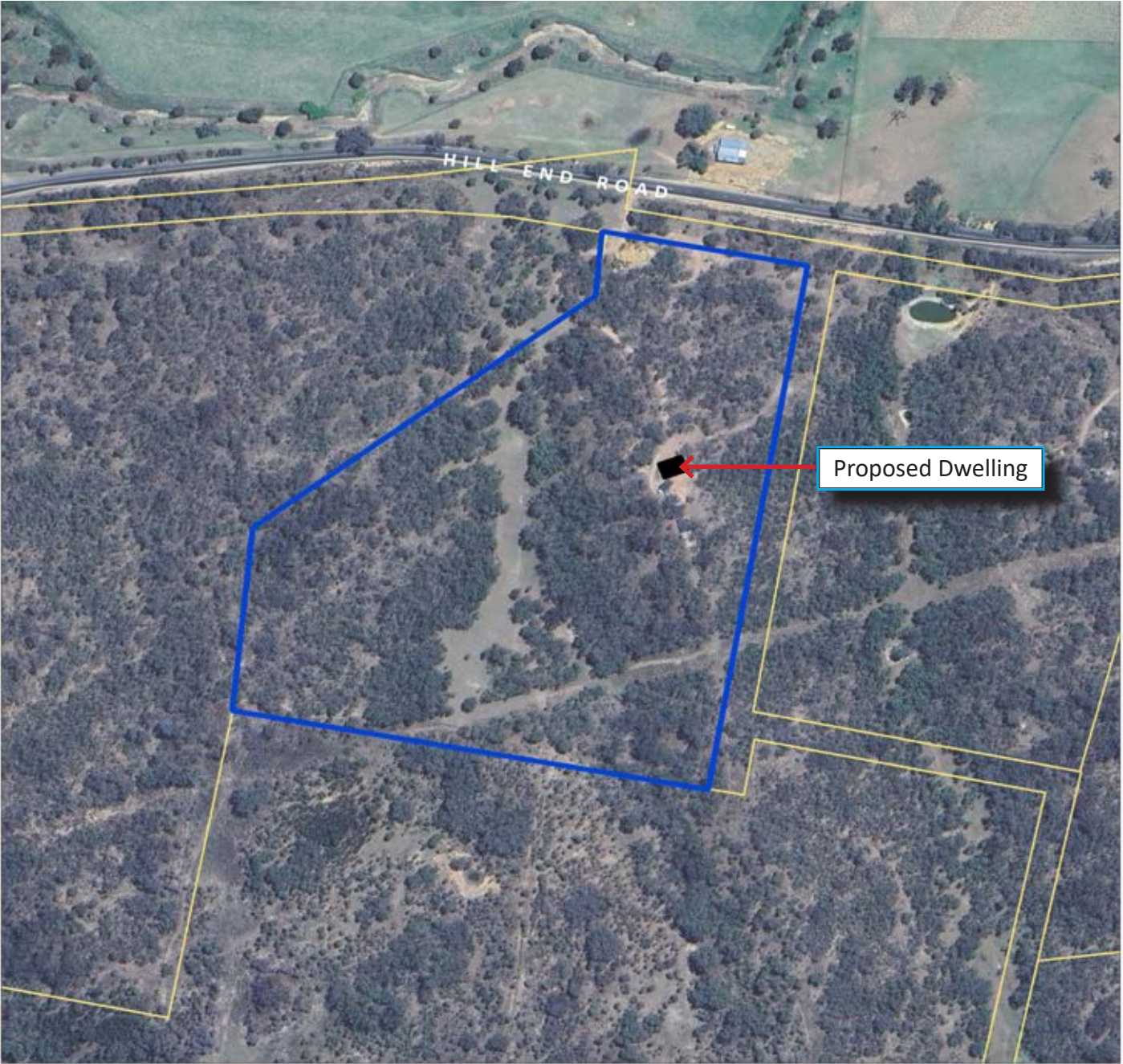
A.09 BIODIVERSITY VALUES

A.10 REPORT LIMITATIONS



A.01 BUSHFIRE PRONE LAND

The subject site whether in whole or part is not recorded as bushfire affected on a relevant map certified under Section 10.3 (2) of the Environmental Planning and Assessment Act 1979 (Refer figure A.01). However, there is bushfire prone vegetation within and surrounding the subject site.



## A.02 DEVELOPMENT PROPOSAL

The development relates to the construction of a sole occupancy dwelling. An existing cottage is located to the south of the proposed building. The cottage was approved and constructed under a separate DA. The proposed dwelling will be the principal dwelling. The cottage will then become the secondary dwelling.



## Concept Drawing



## A.03 REGULATORY FRAME WORK

### The Environmental Planning and Assessment Act 1979 (EP&A Act)

#### 4.14 Consultation and development consent--certain bush fire prone land

- (1) Development consent cannot be granted for the carrying out of development for any purpose (other than a subdivision of land that could lawfully be used for residential or rural residential purposes or development for a special fire protection purpose) on bush fire prone land (being land for the time being recorded as bush fire prone land on a relevant map certified under section 10.3(2)) unless the consent authority--

(a)	is satisfied that the development conforms to the specifications and requirements of the version (as prescribed by the regulations) of the document entitled Planning for Bush Fire Protection prepared by the NSW Rural Fire Service in co-operation with the Department (or, if another document is prescribed by the regulations for the purposes of this paragraph, that document) that are relevant to the development “the relevant specifications and requirements” ), or
(b)	has been provided with a certificate by a person who is recognised by the NSW Rural Fire Service as a qualified consultant in bush fire risk assessment stating that the development conforms to the relevant specifications and requirements.

- (1A) If the consent authority is satisfied that the development does not conform to the relevant specifications and requirements, the consent authority may, despite subsection (1), grant consent to the carrying out of the development but only if it has consulted with the Commissioner of the NSW Rural Fire Service concerning measures to be taken with respect to the development to protect persons, property and the environment from danger that may arise from a bush fire.

- (1B) This section does not apply to State significant development.

- (1C) The regulations may exclude development from the application of this section subject to compliance with any requirements of the regulations. The regulations may (without limiting the requirements that may be made)--

(a)	require the issue of a certificate by the Commissioner of the NSW Rural Fire Service or other qualified person in relation to the bush fire risk of the land concerned, and
(b)	authorise the payment of a fee for the issue of any such certificate.

## NATIONAL CONSTRUCTION CODE (NCC)

### FUNCTIONAL STATEMENTS

#### F2.7.4 Bushfire prone areas

A Class 1 building or a Class 10a building or deck associated with a Class 1 building constructed in a designated bushfire prone area is to provide resistance to bushfires in order to reduce the danger to life and reduce the risk of the loss of the building.

### PERFORMANCE REQUIREMENT

**P2.7.5** Performance Requirement means a requirement which states the level of performance which a Performance Solution or Deemed-to-Satisfy Solution must meet.

Where an alternate bushfire protection design is proposed as a Performance Solution to that described in Part 3.10.5, that proposal must comply with—

(a) Performance Requirement P2.7.5; and

(b) The relevant Performance Requirements determined in accordance with A2.2(3) and A2.4(3) as applicable.

### CONSTRUCTION IN BUSHFIRE PRONE AREAS

#### 3.10.5.0 Performance Requirement P2.7.5 is satisfied, for—

(a) a Class 1 building; or

(b) a Class 10a building or deck associated with a Class 1 building,

located in a designated bushfire prone area if it is constructed in accordance with—

(c) AS 3959; or

(d) NASH Standard – Steel Framed Construction in Bushfire Areas.

## NATIONAL CONSTRUCTION CODE (NCC) CONTD...

### STATE AND TERRITORY VARIATIONS

#### 3.10.5.0 IS REPLACED WITH THE FOLLOWING CLAUSE IN NEW SOUTH WALES:

Performance Requirement P2.7.5 is satisfied, for—	
(a)	a Class 1 building; or
(b)	a Class 10a building or deck associated with a Class 1 building,

located in a designated bushfire prone area , if it is constructed in accordance with the following: AS 3959 except—

(1)	as amended by Planning for Bush Fire Protection; and
(2)	for Section 9 for Bushfire Attack Level FZ (BAL-FZ).

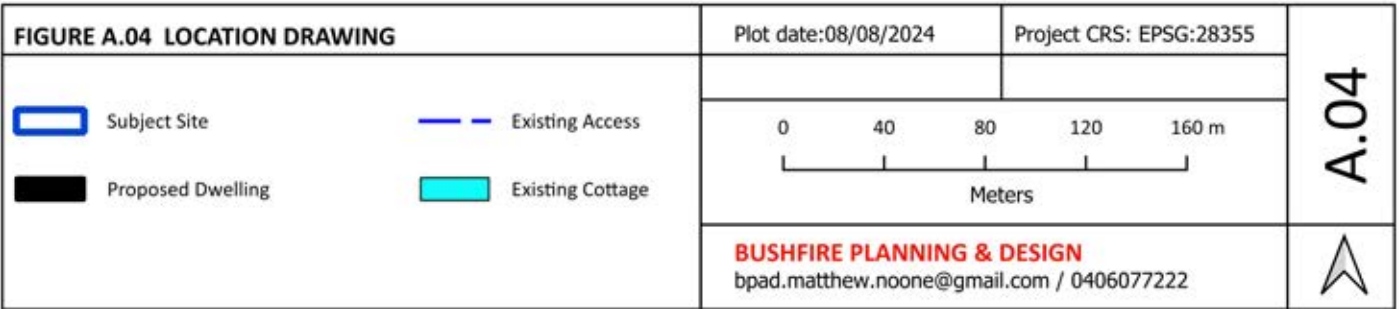
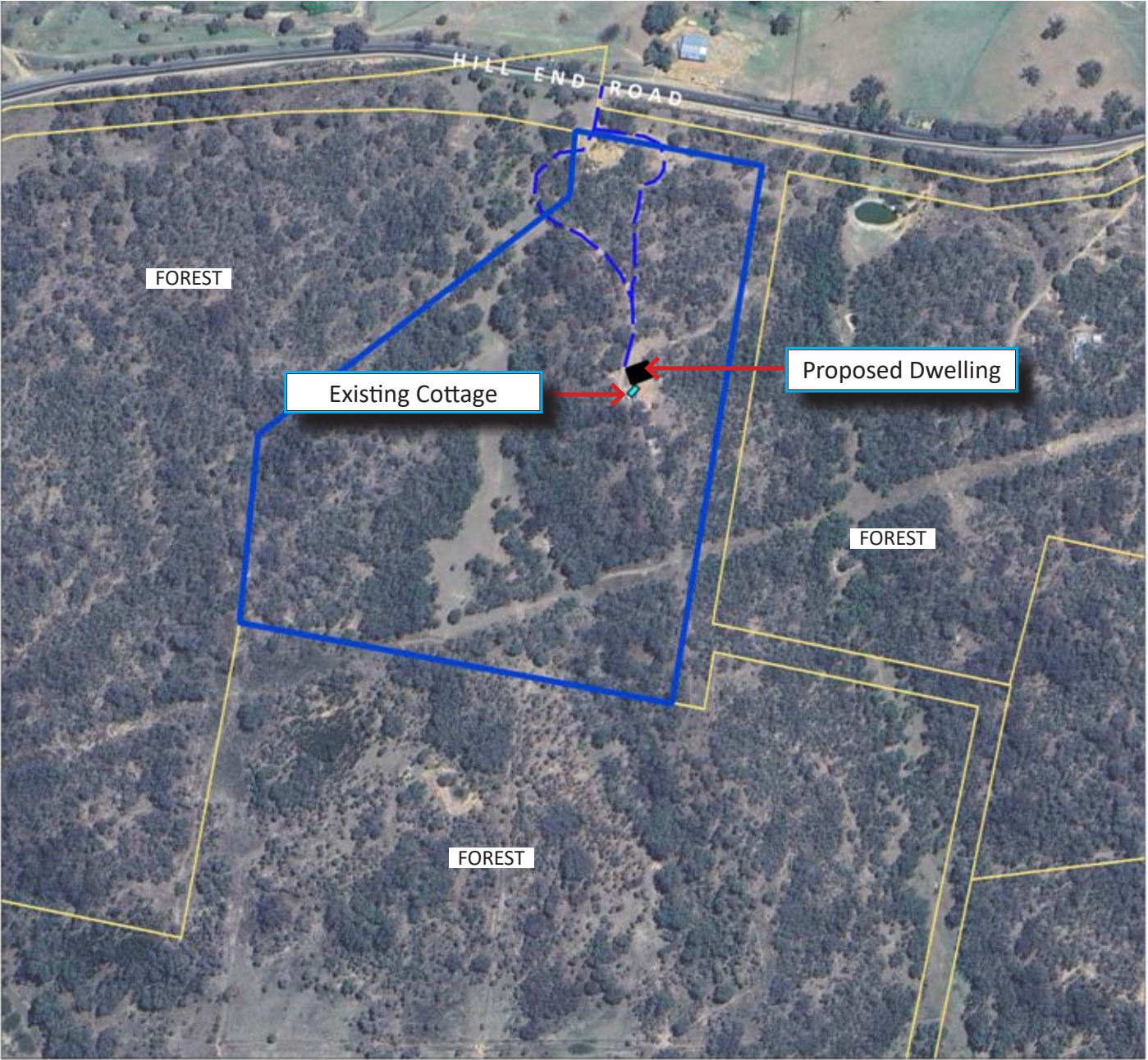
NASH Standard – Steel Framed Construction in Bushfire Areas except—

(1)	as amended by Planning for Bush Fire Protection; and
(2)	for Section 9 for Bushfire Attack Level FZ (BAL-FZ).

the requirements of (c), or (d) above as modified by the development consent following consultation with the NSW Rural Fire Service under section 4.14 of the Environmental Planning and Assessment Act 1979 if required; or the requirements of (c), or (d) above as modified by development consent with a bushfire safety authority issued under section 100B of the Rural Fires Act 1997 for the purposes of integrated development.

A.04 SITE LOCATION, DESCRIPTION AND POTENTIAL BUSHFIRE THREATS

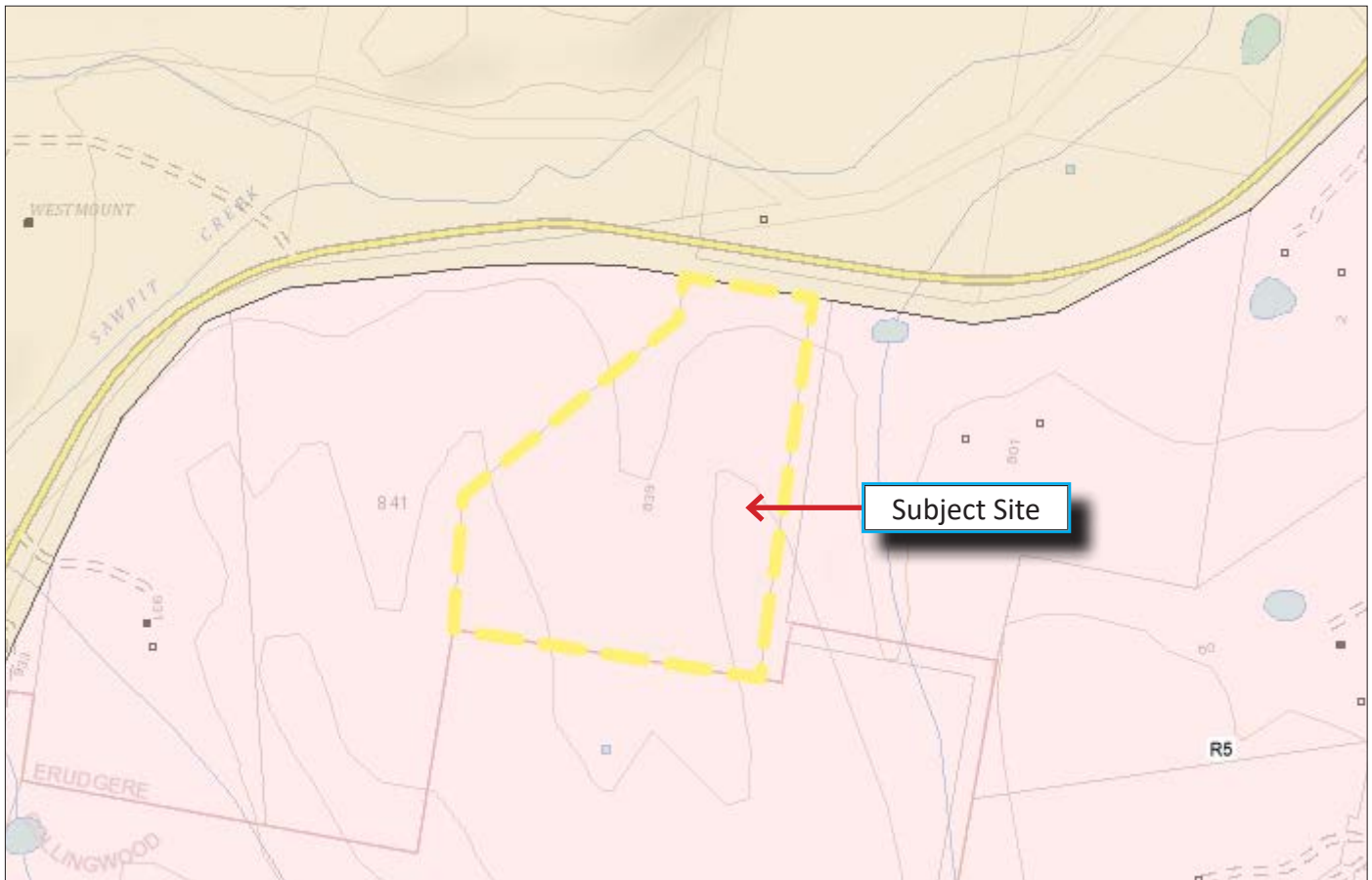
The subject site is located in Erudgere which is within the Mid-Western Regional Local Government Area (LGA). The site is accessed via Hill End Road to the north. Two access trails connect the development area to Hill End Road. The majority of the subject site is identified as forest vegetation with the exception of a grassland within the valley to the west. Forest is located on the adjoining blocks to the east, west, north west and south.





## A.05 LAND USE, ZONING AND PERMISSIBILITY

The subject site is zoned R5 Large Lot Residential.



### LAND ZONING LEGEND

B1 Neighbourhood Centre	IN1 General Industrial	RU1 Primary Production
B2 Local Centre	IN2 Light Industrial	RU2 Rural Landscape
B3 Commercial Core	IN3 Heavy Industrial	RU3 Forestry
B4 Mixed Use	IN4 Working Waterfront	RU4 Primary Production Small Lots
B5 Business Development	R1 General Residential	RU5 Village
B6 Enterprise Corridor	R2 Low Density Residential	RU6 Transition
B7 Business Park	R3 Medium Density Residential	SP1 Special Activities
B8 Metropolitan Centre	R4 High Density Residential	SP2 Infrastructure
C1 National Parks & Nature Reserves	R5 Large Lot Residential	SP3 Tourist
C2 Environmental Conservation	RE1 Public Recreation	UR Urban
C3 Environmental Management	RE2 Private Recreation	DM Deferred Matter
C4 Environmental Living	RO Regional Open Space	
CA Complex Area	RP Regional Park	

## **A.06 SIGNIFICANT ENVIRONMENTAL FEATURES**

There are no significant environmental features within the proposed development area that would affect bushfire behaviour to a greater extent than assessed in part B of this report. It is our understanding the site contains terrestrial biodiversity. The impact to terrestrial biodiversity is a study being carried out by others.

## **A.07 DETAILS OF ABORIGINAL HERITAGE**

To our knowledge the site is not associated with any items of Aboriginal heritage.

## **A.08 THREATENED SPECIES, COMMUNITIES AND CRITICAL HABITATS**

The subject site is not mapped by the Department of Planning, Industry and Environment (DPIE) under Part 7 of the Biodiversity Conservation Act 2016 (BC Act) as having Biodiversity Values (BV). There is no BV mapped land within the proposed development area. Refer to Figure A.09.



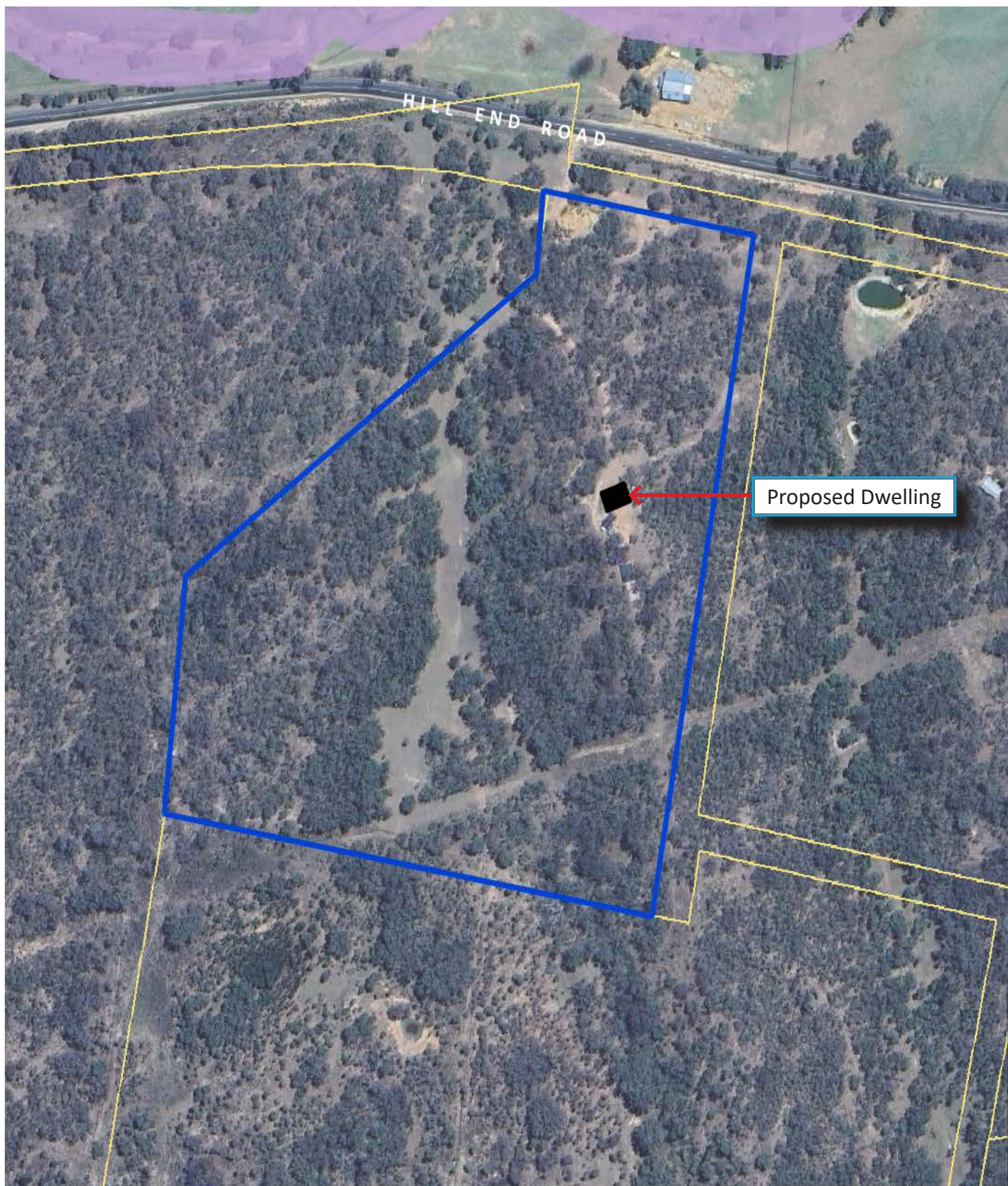


FIGURE A.09 BIODIVERSITY		Plot date:07/08/2024	CRS: EPSG:28355	A.09
<div><div>BIODIVERSITY VALUES</div><div><div><div></div><div>Biodiversity Values</div></div><div><div></div><div>Biodiversity Values added in the last 90 days</div></div></div><div><div><div></div><div>Subject Site</div></div><div><div></div><div>Proposed Dwelling</div></div></div><div>The BV Map has been prepared by the Department of Planning, Industry and Environment (DPIE) under Part 7 of the Biodiversity Conservation Act 2016 (BC Act).</div></div>		<div><div>0150 m</div><div>Meters</div></div>		
		bpad.matthew.noone@gmail.com / 0406077222		<div></div>



## A.09 REPORT LIMITATIONS

This bushfire assessment is developed based on the current accepted standards. The severity of bushfire attack is reliant on many variables. Due to these variables the bushfire attack on any given day could be higher due to the limitations outline below. The bushfire protection measures contained in this document does not guarantee that loss of life, injury or property damage will not occur during a bush fire event.

### Fire Danger Index

It may be possible that days of higher Fire Danger Index (FDI) may be experienced than the FDI levels used for assessment. This may result in fire situations where conditions challenge survivability of buildings and their occupants.

### Fuel Load

The fuel loads and vegetation classes used in our assessment are based on the State Vegetation Mapping and Comprehensive Fuel Loads based on The University of Wollongong's (UoW) Fuels Modelling Project. Fuel loads in some areas may be higher than those used in this document. This can influence bush fire behaviour and the potential impact on property. The DTS APZs in PBP (2019) are based on the UoW fuel loads and are therefore suitable for design purposes.

### Climate change

Climate change has led to longer, more intense fire seasons and an increase in the average number of elevated fire weather days, as measured by the Forest Fire Danger Index (FFDI). Last year saw the highest annual accumulated FFDI on record. Australia was the first country in the world to report the impact of climate change on bushfires through CSIRO's work to model the increase in high fire danger days.

### Legislative Standards

Recommendations relating to development of bushfire prone land are a directive through the legislative standards applicable at the time of writing. Legislative standards change over time. All recommendations made are based on the current standards. We cannot guarantee that the current standards will be suitable in comparison to future standards.

### Maintenance

After the issuance of an Occupancy Certificate (OC) it is imperative that the bushfire protection recommendations are carried out for the life of the development. Failure to maintain a property in accordance with the RFS standards for Asset Protection Zones could lead to the failure of the building, property and life. We have no control over the extent of how well a property will be maintained post OC.



### B.01 INTRODUCTION

For the purpose of this bushfire assessment, the vegetation is required to be described to a distance of 140m from the boundary and the slope to 100m from boundary. Vegetation type and slope under vegetation are the factors that will significantly affect bushfire behaviour.

‘Research has shown that 85% of houses are lost in the first 100m from bushland and that ember attack is a significant form of attack on properties’ (RFS 2006).

### B.02 SLOPE DETERMINATION

The effective slope has been assessed for a distance of at least 100m from the proposed development. The slope data has been calculated from a 1m LiDAR Digital Elevation Model (DEM). The source data sets have been captured to standards that are generally consistent with the Australian ICSM LiDAR Acquisition Specifications which require a fundamental vertical accuracy of at least 0.30m (95% confidence) and horizontal accuracy of at least 0.80m (95% confidence). The slope arrows indicated in figure A represent the slope calculated across the length of the arrow direct from the digital elevation model. The calculated slope as shown in Figure A has not been manipulated or modified in any way.

### B.03 HOW THE VEGETATION COVER IS MEASURED

The author has visited the site to view the vegetation. The distance to vegetation is measured from the extent of vegetation cover interpolated from high resolution aerial imagery. For the areas beyond the line of sight we have defaulted to interpreting the extent of vegetation cover high resolution aerial image.

### B.04 PREDOMINANT VEGETATION FORMATIONS

This assessment considers the vegetation within the site and if relevant, vegetation external to the site boundaries. Where mixes of vegetation formations are located together, the vegetation formation providing the greater hazard (highest radiant heat load) shall be used to determine the BAL and APZ. The combination of vegetation and slope that yields the worst case scenario shall be used (A1.2 PBP 2019). The vegetation mapping provides an overview of the types of vegetation proximal to the site. The vegetation mapping shown in Figure B.04 is not intended to be conclusive.



**FIGURE B.04 VEGETATION CLASS**

 Subject Site

 Dry Sclerophyll Forests (Shrub/grass sub-formation)

 Proposed Dwelling

CRS: EPSG:28355

Plot date: 07/08/2024

0 Meters 100 m

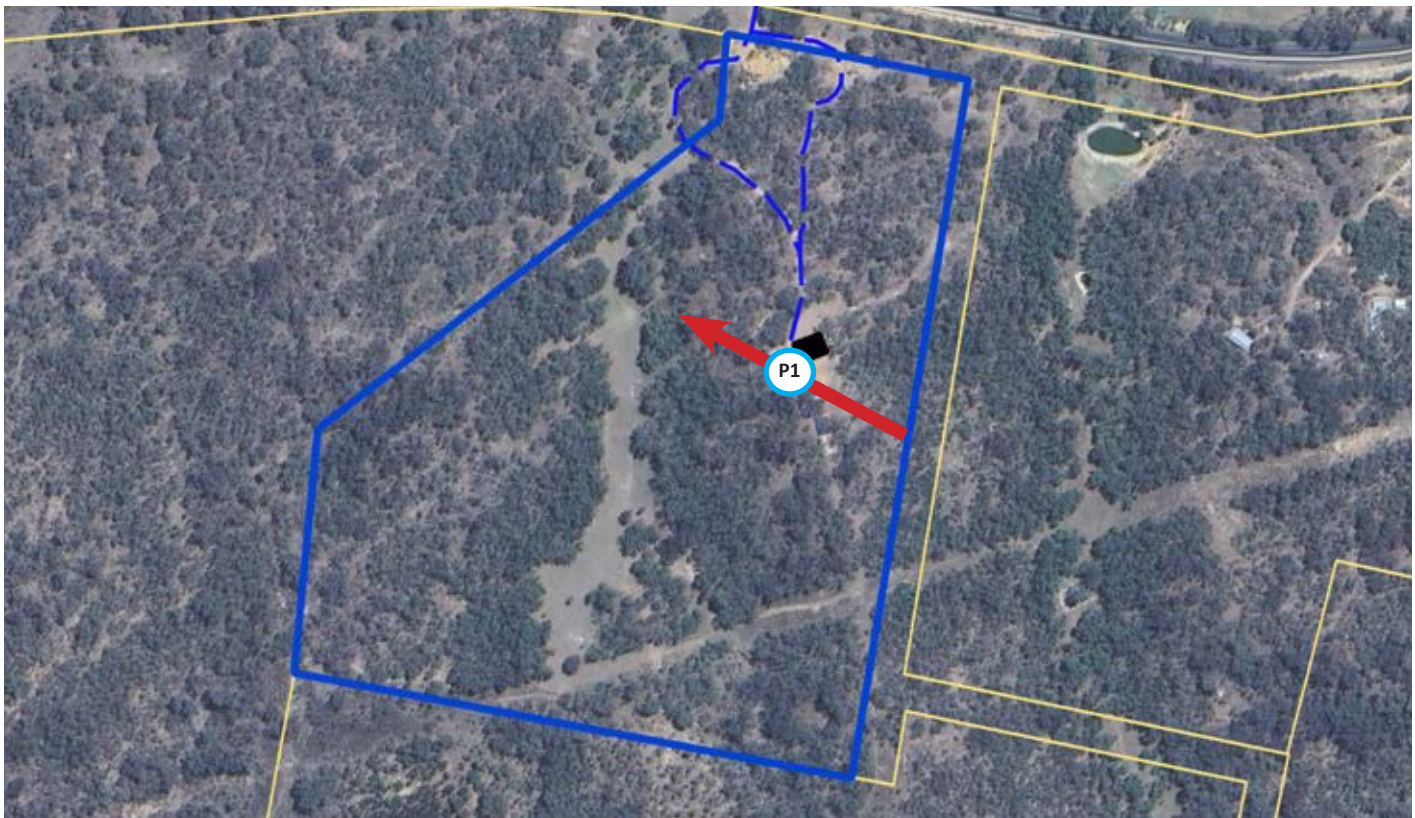
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B.05 VEGETATION PHOTOS



P1: Forest vegetation to the north west.







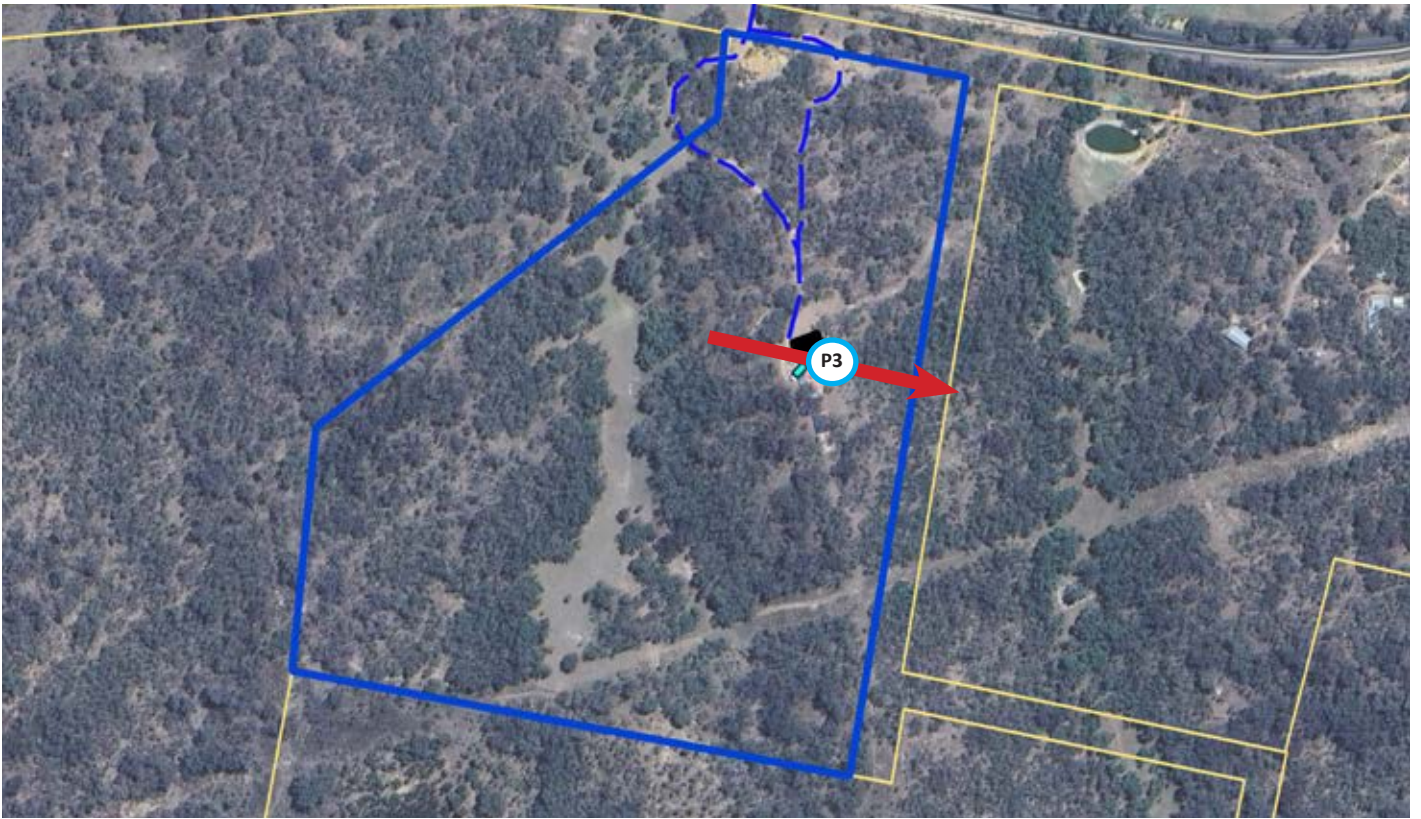
P2: Forest vegetation to the north east.







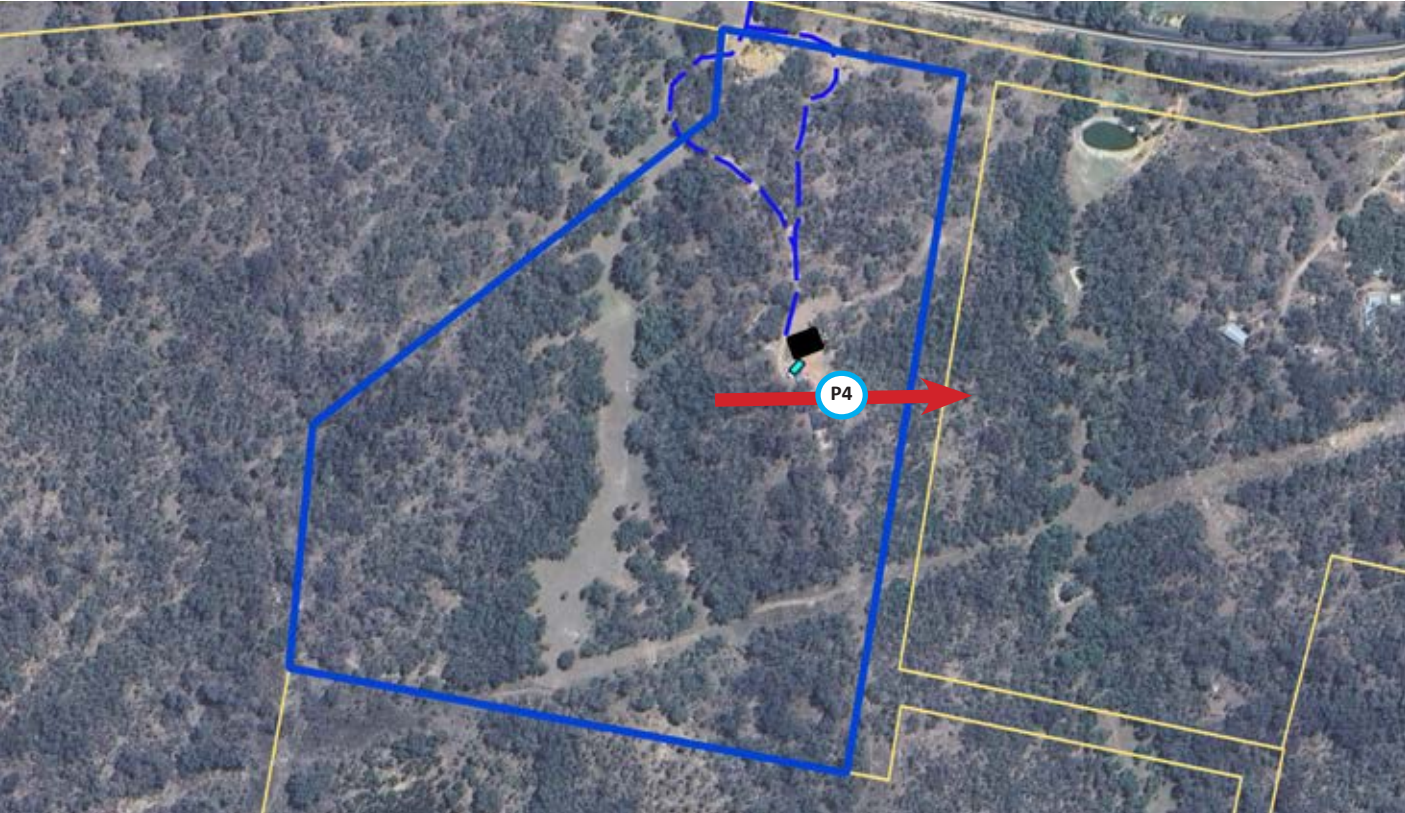
P3: Forest vegetation to the east.







P4: Forest vegetation to the east.







P5: Forest vegetation to the south east.







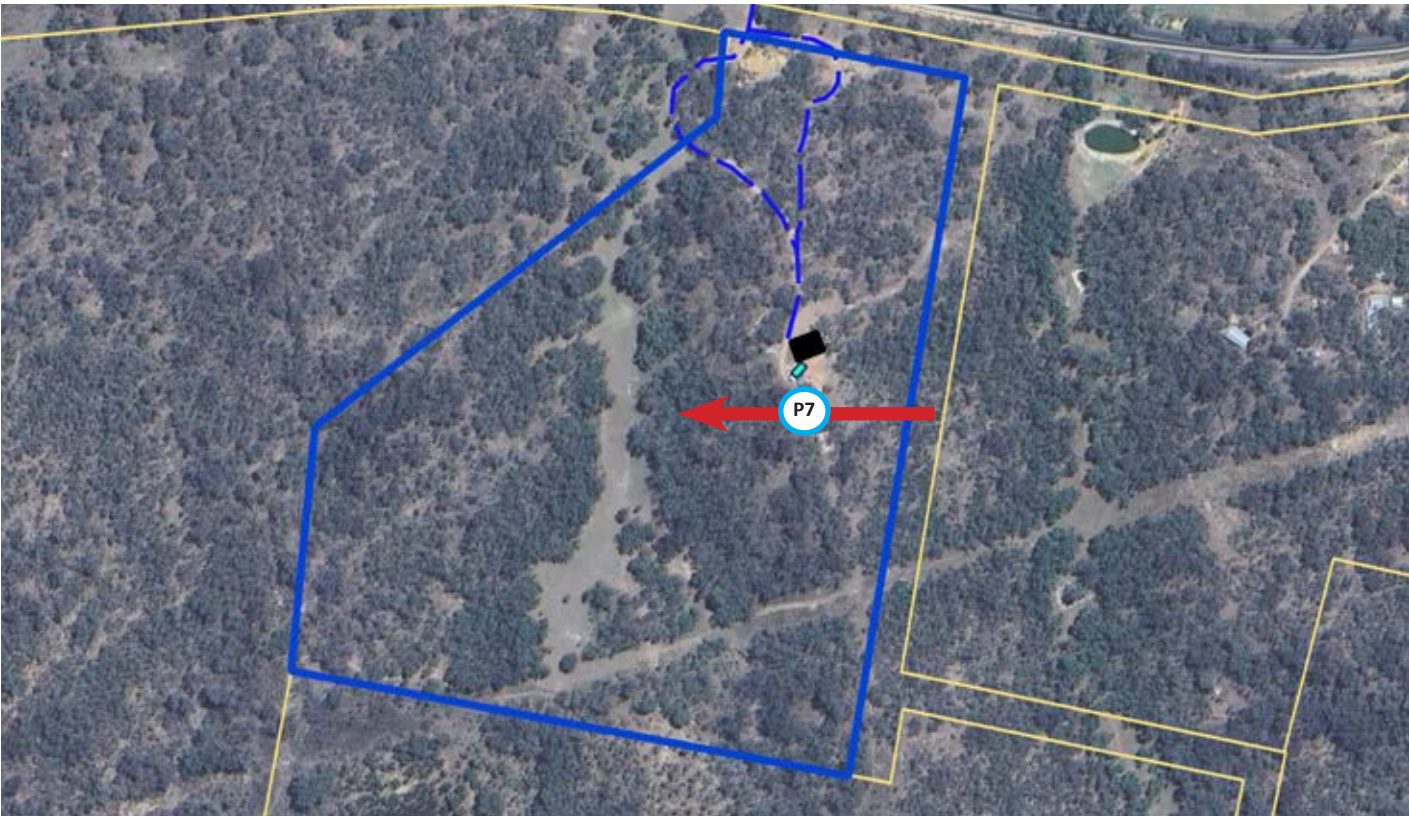
P6: Forest vegetation to the south / south east.







P7: Forest vegetation to the west.





## B.06 BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT.

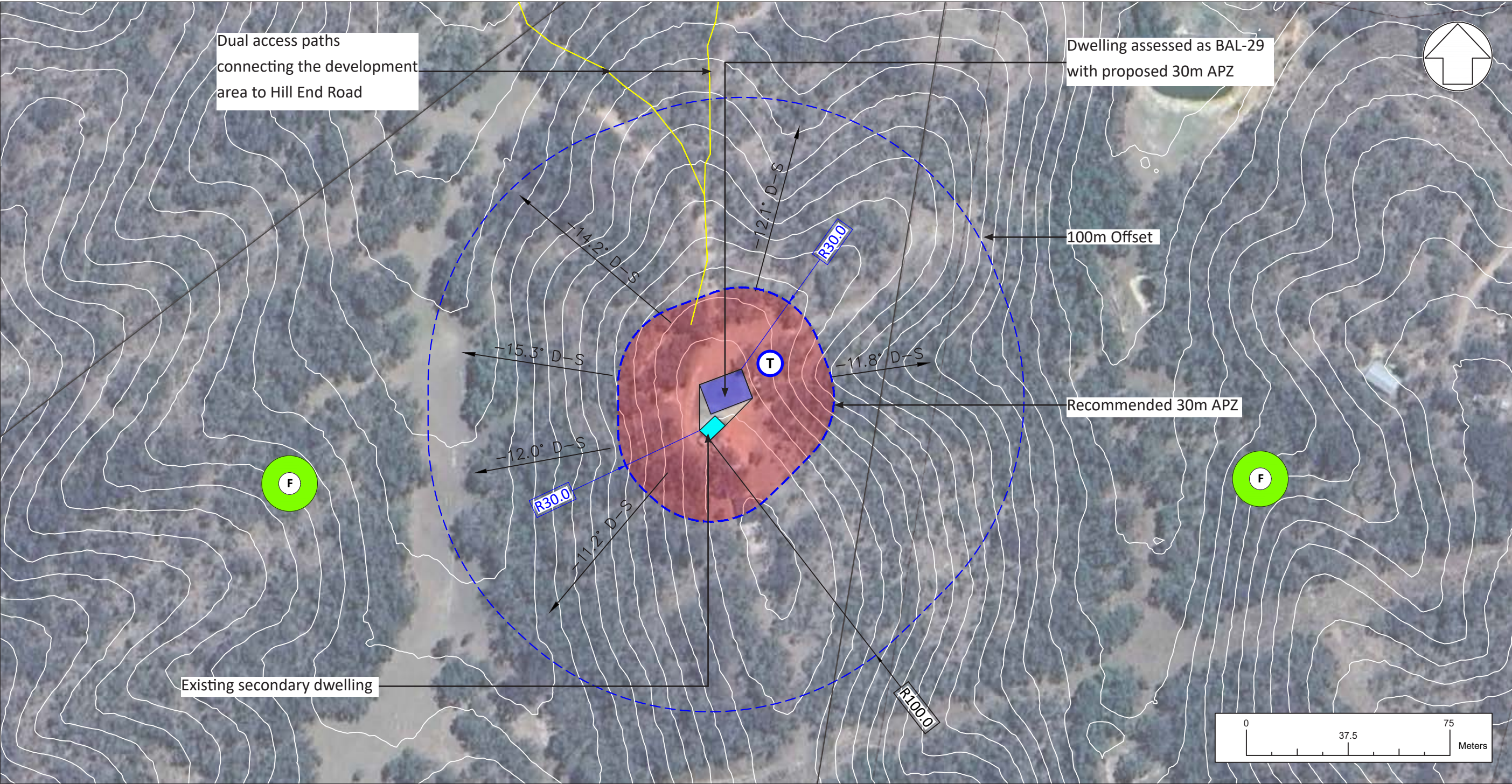
The subject site is surrounded by North West Slopes Dry Sclerophyll Woodland (which we understand to be a Forest community) for all aspects. We have reviewed all applicable slopes and the maximum effective slope (to the west) is 15.5° down-slope. Maximum site slope is 18.5° down-slope (to the east). To minimize the impact to terrestrial biodiversity, we have undertaken a Method 2 analysis to determine the APZ and construction requirements for the principal dwelling.

**Principal Dwelling:** A 30m APZ will achieve a predicted radiant heat load less than 29 kW/m<sup>2</sup> in the event of a bushfire (refer page 28).

<b>TABLE 1</b> (To be read in conjunction with Figure A).						
LGA = Mid-Western Regional Council				Forest Fire Danger Index = FDI 80		
ASPECT <sup>1</sup>	Vegetation Class <sup>2</sup>	Max Effective Slope <sup>3</sup>	Site slope <sup>3</sup>	Required APZ <sup>4</sup>	Proposed APZ / EML <sup>5</sup>	BAL-Rating
N, S, E, W	North West Slopes DSW <sup>10</sup>	15.5°	18.5°	> 27m <sup>9</sup>	> 30m	BAL-29 <sup>9</sup>

<sup>1</sup>	Cardinal direction from each proposed building facade based on grid north.
<sup>2</sup>	Vegetation Classifications are as described in PBP (2019) A1.2.
<sup>3</sup>	Site slope is calculated from 1m LiDAR contours.
<sup>4</sup>	Minimum APZ required stated as Acceptable Solutions within Table 1.12.2 and A1.12.5. PBP (2019).
<sup>5</sup>	Actual dimensional setback from the face of the building to the assessed vegetation. Achieved Asset Protection Zone (APZ) or extent of managed land (EML).
<sup>6</sup>	Where the direct line of sight between the proposed building and assessed vegetation is obstructed (by a wall or building) the assessed rating can be lowered by one BAL-rating (PBP 2019, s. A1.8).
<sup>7</sup>	Remnant bushland and narrow vegetation corridors (NVC) as stated in PBP (2019) s.A1.11 are assessed as rainforest as a simplified approach or be assessed as Short Fire Run using method 2 (AS3959).
<sup>8</sup>	Deeming provisions for grassland s.7.9 PBP (2019).
<sup>9</sup>	BAL-rating and APZ determined via method 2 (AS3959)
<sup>10</sup>	NW Slopes Dry Sclerophyll Woodland (14 / 24.47) Tonnes per Hectare based on The University of Wollongong's (UoW) Fuels Modelling Project)





**VEGETATION KEY**



Forest

**DRAWING LEGEND**

Site Boundary ——— Proposed Primary Dwelling  Existing Secondary Dwelling  Minimum Asset Protection Zone  Tank T

**BUSHFIRE PLANNING & DESIGN**

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Figure:

**A**





# NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

Print Date: 12/08/2024

Assessment Date: 1/03/2024

Site Street Address: 839 Hill End Road, Mudgee

Assessor: Matthew Noone; Bushfire Planning and Design

Local Government Area: Mid-western Regional

Alpine Area: No

## Equations Used

Transmissivity: Fuss and Hammins, 2002

Flame Length: RFS PBP, 2001/Vesta/Catchpole

Rate of Fire Spread: Noble et al., 1980

Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005

Peak Elevation of Receiver: Tan et al., 2005

Peak Flame Angle: Tan et al., 2005

Run Description: N, S, E, W

## Vegetation Information

Vegetation Type: North West Slopes DSW

Vegetation Group: Dry Sclerophyll Forests (Shrub/Grass)

Vegetation Slope: 15.5 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 14

Overall Fuel Load(t/ha): 24.47

Vegetation Height(m): 2

Only Applicable to Shrub/Scrub and Vesta

## Site Information

Site Slope: 18.3 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): 2.4

APZ/Separation(m): 30

## Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

## Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 80

## Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 3.93

Radiant Heat(kW/m2): 25.12

Flame Angle (degrees): 76

Flame Length(m): 28.39

Maximum View Factor: 0.406

Rate Of Spread (km/h): 3.92

Inner Protection Area(m): 24

Transmissivity: 0.813

Outer Protection Area(m): 6

Fire Intensity(kW/m): 49513

## BAL Thresholds

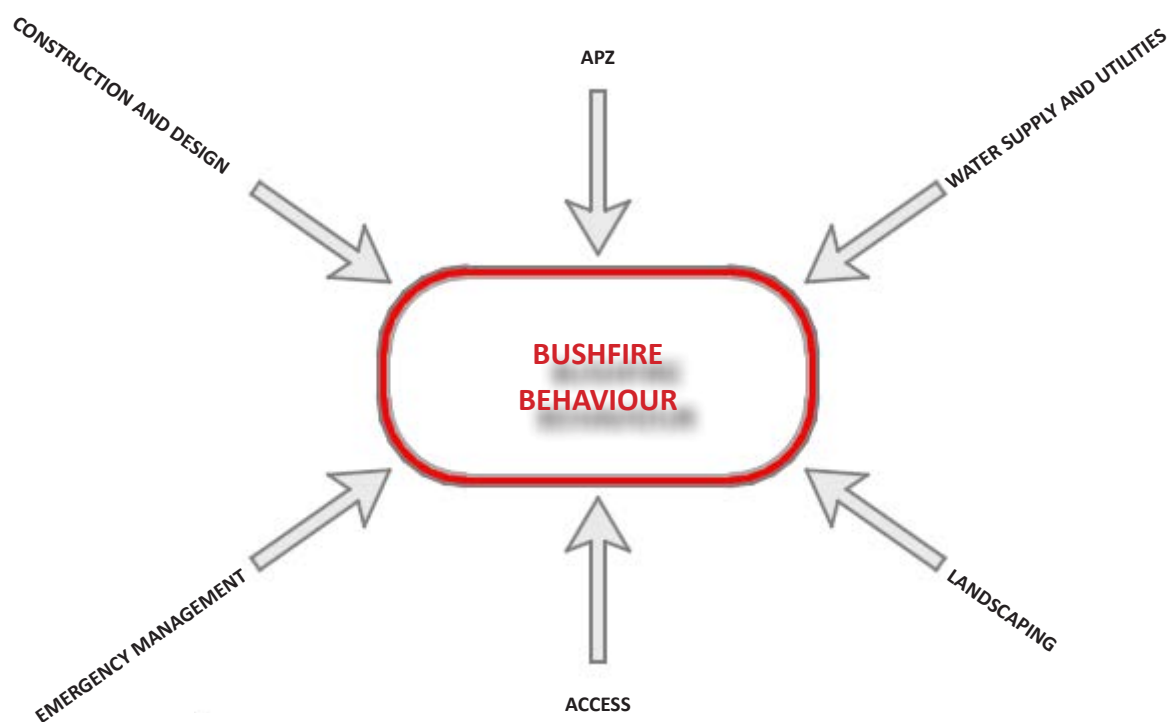
BAL-40: BAL-29: BAL-19: BAL-12.5: 10 kw/m2: Elevation of Receiver:

Asset Protection Zone(m): 19 27 38 51 75 2.4



## PART C BUSHFIRE PROTECTION MEASURES

BPMs can mitigate the impact of bush fire attack on people and assets. The types of protection measures include APZs, access, landscaping, water supply, building design and construction and emergency management arrangements. These measures assist building survival during a bush fire. They also contribute to the safety of firefighters and members of the community occupying buildings during the passage of a bush fire front. There are a range of different BPMs which should be applied in combination based upon the development type and the level of bush fire risk. All requirements for BPMs that relate to the development must be provided, as required by this document.



### C.01 ASSET PROTECTION ZONES (APZs)

### C.03 CONSTRUCTION

### C.04 ACCESS

### C.05 WATER

### C.06 ELECTRICITY & GAS

## C.01 ASSET PROTECTION ZONES (APZs)

APZ Intent of measures: to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting fire fighting activities.

The asset protection zones (APZ) recommendations in this report have been derived from the methodology of A1.12.2 or A1.12.3 in Appendix 1 of PBP (2019). Asset protection zones and in particular the Inner Asset Protection Zones are critical for providing defensible space and reducing flame length and rate of spread (PBP 2019). APZs are designed to provide sufficient open space for emergency workers to operate and for occupants to egress the site safely. They are divided into Inner and Outer Asset Protection Zones (IPAs and OPAs) and are required to be maintained for the life of the development. The IPA provides for defensible space and a reduction of radiant heat levels at the building line and the OPA provides for the reduction of the rate of spread and filtering of embers.

### PERFORMANCE CRITERIA (PBP 2019)

- APZs are to be provided commensurate with the construction of the building.
- A defensible space is to be provided.
- APZs are to be managed and maintained to prevent the spread of a fire to the building.
- The APZ is to be provided in perpetuity.
- APZ maintenance is to be practical, soil stability is not compromised and the potential for crown fires is minimised.

Refer to our APZ discussion and recommendations on page 31.

## C.02 ASSET PROTECTION ZONES (APZs) RECOMMENDATIONS

There is sufficient space within the site to provide an asset protection zone (APZ). Method 2 (AS3959) has been adopted to calculate the required APZs. Method 2 was adopted to reduce the depth of the APZ to minimize the impact on terrestrial biodiversity.

Our APZ recommendations are as follows:

### **Principal Dwelling:**

Provide a 30m APZ is required for all aspects. Vegetation management will be required. It is our understanding the Test of Significance undertaken by others did not identify vegetation species that might be problematic to remove for the purpose of creating the APZ.

### **Existing Secondary Dwelling:**

It is recommended the 30m APZ is extended around the existing secondary dwelling.

### 3.1 - INNER APZ (IPA) GUIDELINES

The Inner APZ (IPA) is the managed area closest to the asset (eg. dwelling). The IPA is managed to minimal fuel conditions and aims to mitigate the impact of direct flame contact and radiant heat on the development. The IPA also aims to provide defensible space.	
<b>TREES</b>	
•	Canopy cover should be less than 15% (at maturity) within the Inner APZ.
•	Trees (at maturity) should not touch or overhang the building.
•	Lower limbs should be removed up to a height of 2m above ground.
•	Canopies should be separated by 2 to 5m (horizontal and or vertical displacement). .
•	Preference should be given to smooth barked and evergreen trees.
<b>SHRUBS</b>	
•	Create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings.
•	Shrubs should not be located under trees shrubs should not form more than 10% ground cover.
•	Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.
<b>GRASS</b>	
•	Should be kept mown (as a guide grass should be kept to no more than 100mm in height).
•	Leaves and vegetation debris should be removed.

### 3.2 - OUTER APZ (OPA) GUIDELINES

The Outer APZ (OPA) is the part of the APZ that is located between the IPA and the bushfire vegetation threat. The reduction in the available fuels and canopy connections in the OPA aims to mitigate the intensity of an approaching fire and restricts the pathways to crown fuels thus reducing the level of direct flame, radiant heat and ember attack on the IPA and asset (dwelling).	
<b>TREES</b>	
•	Canopy cover should be less than 30% (at maturity) within the Outer APZ.
•	Trees should have canopy separation canopies should be separated by 2 to 5m.
<b>SHRUBS</b>	
•	Shrubs should not form a continuous canopy.
•	Shrubs should form no more than 20% of ground cover.



## C.03 CONSTRUCTION

### PERFORMANCE CRITERIA (PBP 2019)

The proposed dwelling is assessed as having a Bushfire Attack Level of BAL-29. The proposed building is to be constructed to BAL-29 as indicated in Figure A and as specified in AS3959 (2018). This includes the general requirements of Section 3 of AS3959 (2018) and the additional construction requirements stipulated in s.7.5 of the New South Wales Rural Fire Service (RFS) document Planning for Bushfire Protection (PBP 2019).

We recommend the existing cottage be upgraded with regard to ember protection. This is to be achieved by enclosing or covering openings with a corrosion-resistant steel, bronze or aluminium mesh with a maximum aperture of 2mm. Where applicable this includes the openable portion of the windows, vents, weepholes and eaves, but does not include roof tile spaces. Weather strips, draught excluders or draught seals shall be installed at the base of side hung external doors as per AS 3959.

## C.04 ACCESS

Intent of measures: To provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area.

### PERFORMANCE CRITERIA (PBP 2019)

- Fire-fighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.
- The capacity of access roads is adequate for fire-fighting vehicles.
- There is appropriate access to water supply.
- Fire-fighting vehicles can access the dwelling and exit the property safely.

### PUBLIC ROAD

The public road system is suitable for emergency response vehicles. The site is accessed from Hill End Road to the north. Two access ways (see page 12 and 27) connect the development site to Hill End Road to the north.

### PROPERTY ACCESS

The development area is within 200m of the proposed development however the access drive formed over a practical terrain route is a little over the 200m. To enable RFS to be able to access the site, the following is to be provided;

- A minimum carriageway width of four metres for rural-residential areas is required.
- Provide a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches.
- Curves are to have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress.
- The minimum distance between inner and outer curves is six metres.
- The crossfall is not to be more than 10 degrees.
- The maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads.
- Property access must provide a suitable turning area in accordance with Appendix 3;

## C.05 WATER

Intent of measures: 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.

### PERFORMANCE CRITERIA (PBP 2019)

- An adequate water supply is to be provided for fire-fighting purposes.
- The water supply is to be accessible and reliable for fire-fighting operations.
- The integrity of the water supply is to be maintained.
- A static water supply is to be provided for fire-fighting purposes in areas where reticulated water is not available.

### WATER - SPECIFIC REQUIREMENTS

The proposed development can comply with the PBP (2019) with regards to water requirements. The site will rely on tank water. A minimum 20,000 litres is to be provided for fire suppression. We recommend that a 5hp or 3kW petrol or diesel-powered pump be provided. Any hose and reel for fire-fighting connected to the pump shall be 19mm (internal diameter) and capable of reaching all parts of the building. Where applicable, the following requirements are to be adhered to;

#### WATER REQUIREMENTS FOR NON-RETICULATED WATER AREAS

- A connection for fire-fighting purposes is to be 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.
- Ball valves and pipes are to be adequate for water flow and are metal.
- Supply pipes from tank to ball valve are to have the same bore size to ensure flow volume.
- Underground tanks are to have an access hole of 200mm to allow tankers to refill direct from the tank.
- A hardened ground surface for truck access is to be provided within 4m.
- Above-ground tanks are to be manufactured from concrete or metal.
- Raised tanks are to have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F of AS 3959).
- Unobstructed access is to be provided at all times.
- Underground tanks are to be clearly marked.
- Tanks on the hazard side are to be provided with adequate shielding for the protection of firefighters.
- All exposed water pipes external to the building are to be metal, including any fittings.
- Where pumps are provided, they are to be a minimum 5hp or 3kW petrol or diesel-powered pump, and are to be shielded against bush fire attack. Any hose and reel for fire-fighting connected to the pump shall be 19mm internal diameter.
- Fire hose reels are to be constructed in accordance with AS/NZS 1221:1997 and installed in accordance with the relevant clauses of AS 2441:2005.



## C.06 ELECTRICITY & GAS

Intent of measures: To locate gas and electricity so as not to contribute to the risk of fire to a building.

### PERFORMANCE CRITERIA (PBP 2019)

- |   |   |
|---|---|
| • | Location of electricity services is to limit the possibility of ignition of surrounding bush land or the fabric of buildings. |
| • | Location and design of gas services is not to not lead to the ignition of surrounding bushland or the fabric of buildings.    |

### ELECTRICITY (RFS RECOMMENDATIONS FOR CONSIDERATION)

Generally the electrical frame work will be an existing condition. Should there be a need to install new electrical connections the following should be considered;

- |   |  |
|---|--|
| • | Where practicable place electrical transmission lines are underground or,  |
| • | If overhead electrical transmission lines are proposed:- lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and no part of a tree is closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002). |
| • | No part of a tree is to be closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines.   |

### GAS SUPPLY RECOMMENDATIONS (IF APPLICABLE)

Should the Applicant wish to install a gas supply to the dwelling or structure, the following criteria are to be complied with.

- |   |  |
|---|--|
| • | 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 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.  |
| • | Connections to and from gas cylinders are to be metal.   |
| • | Polymer-sheathed flexible gas supply lines are not to be used.   |
| • | Above-ground gas service pipes are to be metal, including and up to any outlets.   |

## C.07 RECOMMENDATIONS

In the event that Council or the NSW Rural Fire Service modifies our recommendations, this report becomes obsolete and should no longer be referred to. The bushfire requirements as stated in the DA Consent conditions will take precedence. We strongly recommend the Applicant cross references the bushfire conditions within the DA consent and the recommendations within Part C of our report and alert us to any discrepancies prior to any works starting on site.

Should Council wish to include our recommendations in the DA consent please insert the following into the consent conditions.

### **Bushfire (Bushfire Protection Measures)**

All Bushfire Protection Measures (BPMs) eg. Asset Protection Zones, Access, Water and Utilities noted in Part C of the bushfire report prepared by Bushfire Planning and Design (BR-800124-D Revision A) are to be complied with.

### **Asset Protection Zones (APZs)**

A minimum 30m APZ is to be maintained around the principal dwelling and existing cottage. The APZ is to be maintained in perpetuity as an Inner APZ in accordance with PBP (2019) Appendix 4.

### **Design and Construction**

The proposed dwelling is to be constructed to BAL-29 as indicated in Figure A and as specified in AS3959 (2018). This includes the general requirements of Section 3 of AS3959 (2018) and the additional construction requirements stipulated in s.7.5 of the New South Wales Rural Fire Service (RFS) document Planning for Bushfire Protection (PBP 2019). The existing cottage should be upgraded with regard to ember protection.

### **Access**

The existing access is to comply with PBP (2019) s.7.4a.

### **Water, Electricity and Gas**

A minimum 20,000 litre water tank is required for fire fighting. The tank is to be non combustible and fitted with a 65mm storz outlet. A hardened ground surface is to be provided within 4m of the tank. Any new gas or electrical services are to comply with PBP (2019) s.7.4a.

The development relates to the construction of a sole occupancy dwelling. An existing cottage is located to the south of the proposed building. The cottage was approved and constructed under a separate DA. The proposed dwelling will be the principal dwelling. The cottage will then become the secondary dwelling.

The development is captured under Section 4.14 of the Environmental Planning and Assessment Act 1979; Consultation and development consent – certain bush fire prone land. For the purpose of bushfire assessment the development is considered infill development as described in the New South Wales Rural Fire Service document Planning for Bushfire Protection (2019).

The subject site is located in Erudgere which is within the Mid-Western Regional Local Government Area (LGA). The site is accessed via Hill End Road to the north. Two access trails connect the development area to Hill End Road. The majority of the subject site is identified as forest vegetation with the exception of a grassland within the valley to the west. Forest is located on the adjoining blocks to the east, west, north west and south.

There is sufficient space within the site to provide an asset protection zone (APZ). Method 2 (AS3959) has been adopted to calculate the required APZs. Method 2 was adopted to reduce the depth of the APZ to minimize the impact on terrestrial biodiversity. A 30m APZ is required for all aspects for the principal dwelling. The recommended 30m APZ is to extend around the existing cottage. Vegetation management will be required, particularly towards the east and west.

The proposed principal dwelling is assessed as BAL-29 as indicated in Figure A and as specified in AS3959 (2018) the Australian Standard for the Construction of Buildings in a Bushfire Prone Area.

Two access ways connect the development site to Hill End Road. The existing access ways are to comply with PBP (2019) s.7.4a. The site relies on tank water. A minimum 20,000 litre water tank is required for fire fighting. The tank is to be non combustibile and fitted with a 65mm storz outlet. A hardened ground surface is to be provided within 4m of the tank.



The project can comply with the construction requirements of AS3959 (2018) and the performance requirements of the BCA. The objectives and performance requirements of PBP (2019) are also achieved.

Should you have any questions in relation this report please get in contact to discuss.

Report prepared by:

**Bushfire Planning and Design**

Matthew Noone



## D.01 REFERENCES

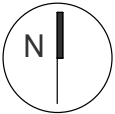
AS3959 (2018)	Australian Standard, Construction of buildings in bushfire-prone areas, AS 3959, Third edition 2018 Standards Australia International Ltd, Sydney.
BCA (2019)	Building Code of Australia 2019, Building Code of Australia, Australian Building Codes Board, Canberra 2019.
EPA Act (1979)	Environmental Planning and Assessment Act 1979, NSW Government, NSW, legislation found at <a href="http://www.legislation.nsw.gov.au">www.legislation.nsw.gov.au</a>
Keith (2004)	Keith, D.A. (2004), Ocean shores to desert dunes: The Native Vegetation of New South Wales and the ACT. NSW Department of Environment and Conservation (2004).
PBP (2019)	Planning for Bushfire Protection, a Guide for Councils,Planners, Fire Authorities, Developers and Home Owners. Rural Fire Service 2019, Australian Government Publishing Service, Canberra.
RFS (2015)	Rural Fire Service, Guide For Bush Fire Prone Land Mapping, Version 5b.

## D.02 APPENDICES

Appendix A - Architectural Drawings.



# **APPENDIX A - ARCHITECTURAL DRAWINGS**



01

OVERALL SITE PLAN

Scale 1 : 1500 @A1

0150003000060000150000

EXISTING SITE LEGEND

- existing boundary
- existing easement
- existing major contours
- existing minor contours
- existing top bank lines
- existing bottom bank lines
- existing buildings & structures

site notes:

- general

This plan is prepared from a combination of field survey & existing records for the purpose of designing new constructions on the land & should not be used for any other purpose. The title boundaries as shown hereon were not marked at the time of survey & have been determined by plan dimensions only & not by field survey.

Services shown hereon have been located where possible by field survey. If not able to be so located services have been plotted from the records of relevant authorities where available & have been noted accordingly on this plan. Where such records either do not exist or are inadequate a notation has been made hereon.

Contractors must verify all dimensions & existing levels on site prior to commencement of work.

Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services & detailed locations of all services, including;

  - notify A.G.L.
  - obtain telstra's "duty of care" document regarding working in the vicinity of telstra plant.
  - verify co-axial/optic fibre cable location

Subsequent registered or other surveys in this area may affect the boundary definition shown on this plan. Any differences so caused to the boundary definition shown on this plan are beyond the control of Barnson Pty Ltd who can accept no responsibility for such differences.

All work to be undertaken in accordance with the details shown on the drawings, the specifications & the directions of the superintendent. Contractors must verify all dimensions & existing levels on site prior to commencement of work.

Where new works about existing the contractor shall ensure that a smooth even profile free from abrupt changes is obtained.

The contractor shall arrange all survey setout to be carried out by a registered surveyor.
- drainage

Surface water drainage must be prevented from entering the building with fgl sloping 50mm over the first 1m away from the building & the finished slab height at a minimum ffl 150mm above fgl or minimum 100mm above fgl in sandy, well drained areas of low rainfall intensity (Q20 125mm), or 50mm above impermeable paved or concreted areas all in accordance with the ABCB Housing Provisions, Part 3.3.3

Site drainage is to be constructed according to AS/NZS 3500.3 - Stormwater drainage or AS/NZS 3500.5 - Domestic installations & the ABCB Housing Provisions, Part 3.3.5

The contractor shall provide all temporary diversion drains & mounds to ensure that at all time exposed surfaces are free draining & where necessary excavate sumps & provide pumping equipment to drain exposed areas.

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G	13.02.2024	REVISED FOR COORD

Project.

PROPOSED NEW DWELLING

Site Address.

839 HILL END ROAD ,ERUDGERE NSW 2850

Client.

TERRY & LISA TURNER

Drawing Title.

SITE PLAN

Scale.

As indicated @A1

Sheet.

03 of 10

Project No.

42549

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Checked.

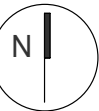
Revision.

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Drawing No.

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A02



02 PART SITE PLAN  
Scale 1 : 200 @A1

EROSION & SEDIMENT CONTROL

Vegetation is not to be removed from the site until a start is imminent and only for the area approved by Council for the location of the building. Vegetation is not to be removed until the approved erosion and sediment control measures are in place.

During excavation, vegetation above and below the cut and fill areas is to be retained as far as practicable to stop runoff water coming onto the site and into the excavation and to prevent soil leaving the site.

All excess material is to be removed immediately after excavation to prevent bogging and soil washing away.

Soil stockpiles must be stored within the approved areas of the site.

Drainage channels are to be provided above the excavation cut and below the cut batter to minimise water entering the excavation and/or building pad.

Only one entry/exit is to be provided to each building site. Each entry/exit is to be constructed of a minimum depth of 150 - 200 mm thick blue metal gravel or other approved coarse material, underlaid with a geotextile fabric, to prevent bogging.

All materials delivered to the site must be located within the surveyed boundaries of the allotment. Under no circumstances will materials be permitted to be stored on the footpath, roadway or on adjoining land.

All sewer, water and drainage line trenches are to be backfilled within twenty-four (24) hours of inspection and approval by Certifier.

Any trenches excavated across the footpath for service pipes are to be backfilled immediately the installation is completed and passed and approved by Certifier. If a trench has to be retained open after night fall, the excavation must be suitably barricaded and lit for the protection of any passing public.

Sediment fences (or other approved soil erosion control materials) must be placed below the excavated/disturbed site to prevent soil moving off the allotment during periods of rainfall.

Sediment fences or hay bales must be provided around the perimeter of any interallotment stormwater drainage pit located on the site to prevent soil being washed into the drainage system during periods of rainfall.

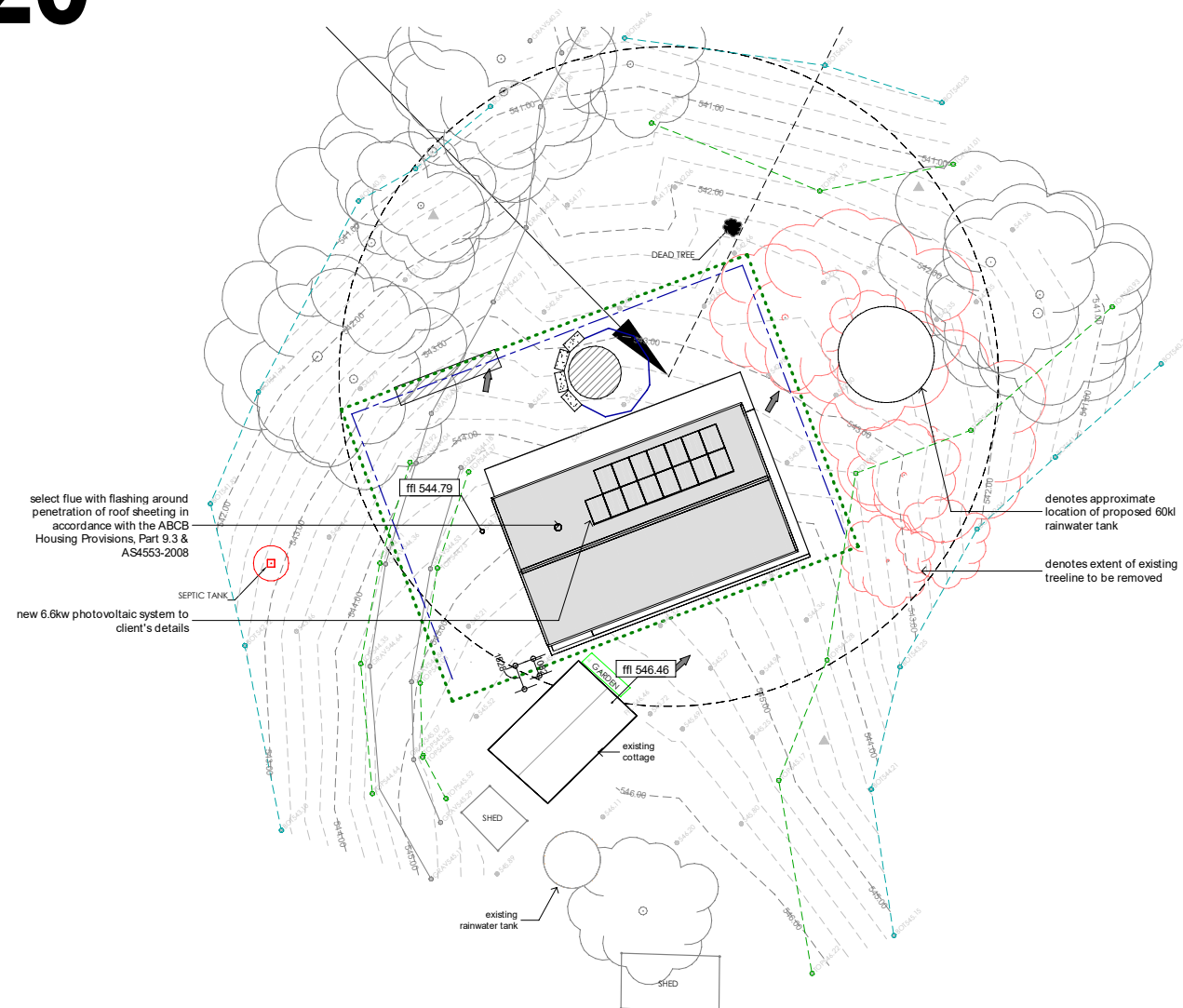
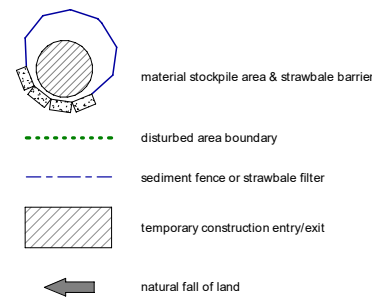
A filter roll (or other approved soil erosion control materials) must be placed in front of or over any stormwater inlet pit located in the adjoining road kerb to the development site, to prevent entry of sediment into the drainage system during periods of rainfall.

The approved erosion control measures must be in place prior to construction work commencing.

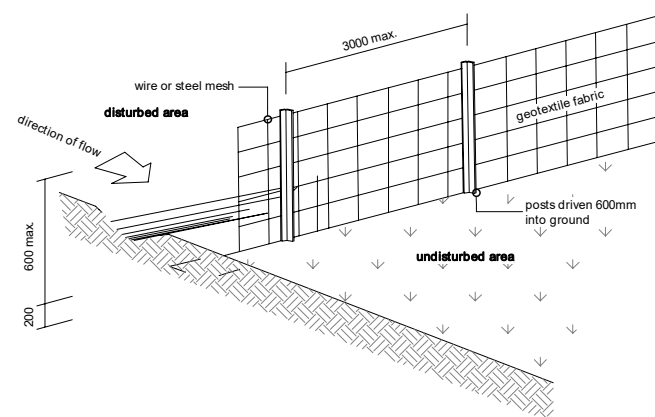
The erosion control measures are to be maintained throughout the progress of the work eg collected sediment removed from behind filter fences, hay bales etc; fences and other works repaired or renewed where damaged by plant, storms etc.

Damaged caused by the owner/applicant or their agent during the building operations to any drainage structure or sedimentation/stormwater control measure previously installed on the subject allotment by the subdivider, is to be repaired at the owners/applicants full cost.

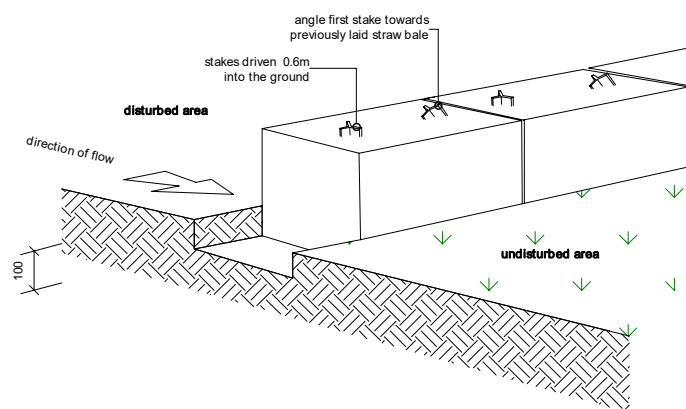
EROSION & SEDIMENT LEGEND.



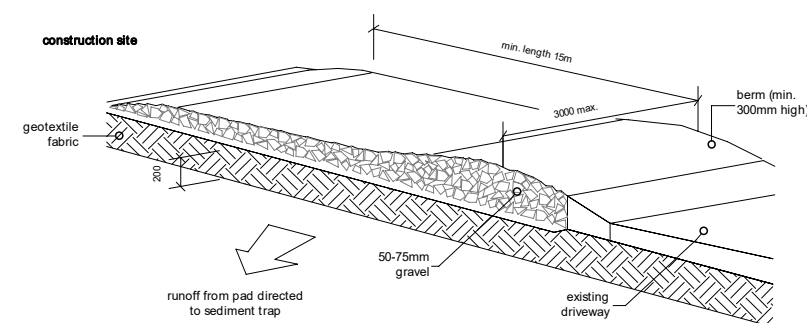
03 SEDIMENT FENCE  
Scale 1 : 2 @A1



04 STRAWBALE FILTER  
Scale 1 : 50 @A1

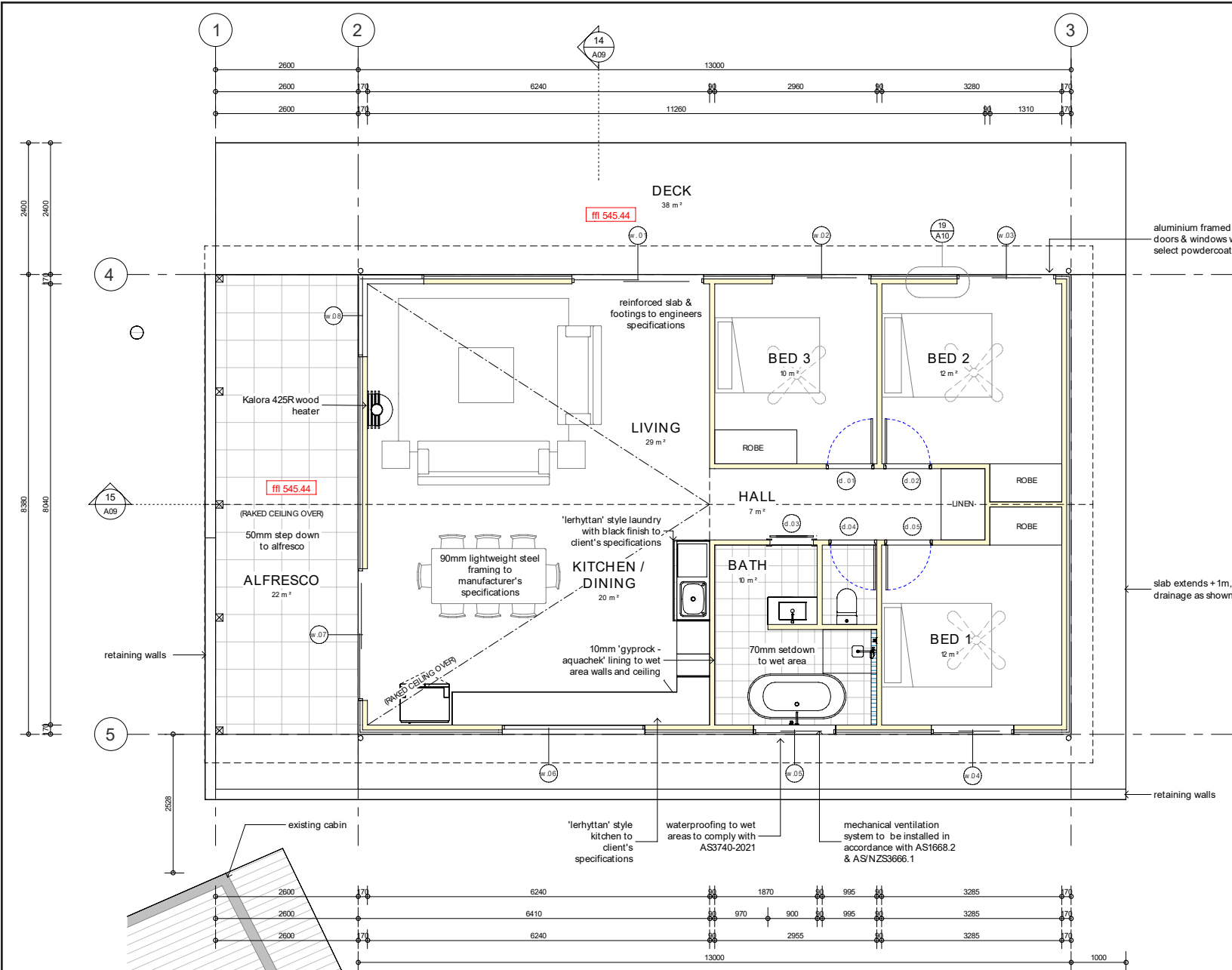


05 CONSTRUCTION EXIT  
Scale 1 : 50 @A1



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07 GROUND FLOOR LAYOUT

Scale 1 : 50 @A1

GROSS FLOOR AREA

ground floor level	
ALFRESCO	21.79 m²
DECK	37.44 m²
LIVING	108.94 m²
OVERALL TOTAL	168.17 m²

ROOM FLOOR AREAS

ground floor level	
BED 1	12 m²
BATH	10 m²
BED 2	12 m²
BED 3	10 m²
LIVING	29 m²
DECK	38 m²
KITCHEN / DINING	20 m²
ALFRESCO	22 m²
HALL	7 m²

NOTE: room floor areas are to the internal face of each room.

WINDOW & DOOR NOTES.

All glass is to be selected & installed in accordance but not exclusively with the following Australian &/or New Zealand standards;

- AS 1288 glass in buildings selection & installation
- AS 1170 minimum wind loads on structures
- AS/NZS 2208 safety glazing materials in buildings
- AS/NZS 4667 quality requirements for cut-to-size & processed glass

Confirm dimensions on site prior to fabrication.

Unless noted otherwise lintels over windows if required are to frame manufacturers specifications.

Unless noted otherwise window head heights to be 2100mm above the finished floor level.

Unless noted otherwise all windows to be aluminium framed windows with a select powdercoat finish & aluminium framed steel mesh insect screens complying with the requirements of AS3959-2018.

Unless noted otherwise all glazing to be in accordance with BASIX specifications.

All glazing in the premises that is 0.75m or less above the FFL must be glazed with safety glass in accordance with AS2208.

External windows & doors to be sealed using rubber compressive strips which will restrict air infiltration.

Where there is no transom, colonial bars or chair rail, all frameless or fully glazed doors & sidelights capable of being mistaken for a doorway or opening, shall be clearly marked with a permanent motif or other decorative treatment to indicate its presence.

Unless noted otherwise all external doors to be timber solid core with a select paint finish & all internal doors are to be hollow core with a select paint finish.

External doors are to be fitted with aluminium framed mesh insect screens.

External doors to be sealed using rubber compressive strips which will restrict air infiltration.

The door handle & related hardware shall be of the type that allows the door to be unlocked & opened with one hand.

DOOR SCHEDULE - GROUND FLOOR

mark	height	width	type	description
01	2040	820	820	timber door frame - 1 / internal hollow core hinged door
02	2040	820	820	timber door frame - 1 / internal hollow core hinged door
03	2070	790	Barn Door	
04	2040	820	820	timber door frame - 1 / internal hollow core hinged door
05	2040	820	820	timber door frame - 1 / internal hollow core hinged door

WINDOW SCHEDULE - GROUND FLOOR

mark	height	width	head	type	description
01	2400	2400	2400	FX2424	ALUMINIUM FRAMED - ONE SLIDING DOOR SECTION, ONE FIXED SECTION
02	2400	1800	2400	FX2418	ALUMINIUM FRAMED - ONE SLIDING DOOR SECTION, ONE FIXED SECTION
03	2400	1800	2400	FX2418	ALUMINIUM FRAMED - ONE SLIDING DOOR SECTION, ONE FIXED SECTION
04	1500	1500	2100	SF1515	ALUMINIUM FRAMED - ONE FIXED SECTION, ONE SLIDING SECTION
05	1500	1500	2100	SF1515	ALUMINIUM FRAMED - ONE FIXED SECTION, ONE SLIDING SECTION
06	600	2600	1540	F0626	aluminium framed - one fixed sections
07	2400	2400	2400	FX2424	ALUMINIUM FRAMED - ONE SLIDING DOOR SECTION, ONE FIXED SECTION
08	1500	1500	2100	F1509-1512	ALUMINIUM FRAMED - ONE FIXED SECTION CORNER WINDOW

legend

bas	basin
conc	concrete
cpt	carpet
ct	cooktop
d/w	dish washer
shr	shower
sk	sink
vny	vinyl
wc	water closet



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Project.  
PROPOSED NEW DWELLING

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Client.  
TERRY & LISA TURNER

Drawing Title.  
GROUND FLOOR PLAN

Scale.	As indicated @A1	Drawn.	AK
Sheet.	06 of 10	Checked.	
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