



KHS ECOLOGY & BUSHFIRE

Bushfire Assessment Report

*for a proposed new private residential development at
361 Old Grattai Road, Erudgere, Lot 102 DP 756897*

Mid-Western Local Government Area



October 2021

Prepared by:

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(BPAD 29655)

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SUMMARY

Development type:	Private residential infill development for a Dwelling, Farm building (shed) and Secondary Dwelling, on an existing lot of 409 ha.
Property Address:	361 OLD GRATTAI ROAD, ERUDGERE 2850, Lot102 DP756897
Property Owner & Proponent:	Neil Stone & Kate Hammill Stone
Plan reference:	Anderson Architecture plans, dated October 2021
Method:	The assessment follows the Method 1 Site Assessment of <i>Planning for Bush Fire Protection 2019</i> .
Site assessment date:	18/07/2021, valid for 12 months
BAL Assessment	Based on the site layout mapped in Figure 3-1 in this report, the development is assessed as achieving BAL 12.5 for the main Dwelling and BAL 29 for the Secondary Dwelling.
Other Bushfire Protection Measures	Construction will comply with the relevant sections of AS3959 for BAL 12.5 and BAL 29. Access, water supplies, electricity and gas services, landscaping and emergency management are compliant subject to the design measures specified in section 3 of this report.
Declaration:	<p>This assessment has been prepared an Accredited Bushfire Planning and Design (BPAD) Practitioner who is a consultant recognised by the NSW Rural Fire Service.</p> <p> 22/08/2021 (Site assessment date)</p> <p>Dr Kate Hammill Stone <i>PhD, Grad Dip Bushfire Protection, BSc (Hons)</i> Accredited Bushfire Consultant (BPAD 29655) M: 0407021472 E: KHSecologybushfire@bigpond.com</p>

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***DISCLAIMER:** This report has been prepared on the basis of information provided and in accordance with relevant legislation and published guidelines and methods as identified in this report. All due care has been taken in preparing this assessment, however it cannot be guaranteed to be free of errors or omissions. Consent authorities may differ in their findings or conclusions; or impose requirements that differ to those outlined in this report. To the maximum extent permitted by law, the author disclaims any liability arising from or damages in relation to the findings and advice contained in this document. Due to the unpredictable nature of weather and bushfire behaviour, there can be no guarantee that the building will survive a bushfire, even if the bushfire protection measures recommended in this report, and/or other conditions imposed by consent authorities are implemented.*

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1 Introduction and background

1.1 Background

This Bushfire Assessment Report documents how the proposed development at 361 Old Grattai Road, Erudgere, addresses the bushfire protection requirements relevant to private residential development. The property is located 10km by road from Mudgee, 409 hectares in size and is zone E3 Environmental Management. The site plans and building design have been prepared by Anderson Architecture Pty Ltd.

This report includes a Bushfire Attack Level (BAL) assessment and a summary of bushfire protection measures to address the requirements of *Planning for Bush Fire Protection 2019* (PBP 2019). The assessment has been prepared by an Accredited Bushfire Consultant (BPAD 29655), Dr Kate Hammill Stone, who is also the proponent and joint owner of the land.

1.2 Information sources

The following information and data sources were used to inform this assessment.

- Site assessment undertaken on 22/08/2021.
- Architectural plans prepared by Anderson Architecture Pty Ltd, dated October 2021 (refer to attached plans).
- Flora and Fauna Assessment report, prepared by KHS Ecology & Bushfire, October 2021.
- *Planning for Bush Fire Protection 2019* (RFS 2019) (www.rfs.nsw.gov.au).
- NSW Government Planning Portal (<https://www.planningportal.nsw.gov.au/>) and spatial data including cadastre layers obtained from SIXMaps (www.maps.six.nsw.gov.au).
- Keith (2004) *Ocean Shores to Desert Dunes – The Vegetation of New South Wales and the ACT*, Department of Environment and Conservation (NSW) July 2004. The following documents and information sources have been used to inform this assessment.

1.3 The proposal

The proposal is for a new dwelling, shed and secondary dwelling on the property, as shown in **Figure 1-1** and **Figure 1-2**.

The development comprises the following components:

- A main dwelling building (house), shed and secondary dwelling (private cabin), with associated rainwater tanks and on-site waste water systems (Worm Farm compost system to the house and septic tank to the shed and secondary dwelling).
- Use of an existing farm track for the driveway access from Old Grattai Road to the shed and secondary dwelling, and a length of new driveway across to the house site.
- Establishment of an Asset Protection Zone (APZ) for bushfire protection, as determined in this assessment to satisfy both environmental and bushfire safety considerations due to the development being on E3 zoned land and bush fire prone land.

The site photographs shown below depict the property entry at Old Grattai Road and the setting for the house and shed (**Photograph 1-1**, **Photograph 1-2**).

Figure 1-1. Property location.

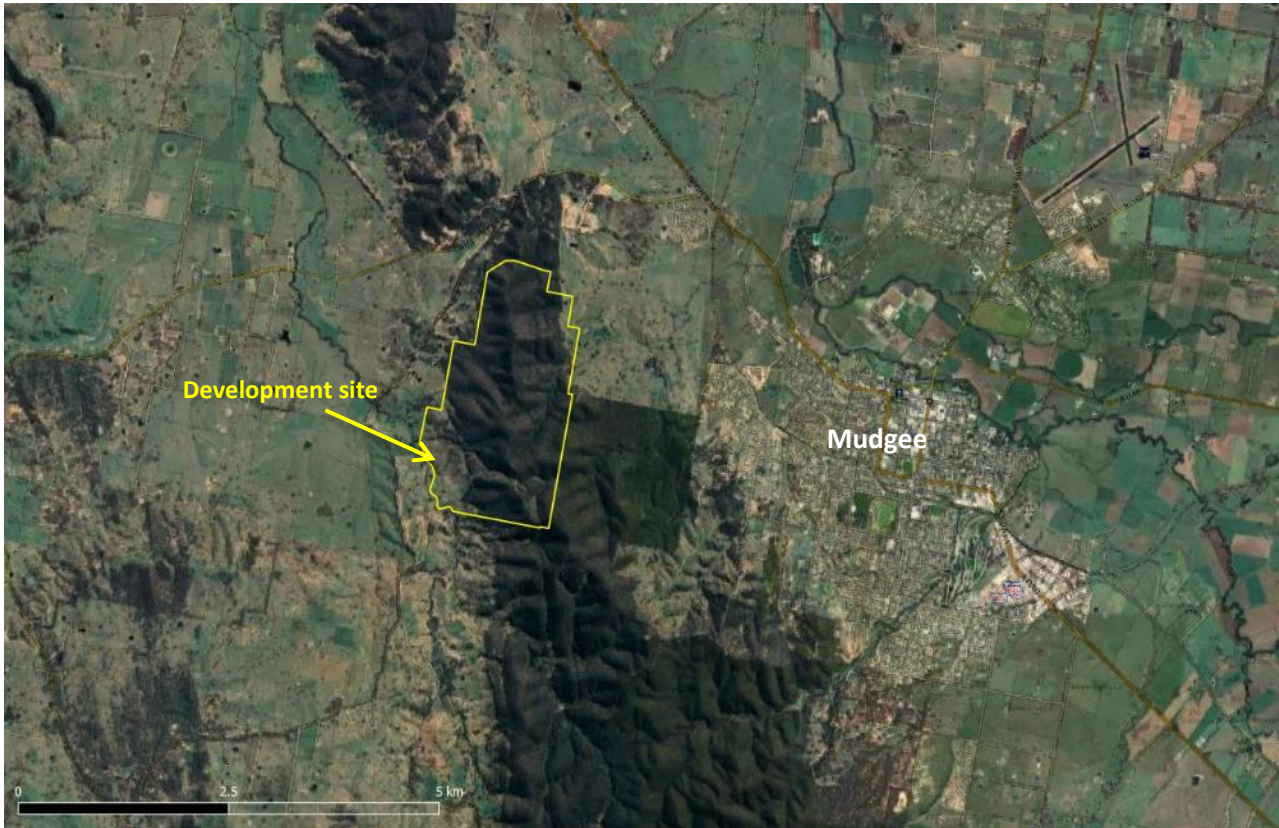
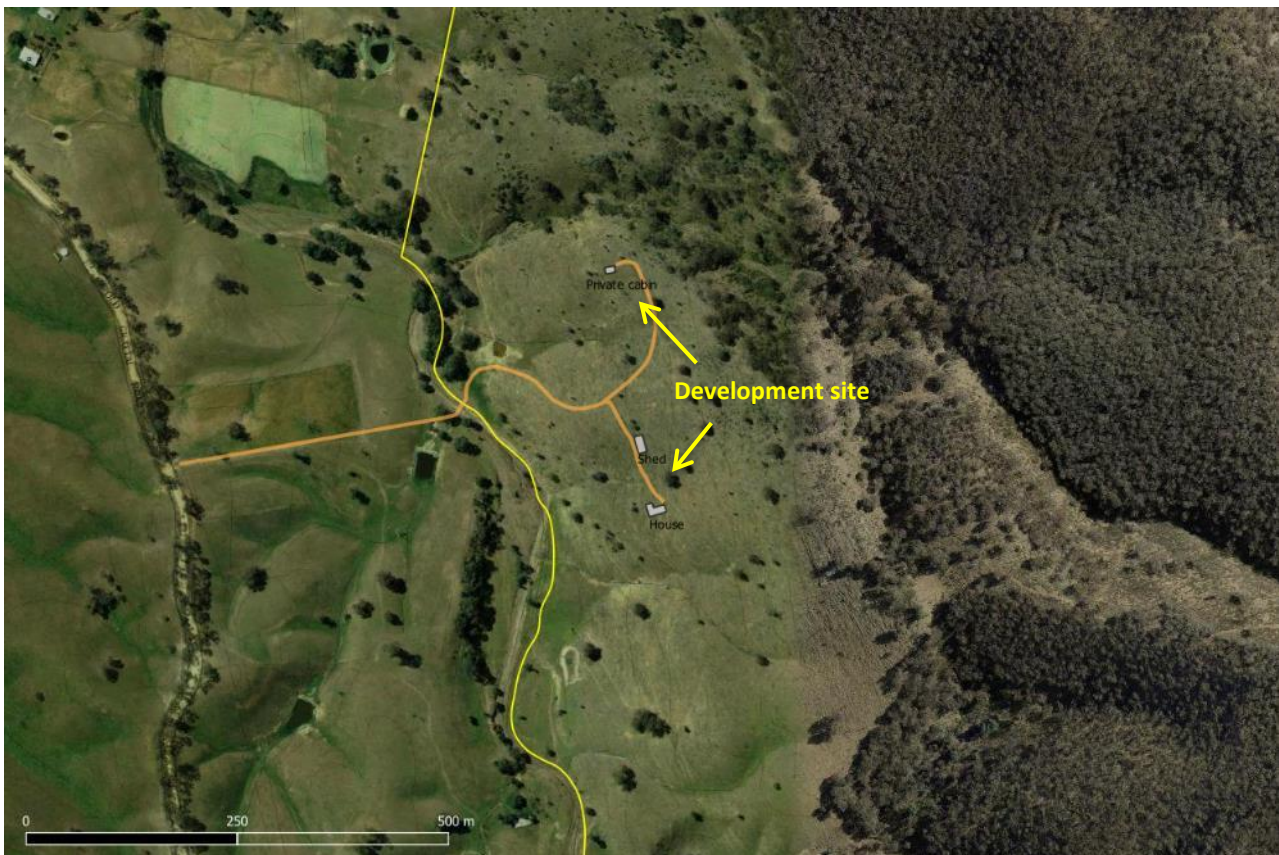


Figure 1-2. Site layout – driveway from Old Grattai Road, proposed house, shed and secondary dwelling (cabin).



Photograph 1-1. Driveway into the property from at Old Grattai Road, with the Right of Carriageway over Track on the far hill on the neighbour's property, and the internal driveway in the foreground.



Photograph 1-2. Setting and location of the proposed shed (centre) and house (right).



Photograph 1-3. Proposed site for the secondary dwelling.



1.4 Property details

The property is identified under the Mid-Western Regional Local Environmental Plan (LEP) 2012 (pub. 10-8-2012) as follows (also refer to the planning maps in **Appendix A**).

- Local Government Area: Mid Western Regional Council
- Address: 361 OLD GRATTAI ROAD ERUDGERE 2850
- Lot/Section/Plan no: 102/-/DP756897
- Land zoning: E3 - Environmental Management
- Bushfire Prone Land
- Minimum lot size (LEP zoning): 400 ha
- The actual lot size is 409.1 ha (Sixmaps cadastre)

1.5 Planning context

The property is located within the bush fire prone area under Mid-Western Regional LEP 2012. Section 4.14 of the *Environmental Planning and Assessment Act 1979* requires developments on bush fire prone land to satisfy the NSW Rural Fire Service (RFS) document, *Planning for Bush Fire Protection 2019*.

Being an existing lot with dwelling entitlement (given the actual lot size is 409 ha and the minimum lot size for the zoning in 400 ha), the proposed development is 'Residential Infill Development' and is required to address the requirements of Chapter 7 *Residential Infill Development* of PBP 2019.

The development aims to minimise environmental impacts in relation to native vegetation clearing, while still facilitating a development with a reasonable level of bushfire safety, in recognition of the land being zoned E3 Environmental Management. This includes taking a minimal impact approach to vegetation management within the APZ as described in the Flora and Fauna assessment, such as retaining established trees in the APZ where these provide less than 15% cover overall.

1.6 Assessment approach and methods

This assessment takes an Acceptable Solutions approach to compliance with PBP 2019. The assessment has been completed in accordance with the site assessment of PBP 2019 Appendix 1 *Site Assessment Methodology*.

The bushfire protection measures for the proposed development aim to address the objectives and intent of PBP 2019, Chapter 7 *Residential Infill Development*:

- *provide a defensible space for firefighting around the building;*
- *provide better bush fire outcomes on a redevelopment site than currently exists, commensurate with the scale of works proposed;*
- *design and construct buildings commensurate with the bush fire risk;*
- *provide access, services and landscaping to aid firefighting operations;*
- *not impose an increased bush fire management and maintenance responsibility on adjoining land owners; and*
- *increase the level of bush fire protection to existing dwellings based on the scale of the proposed work and level of bush fire risk.*

1.7 Author qualifications

The author qualifications are summarised in **Table 1-1**.

Table 1-1: Summary of qualifications

Name / Position	Qualifications / experience
Dr Kate Hammill, Principal, KHS Ecology & Bushfire	Biodiversity Assessment Methodology (BAM) accredited assessor (Certification No.: BAAS18022; Valid From: 9/02/2018 to 8/02/2021). Bushfire Planning and Design (BPAD) NSW level 2 Accredited Practitioner (BPAD 29655) Practising member of the NSW Ecological Consultants Association (NSW ECA). 18 years ecological research and consulting experience, in the Greater Blue Mountain, Central Tablelands, Central West, Far West, North West Slopes and Sydney regions NSW. PhD native vegetation restoration (University of Sydney). Bachelor of Science majoring in Botany / Zoology / Microbiology (University of Sydney). Graduate Diploma in Bushfire Protection (University of Western Sydney).

2 Site analysis

Site inspection was undertaken on 18/7/2021 to assess the site features, hazard vegetation and slope as relevant to the bushfire assessment. The site observations were combined with the desktop mapping analysis in GIS software to determine the best achievable site layout and Asset Protection Zone (APZ). The site analysis is mapped in **Figure 2-1**.

2.1 Hazard vegetation and slope

The vegetation has been assessed out to 140 m from the house site in accordance with PBP 2019, Appendix 1 Site Assessment Methodology. Slope has been assessed under the hazard vegetation out to 100m from the proposed building site (as shown in **Figure 2-1**).

The trees on the site are *Eucalyptus dealbata* (Hill Red Gum), with *Allocasuarina verticillata* (Drooping Sheoak), *Brachychiton populneus* (Kurrajong) and *Eucalyptus sideroxylon* (Mugga Ironbark). There is a dense herbaceous grassy groundcover with very few shrubs.

The flora and fauna report (also attached to the Development Application) has identified the vegetation as a semi-cleared and derived grassland form of NSW Plant Community Type (PCT) 461 *Tumbledown Gum woodland on hills in the northern NSW South Western Slopes Bioregion and southern Brigalow Belt South Bioregion* (DPIE 2021). This PCT is within the Western Slopes Grassy Woodland vegetation class of Keith (2004). The development is mainly a derived grassland with a mixed native / non-native groundcover, few to no shrubs. Isolated trees are present in some areas, but these do not form a woodland canopy, therefore the hazard vegetation is predominantly grassland.

In summary the hazard vegetation is assessed as follows:

- **Grassland** - where trees are absent or very sparse and not contributing to the fuel load or potential fire behaviour, and
- **Grassy Woodland** - in small patches where there are mature trees and saplings that form an open grassy woodland structure.

Hazard vegetation and slope relevant to the house site is assessed as follows.

- **NORTH:** Grassland to 140m with occasional trees, Upslope along the contour to the north (**Photograph 2-1**).
- **EAST:** Grassland to 140m with occasional trees, Upslope, towards the hills on the range (**Photograph 2-2**).
- **SOUTH:** Grassland to 140 m, Downslope >5-10 degrees across undulating terrain (**Photograph 2-3**).
- **WEST:** Grassy Woodland to 140m, Downslope >0-5 degrees for 45m then the >15-20 degrees to 100m (taken to be the greatest slope of >15-20 degrees for the BAL assessment) (**Photograph 2-4**).

Hazard vegetation and slope relevant to the secondary dwelling is assessed as follows.

- **NORTH:** Grassy Woodland to 140m, Downslope >15-20 degrees into the gully to the north.
- **EAST:** Grassy Woodland to 140m, Upslope, towards the hills on the range.
- **SOUTH:** Grassland to 140 m, Downslope steeper slopes of >5-10 degrees across undulating terrain.
- **WEST:** Grassy Woodland to 140m, Downslope steeper slopes of >10 -15 off the sides of the ridgeline to the west.

2.2 BAL assessment

The relevant Forest Fire Danger Index (FFDI) for Mid-Western Regional LGA is **FFDI 80**. The BAL distances in PBP 2019 Table A1.12.6 (for FFDI 80) are relevant to this assessment and are shown in **Table 2-1**

Table 2-1. Relevant BAL distances from PBP 2019, Table A1.12.6 — MAIN DWELLING.

Direction	Dominant hazard & slope	Relevant BAL distances (m)				
		BAL FZ	BAL 40	BAL 29	BAL 19	BAL 12.5
NORTH	Grassland to 140m, Upslope/ Flat	<7	7 - <10	10 - <14	14 - <20	20 - <50
EAST	Grassland to 140m, Upslope	<7	7 - <10	10 - <14	14 - <20	20 - <50
SOUTH	Grassland to 140m, Downslope >5-10 deg	<9	9 - <12	12 - <18	18 - <26	26 - <50
WEST	Grassland, Downslope >0-5 deg and rocky slope >15-10 deg	<12	12 - <16	16 - <24	24 - <34	34 - <50

Table 2-2. Relevant BAL distances from PBP 2019, Table A1.12.6 — SECONDARY DWELLING SITE.

Direction	Dominant hazard & slope	Relevant BAL distances (m)				
		BAL FZ	BAL 40	BAL 29	BAL 19	BAL 12.5
NORTH	Grassy Woodland, Downslope >15-10 deg	<20	20 - <27	27 - <38	38 - <52	52 - <100
EAST	Grassy Woodland, Upslope	<8	8 - <11	11 - <16	16 - <22	22 - <100
SOUTH	Grassland, Downslope >5-10 deg	<9	9 - <12	12 - <18	18 - <26	26 - <50
WEST	Grassland, Downslope >15-10 deg	<10	10 - <14	14 - <21	21 - <30	30 - <50

The development is proposed to be **BAL 12.5 for the main house** and **BAL 29 for the secondary dwelling**, as mapped in **Figure 3-1**.

The proposed BAL for the development aims to provide a balance between the size of the total development footprint and environmental protection on the land which is zoned E3. The shed is a non-habitable building and is not required to have an APZ, although flammable material should be kept clear of the building.

Photo 2-1. NORTH of the house site – Grassland and Grassy Woodland.



Photo 2-3. SOUTH of the house site – Grassland to 140 m.



Photo 2-2. EAST of the house site – Grassland to 110 m then Grassy Woodland.



Photo 2-4. WEST of the house site – Grassland and Grassy Woodland.



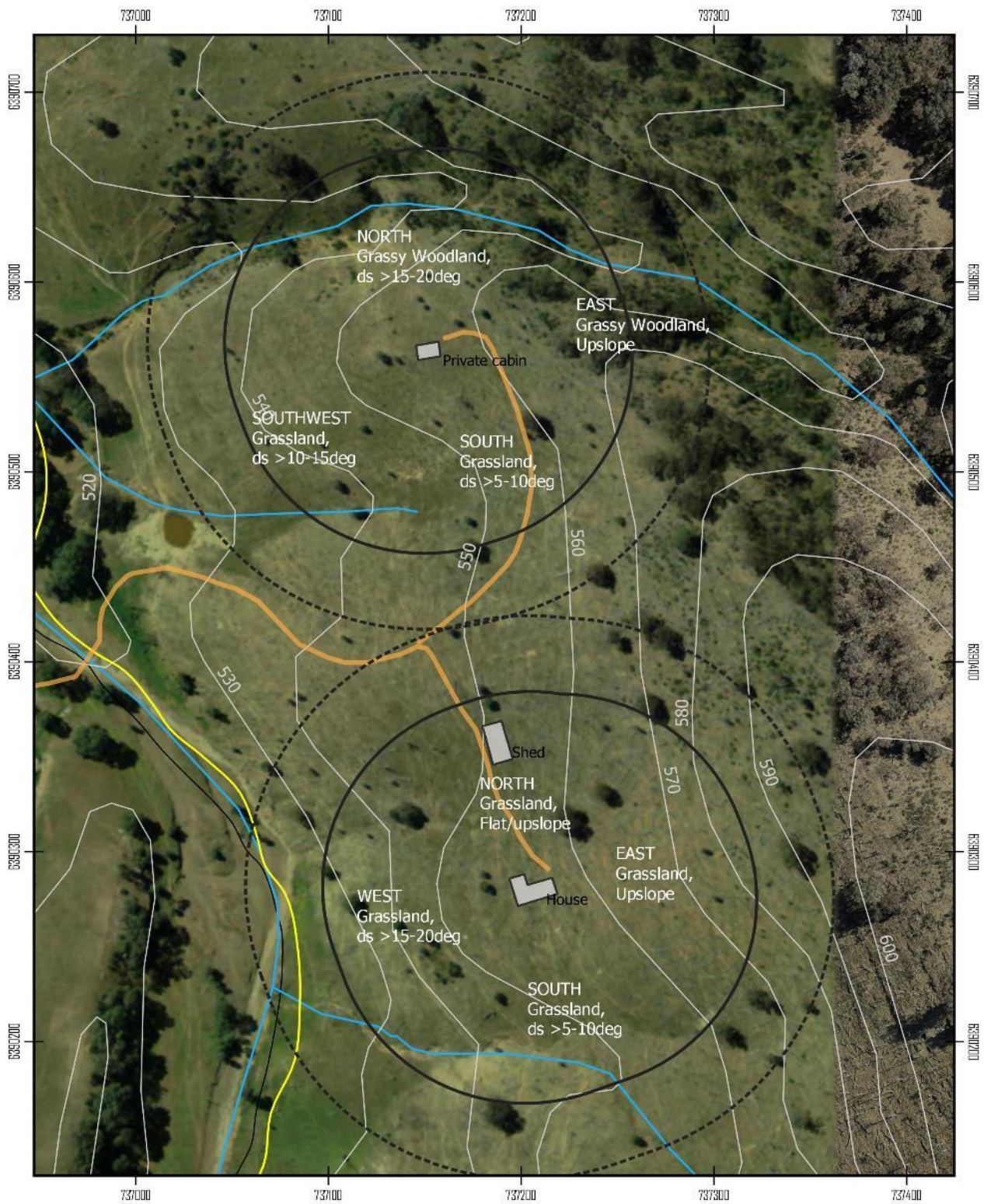
Photo 2-5. The secondary dwelling site is exposed to Grassland and Grassy Woodland hazard.



Photo 2-6. Rock and grassland groundcover provides for relatively low fuel loads, on all sides at the secondary dwelling site.

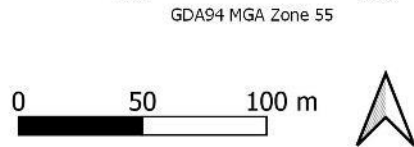


Figure 2-1. Bushfire site analysis of hazard vegetation and slope relevant to the proposed development for the main dwelling (house) and secondary dwelling (private cabin).



**361 Old Grattai Road
BUSHFIRE SITE ANALYSIS
October 2021**

- Property boundary
- 100m assessment circle
- 140m assessment circle
- Creek lines
- contour



3 Bushfire protection measures

The PBP 2019 Bushfire Protection Measures (BPMs) for residential infill development include provisions for:

- Asset protection zone
- Building construction standard
- Access
- Fire-fighting water supply
- Electricity and gas services
- Landscaping
- Emergency evacuation.

The intent of the BPMs is to minimise the risk of bush fire attack to buildings (and occupants) and provide protection for emergency services personnel, residents and others assisting firefighting activities. The design solutions proposed for the current development aim to achieve the intent of each BPM as set out in PBP 2019 *Chapter 7 Residential Infill Development*, and Table 7.4a.

3.1 APZ and BAL construction

The current proposal seeks to achieve BAL 12.5 for the house and BAL 29 for the secondary dwelling, with the APZ established out to the distances shown in **Table 3-1**. The APZs for the main dwelling and secondary dwelling are mapped further below in **Figure 3-1**.

Table 3-1. Proposed size of the APZ (minimum distances for the BAL).

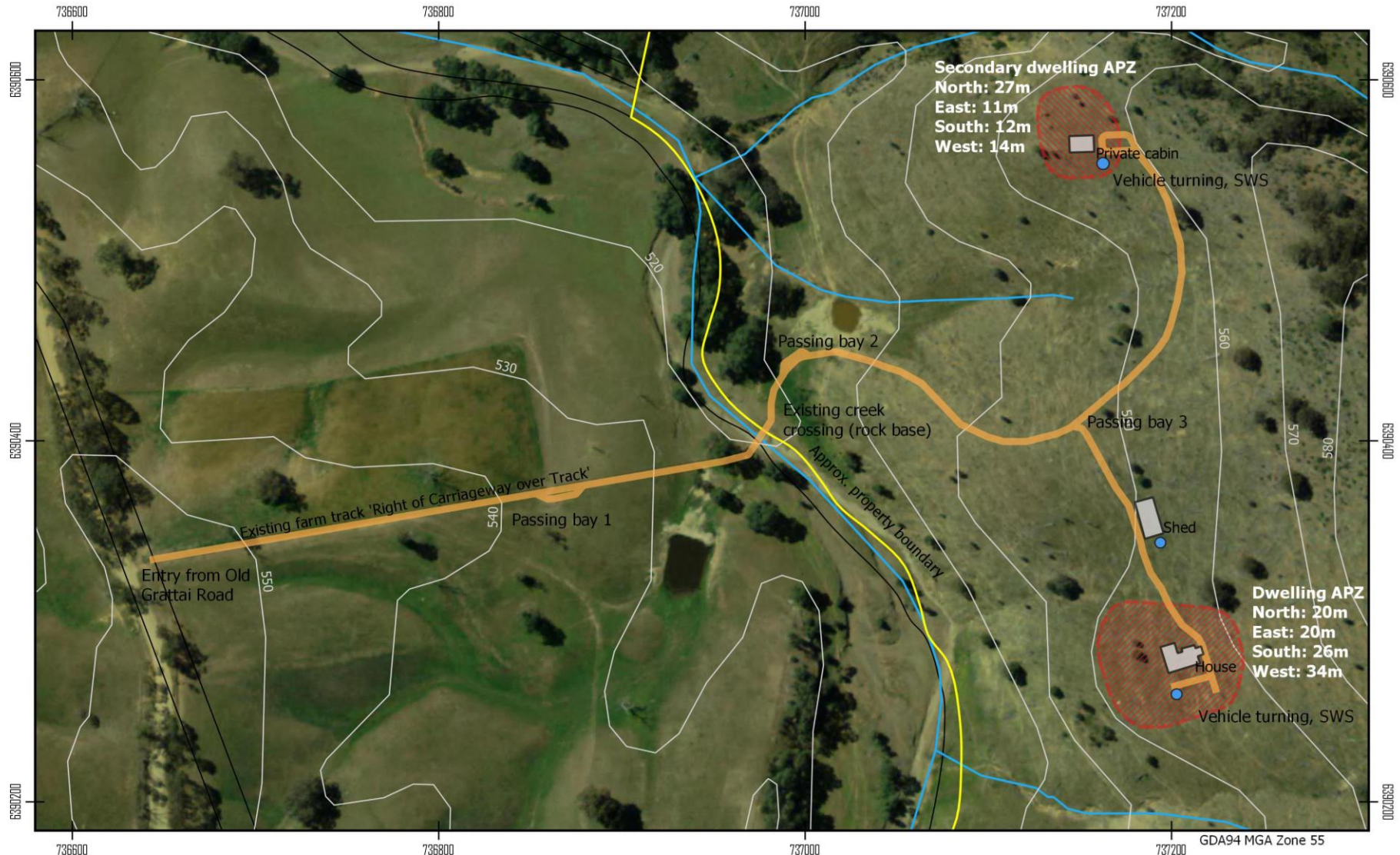
Direction	House – Proposed setbacks to achieve BAL 12.5	Secondary dwelling – Proposed setbacks to achieve BAL 29
NORTH	20 m	27 m
EAST	20 m	11 m
SOUTH	26 m	12 m
WEST	34 m	14 m

The APZs for BAL 12.5 to the main dwelling and BAL 29 to the secondary dwelling are practical and achievable for the site, and provide a balance between bushfire protection and minimising the overall size of the development footprint given the E3 zoning of the land.

A schematic of the general appearance of the APZ including the IPA and OPA is shown in **Figure 3-2** below. Trees will need to be maintained to achieve the required canopy cover of no more than 15%, with a crown separation of at least 2 to 5 m between tree canopies. No trees will be removed to achieve the APZ, since trees are sparse within each area proposed for the APZs.

Construction of the main dwelling is recommended to be BAL 12.5 bushfire standard, and construction of the secondary dwelling is recommended to be BAL 29 bushfire standard, as per Australian Standard AS3959 *Construction of buildings in bushfire-prone areas*. These building standards are deemed to provide resilience against the predicted bushfire attack for the APZs defined above.

Figure 3-1. Site layout and proposed bushfire protection measures.



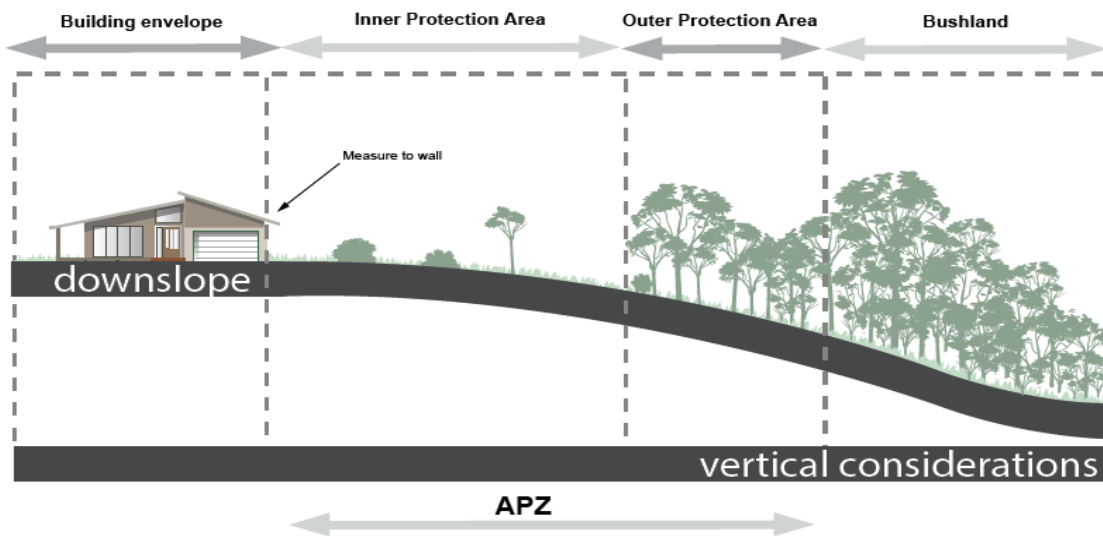
361 Old Grattai Road, Erudgere
SITE LAYOUT for BUSHFIRE PROTECTION
October 2021

- Property boundary
- Driveway
- Creek lines
- contour
- APZ house BAL12.5
- APZ cabin BAL29
- Water supply tanks



Base map: SIXmaps Satellite, 30/9/2017
This map is indicative and for planning purposes and is not guaranteed to be free of errors or omissions.

Figure 3-2. Schematic illustration of the APZ, including IPA and OPA (PBP 2019, Appendix 4).

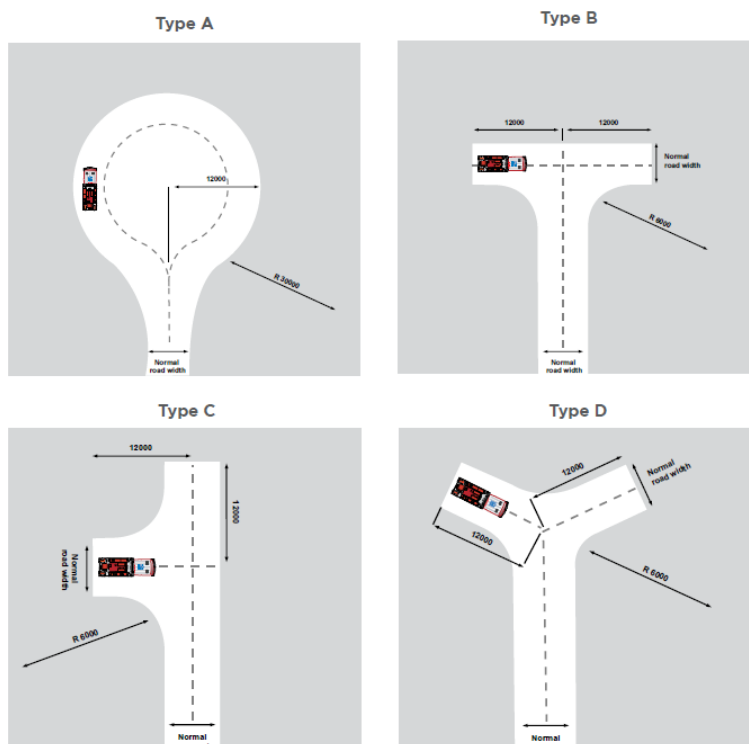


3.2 Access and water supply

The main dwelling and secondary dwelling are located approximately 700 m from Old Grattai Road via the driveway through a 'Right of Carriageway over Track' on the title and benefiting the property. There is no option for the development to be located closer to the public road due to the land being situated behind privately-owned farmland. Three passing bays are provided and there the vegetation is grassland only, and low hazard.

The driveway will provide an all-weather gravel surface with a vehicle stand area and turning space provided near both the house site and secondary dwelling site. The turning will be consistent with option Type C in PBP 2019 (as shown in Figure 3-3), and will be located adjacent the fire-fighting water supply.

Figure 3-3. Multipoint vehicle turning options PBP 2019.



3.3 Water supply

The property is rural and not on reticulated water supply. The requirement for residential development on rural lots (>1 ha) without reticulated supply is to provide 20 000L bushfire-fighting water supply. This is in addition to any domestic water supply capacity. The development will provide a dedicated 20,000L fire-fighting water supply at the house and a dedicated 20,000L at the secondary dwelling site. The tanks will be fitted with a 65 mm metal Storz fitting and accessible to vehicles (refer to the site plans).

3.4 Electricity and gas supply

The development will have off-grid solar fitted to the shed and power lines running underground to the house and secondary dwelling. There are no gas services or gas cylinders proposed for the current development, since hot water and power will be from solar.

3.5 Landscaping

The requirements for landscaping are set out in Appendix 4 of PBP 2019. Landscaped areas immediately around the house, if designed and maintained appropriately, can minimise fire risk to buildings and provide a defensible space for active defence of the property during a bushfire. A defensible space provides a relative safe area to move around the house to extinguish spot fires and burning embers before and after the fire front. The house itself can provide shelter as the fire approaches and passes through the site, although depending on conditions the recommended approach is to relocate well before the fire approaches. Low-flammability plantings, gravel areas, stone walls, etc that are maintained to be free of fine fuels, can increase the likelihood that the building will survive. This is an important consideration for the current development due to the exposed location.

3.6 Emergency management

An emergency management plan is not mandatory for private residential development, however it is recommended that the occupants / owners develop a personal/property Bush Fire Survival Plan, based on the recommendations of the Rural Fire Service. Refer to <https://www.rfs.nsw.gov.au/resources/bush-fire-survival-plan>. If the property is to be used for short-term holiday rental an Emergency Management and Evacuation Plan is to be prepared consistent with: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan* (RFS 2014).

3.7 BMPs summary table

The BMPs proposed for the current development are summarised in **Table 3-2**.

Table 3-2. Bushfire Protection Measures for the proposal, addressing PBP 2019.

Planning for Bush Fire Protection 2019 Performance Requirement	Design measures provided by the proposed development	PBP 2019 compliance
<p><u>ASSET PROTECTION ZONE</u></p> <p><i>The intent may be achieved where:</i> APZs are provided commensurate with the construction of the building a defensible space is provided APZs are managed and maintained to prevent the spread of a fire to the building.</p> <p><i>the APZ is provided in perpetuity (APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimized).</i></p> <p><i>Home-based child care: the building must not be exposed to radiant heat levels exceeding 29kW/m² (1090K).</i></p>	<p>The APZ will be managed in perpetuity for the life of development as follows:</p> <p>HOUSE:</p> <ul style="list-style-type: none"> • NORTH - 20 m from the house. • EAST – 20 m from the house. • SOUTH - 26 m from the house. • WEST - 34 m from the house. <p>SECONDARY DWELLING</p> <ul style="list-style-type: none"> • NORTH - 27 m from the house. • EAST – 11 m from the house. • SOUTH - 12 m from the house. • WEST - 14 m from the house. 	<p>BAL 12.5 and BAL 29 APZ to the house and secondary dwelling, as shown in Figure 3-1.</p>
<p><u>CONSTRUCTION STANDARD</u></p> <p><i>The intent may be achieved where:</i> the proposed building can withstand bush fire attack in the form of embers, radiant heat and flame contact. proposed fences and gates are designed to minimise the spread of bush fire.</p> <p><i>Proposed Class 10a buildings are designed to minimise the spread of bush fire.</i></p> <p><i>Home-based child care: the proposed building can withstand bush fire attack in the form of wind, localised smoke, embers and expected levels of radiant heat.</i></p>	<ul style="list-style-type: none"> • The house is proposed to be to BAL 29 construction in accordance with the <i>Building Code of Australia</i>, AS3959 and the NSW variations required in section 7.5 of PBP 2019, as relevant. • There are to be no flammable (e.g. brush) fences or gates. • Attached Class 10a buildings (carport, garage or shed) are separated from the dwelling buildings by ~80 m. Bushfire building standards do not apply to shed. 	<p>Yes, can be compliant, refer to Architects plans.</p>
<p><u>ACCESS</u></p> <p><i>The intent may be achieved where:</i> firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation the capacity of access roads is adequate for firefighting vehicles there is appropriate access to water supply firefighting vehicles can access the dwelling and exit the property safely.</p>	<p>Vehicle access will be provided as follows:</p> <ul style="list-style-type: none"> • All-weather gravel road to the house and secondary dwelling site of 4m width, ~700 m length. There are no development sites possible closer to the public road. • Three passing bays are provided at ~200m and ~400m and 560m along the driveway, measured from Old Grattai Road. • Vehicle turning area is provided at both the house and secondary dwelling site, in accordance with Type C in PBP 2019 (see Figure 3-1). Each turning area will be adjacent to a SWS fire-fighting water supply. • No alternative emergency access is possible due to the lack of other road options and steep terrain. 	<p>Driveway is compliant for private residential development. No alternative access is possible due to rugged terrain.</p>

Planning for Bush Fire Protection 2019 Performance Requirement	Design measures provided by the proposed development	PBP 2019 compliance
<p><u>WATER SUPPLIES</u> <i>The intent may be achieved where: an adequate water supply is provided for firefighting purposes. water supplies are located at regular intervals; and the water supply is accessible and reliable for firefighting operations. flows and pressure are appropriate. the integrity of the water supply is maintained. a static water supply is provided for firefighting purposes in areas where reticulated water is not available.</i></p>	<p>Water supply will be provided as follows:</p> <ul style="list-style-type: none"> • 20,000 L SWS provided as a dedicated fire-fighting water supply, with a 65 mmm Storz valve at the house site. • Additional 20,000 L SWS provided as a dedicated fire-fighting water supply, with a 65 mmm Storz valve at the secondary dwelling site. • The tank and all external pipes and fittings will be metal. • Diesel fire-fighting pump with 60m fire hose will be provided at the house water tank. 	Yes, compliant.
<p><u>ELECTRICITY SERVICES</u> <i>The intent may be achieved where: location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.</i></p>	<p>The development is off-grid and will be providing stand-alone solar power system installed on the shed be advised by the owners. Electricity supply to the house will be provided via underground power lines from the shed to the house. Underground power lines mean that there is no the possibility of ignition of surrounding bush land or the fabric of buildings without aerial powerlines.</p>	Yes, compliant.
<p><u>GAS SERVICES</u> <i>The intent may be achieved where: location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.</i></p>	<p>No gas service or cylinders are proposed for this development.</p>	Not applicable
<p><u>LANDSCAPING</u> <i>The intent may be achieved where: landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.</i></p>	<p>Landscaping is to be consistent with the RFS Asset protection zone standards in Appendix 4 of PBP 2019. A clear area of low-cut grass or paving or gravel is maintained adjacent the dwelling building, to provide defensible space. Ornamental grasses, grass-like plants and other fine fuels are not to be used for landscaping near the house, as these contribute to the bushfire fuels. Succulent plants and/or pebbles as mulch are non-flammable and are recommended for landscaped areas including near the dwelling. Woodchip mulch should be used only where necessary and to a very limited extent near the dwelling. Trees and shrubs are to be maintained to have no over-hanging branches over the roof, and a non-continuous canopy.</p>	Yes, compliant subject to ongoing maintenance.
<p><u>EMERGENCY MANAGEMENT</u> <i>The intent may be achieved where: Home-based child care: a bush fire emergency and evacuation management plan is prepared.</i></p>	<p>While not mandatory for single residential development, it is recommended that the occupants / owners develop their own Bush Fire Survival Plan, based on the recommendations of the Rural Fire Service, refer to https://www.rfs.nsw.gov.au/resources/bush-fire-survival-plan. If the property is to be used for short-term rental accommodation all of the above bushfire protection provisions apply and in addition an Emergency Management and Evacuation Plan is to be prepared consistent with: <i>A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan</i> (RFS 2014).</p>	Not mandatory, although this is recommended to be prepared by the property owners.

4 Conclusion

This report outlines how the development addresses the requirements for a single private residential development, as set out in *Planning for Bushfire Protection 2019*, Chapter 7 ‘Residential infill development’.

The site layout shown in **Figure 3-1** provides for a BAL 12.5 rating for the house (main dwelling) and BAL 29 rating for the secondary dwelling. This is based on establishing APZs to the following distances.

Main dwelling, based on Grassland hazard on all sides (and assessed slopes in **section 2**):

- NORTH to 20 m
- EAST to 20 m
- SOUTH to 26 m
- WEST to 34 m

Secondary dwelling, based on Grassy Woodland and Grassland hazard (and assessed slopes in **section 2**):

- NORTH to 27 m
- EAST to 11 m
- SOUTH to 12 m
- WEST to 14 m

The proposed APZ are practical and achievable for the site and are not excessive given the E3 environmental zoning of the land.

Other bushfire protection measures relating to access, water supply, electricity and gas, landscaping have been addressed in **section 3** of this report. This includes a gravel driveway with passing bays, vehicle turning area and dedicated 20,000 L fire-fighting water supply to each building (refer to **Figure 3-1**).

The above measures in combination are expected to provide an acceptable level of bushfire protection consistent with current bushfire requirements in PBP 2019, for residential development.

This report is intended to support the development application to Council. The bushfire protection measures outlined in this report, whilst aiming to address compliance with the required bushfire protection measures, do not in any way guarantee that the building or occupants would survive a bushfire under all circumstances.

5 Declaration of interest

This report has been prepared by Dr Kate Hammill Stone who is the Joint land owner and proponent, and also an NSW Level 2 BPAD Accredited Consultant. The assessment has been undertaken in the same manner and with due diligence as would be applied by the author for any other similar development proposal.

6 References

DPIE (2017) *State Vegetation Type Map: Central Tablelands Region Version 1.0. VIS_ID 4778*. This dataset was developed under the OEH State Vegetation Map project to provide government and community with regional scale information about native vegetation. Accessed from <https://datasets.seed.nsw.gov.au/>. Published by the Department of Planning Industry and Environment, 2017.

DPIE (2021) *BioNet Vegetation Classification database*, published Department of Planning Industry and Environment, accessed from <https://www.environment.nsw.gov.au/>, August 2021.

Keith D A (2004) *Ocean Shores to Desert Dunes: The native vegetation of New South Wales and the ACT*, Department of Environment and Conservation (NSW), Hurstville NSW.

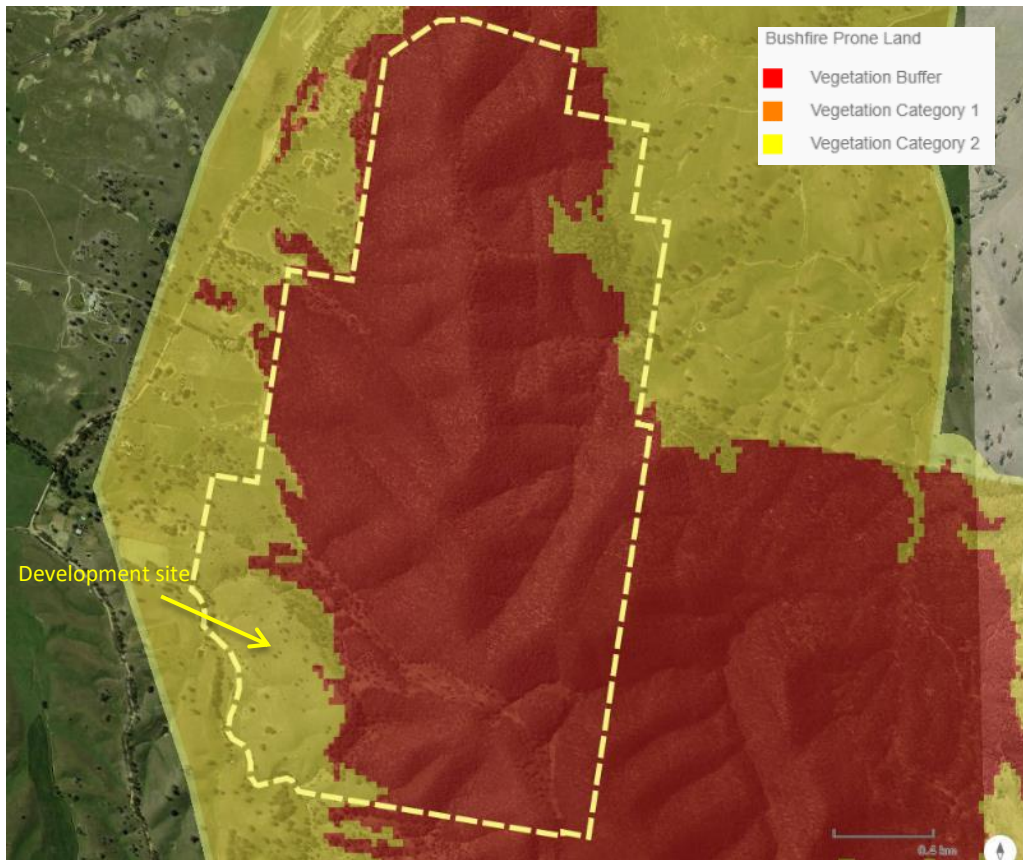
RFS (2019) *Planning for Bush Fire Protection, A guide for councils, planners, fire authorities and developers*, published by the State of New South Wales through the NSW Rural Fire Service, November 2019, Granville.

RFS (2014) A guide to developing a Bush Fire Emergency Management and Evacuation Plan, published by the NSW Rural Fire Service, Granville (assessed at https://www.rfs.nsw.gov.au/_data/assets/pdf_file/0003/29271/DPP1079-Emergency-management-and-evacuation-plan-FORM.pdf)

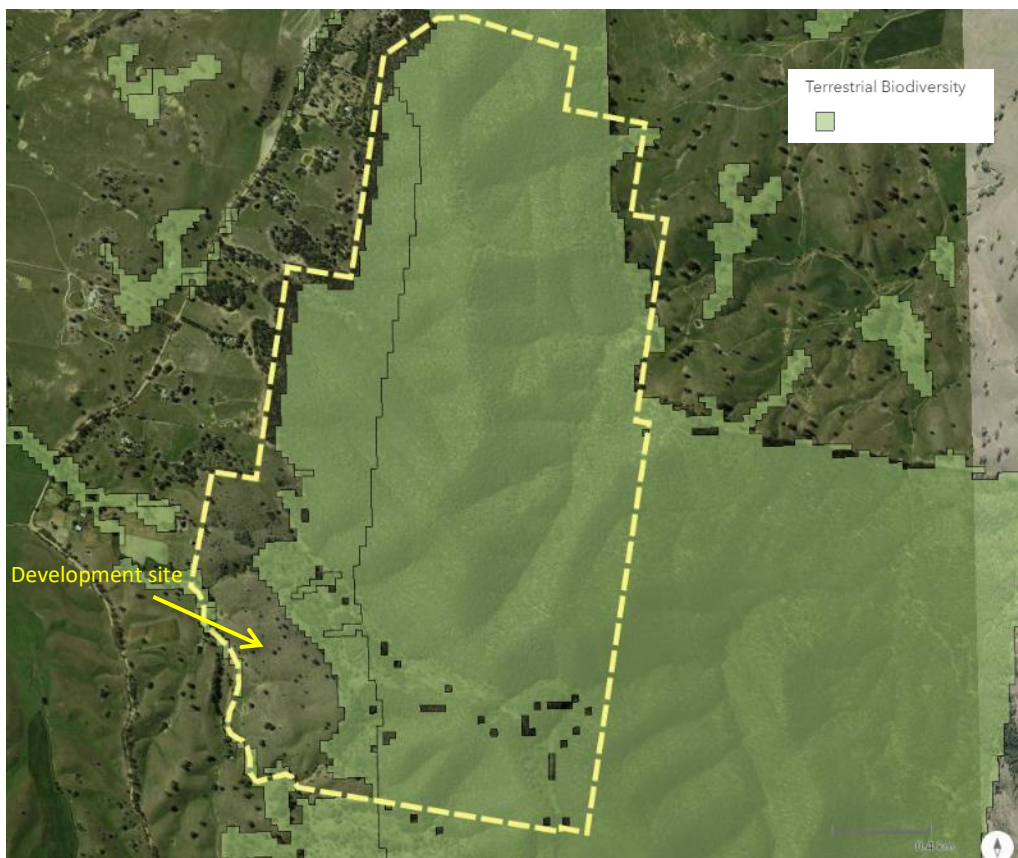
Standards Australia (2018) Australian Standard *Construction of buildings in bushfire-prone areas, AS 3959—2018*, Standards Australia, Sydney.

Appendix A. Regulatory maps

LEP Bush Fire Prone Land mapping



LEP Terrestrial Biodiversity mapping



LEP Groundwater vulnerability



Biodiversity Values Map

