APPENDIX C

BUSHFIRE ASSESSMENT REPORT

RD
Planning &
Development

BUSHFIRE ASSESSMENT REPORT

156 SIBLEY ROAD, GUNDAROO

Lot 3 DP 1056285

Proposed Rural Residential Subdivision

Prepared for David Corbett

C/- RD Planning & Development

28.7.25

ember
bushfire consulting

Executive Summary

EMBER Bushfire Consulting has been engaged by David Corbett C/- RD Planning & Development, to prepare a bushfire assessment report for a proposed two (2) lot rural residential subdivision at Lot 3 DP 1056285, 156 Sibley Road, Gundaroo.

The subject site is located on bushfire prone land as designated by Yass Valley Council and the NSW Rural Fire Service. The subject site has been assessed as presenting a low to moderate hazard environment given the proximity of Grassy Woodland and Grassland vegetation, mild slopes, and the ability to provide large Asset Protection Zone (APZ) setbacks.

Given that the Subject Site is a greenfield site, there is an excellent opportunity to provide a range of bushfire protection measures that address the bushfire threat and the compliance requirements of Planning for Bushfire Protection 2019 (PBP 2019).

The proposal makes a single departure from the acceptable solutions offered in PBP 2019, resulting in performance-based solutions for access.

The proposed APZ dimensions will ensure that future dwellings are not exposed to radiant heat levels exceeding 29 kW/m^2 and will comply with Table A1.12.2 of PBP 2019.

Access to the proposed dwelling is well provided for and will largely comply with the acceptable solutions in Planning for Bushfire Protection, except that egress from Lot 1's building envelope to Sibley Road (a no through road) is greater than 200 m and alternative access cannot be provided.

Firefighting water supplies, electricity, and gas services will all be provided and are deemed capable of meeting the requirements of PBP 2019.

Based on the bushfire assessment and the recommendations contained in this report, the proposed development is deemed to comply with the specific and broad objectives of PBP (2019), the requirements of the Rural Fire regulations (2013) and, therefore, suitable for submission to the NSW RFS for the issuing of a bush fire safety authority.

CERTIFICATION STATEMENT

Document Title:	Bushfire Assessment Report 156 Sibley Road, Gundaroo
EMBER Reference:	NM.218.25
Lot & DP Number	Lot 3 DP 1056285
Street Address	156 Sibley Road, Gundaroo
Local Government Area	Yass Valley Council
Description of the development	Rural Residential Subdivision
Type of assessment under Planning for Bushfire Protection (2019)	Section 5 – Rural Residential Subdivision
Is referral of the proposal to the NSW RFS required?	YES - Per Section 100B – Bush fire safety authorities. A subdivision of bush fire prone land that could lawfully be used for residential or rural residential purposes.
Has a pre-DA lodgment or bush fire design brief been provided to the NSW RFS?	NO
The highest radiant heat flux determined for the development.	<29 kW/m^2
Highest level of construction applicable:	Bushfire Attack Level (BAL)-19
Accreditation Scheme / Level of accreditation	Bushfire Planning and Design (BPAD) Accreditation Scheme administered by the Fire Protection Association Australia (FPAA)
Prepared by:	Jeff Dau – BPAD 33128 – Level 3
Verified by:	Rob McGregor – BPAD 33130 – Level 2

The author (Jeffrey Dau) hereby certifies that:

- A thorough, in person, survey of the Subject Site was carried out on 28 June 2025;
- A subsequent bushfire threat assessment was undertaken of the site and the proposal per the relevant sections of the NSW Rural Fire Service (NSW RFS) document Planning for Bushfire Protection 2019 (PBP 2019);
- A detailed bush fire assessment report is attached per the submission requirements of Appendix 2 of PBP, together with recommendations needed to satisfy the specifications and requirements of PBP;
- I am a person recognised by NSW RFS as a qualified consultant in bush fire risk assessment and
- Subject to the recommendations in this report, the proposed development conforms to PBP's relevant specifications and requirements.

Furthermore, I am aware that this report will be submitted to support a development application for this site and will be relied upon by the Council to ensure that the bushfire risk management aspects of the proposal have been addressed per PBP 2019.

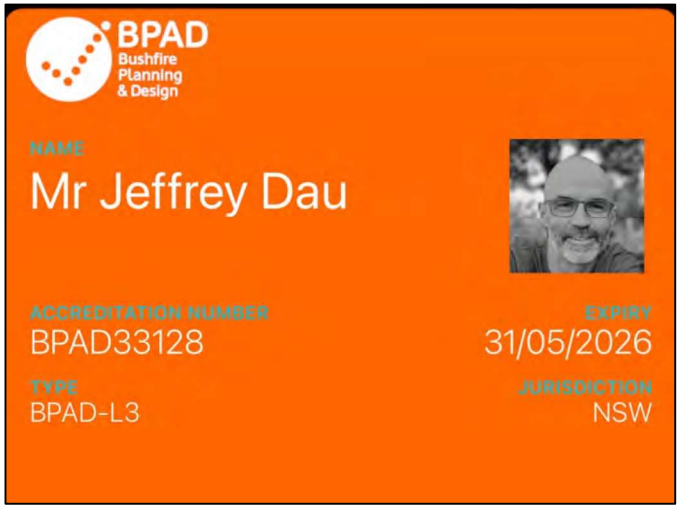
28.7.25

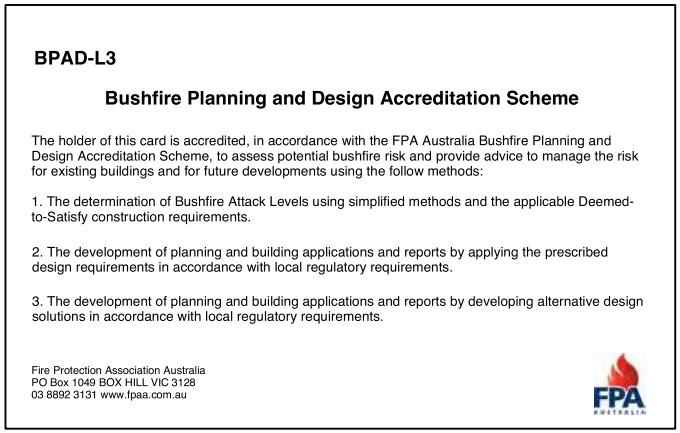
Document Control

Information	Detail
Document Title:	Bushfire Assessment Report 156 Sibley Road, Gundaroo
EMBER Reference:	NM.218.25
Other Reference:	1001 (RD Planning & Development)
Version:	1.0
Version Control:	1.0 – First Issue – 7.7.25
Status:	Issued

Key details of development

Information	Detail
Zoning of subject land	RU1 – Primary Production
Zoning of adjoining lands	RU1 – Primary Production
Lot size	83.85 ha
Staging issues	Nil
Development classification	Rural Residential Subdivision
Type of assessment	Rural Residential Subdivision
Fire weather area	Southern Ranges
Fire Danger Index	100
Predominant vegetation	Grassy Woodland, Grassland
Slope	Ranging from upslope to 5° downslope
Environmental constraints	Typical Biodiversity Offset Scheme (BOS)
Cultural constraints	Nil known
Method of meeting performance requirements	Using both acceptable and performance-based design.





HOW TO READ THIS DOCUMENT -

Section 1 Introduction – Introduction and overview of the subject site and proposed development.

Section 2 Bushfire Hazard Analysis - Assessment of the critical factors contributing to the potential bushfire attack of the proposed development, planning considerations and assessment of the overall bushfire hazard.

Section 3 Bushfire Protection Measures – Assessment and discussion of the recommended bushfire protection measures in response to the Bushfire Attack Assessment, necessary for life safety and compliance purposes.

Section 4 Bushfire Management Plan – A concise list of recommendations for the development proposal to be considered compliant with PBP.

Section 5 Conclusion – Concluding statement.

DEFINITIONS -

Asset Protection Zone (APZ) - A fuel-reduced area surrounding a built asset or structure that provides a buffer zone between a bushfire hazard and an asset. The APZ includes a defendable space within which firefighting operations can be carried out. The size of the required APZ varies with slope, vegetation and FFDI.

Bushfire attack - Attack of a built asset or structure by burning embers, radiant heat or flame generated by a bush fire.

Bushfire hazard - Any vegetation that can potentially burn and threaten lives, property or the environment.

Bushfire prone land (BFPL) - An area of land that can support a bushfire or is likely to be subject to bushfire attack, as designated on a bushfire-prone land map.

Bush fire protection measures (BPMs) - A range of measures used to minimise the risk from a bush fire that needs to be complied with. BPMs include APZs, construction provisions, suitable access, water and utility services, emergency management and landscaping.

Bushfire risk - is the likelihood and consequence of a bushfire igniting, spreading and causing life loss or damage to buildings of value to the community. Note: This assessment does not intend to determine the likelihood of bushfire impacting the subject site. Instead, it focuses on assessing the degree of bushfire attack, its expected consequences and the BPMs needed to moderate this attack.

Managed land - Land with vegetation removed or maintained to a level that limits the spread and impact of bush fire. This may include developed land, roads, golf course fairways, playgrounds, sports fields, vineyards, orchards, cultivated ornamental gardens and commercial nurseries. The most common will be gardens and lawns within the curtilage of buildings. These areas are managed to meet the requirements of an APZ.

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1 INTRODUCTION AND OVERVIEW

1.1 BACKGROUND

David Corbett C/- RD Planning & Development has engaged EMBER Bushfire Consulting to prepare a bushfire assessment report for a proposed two (2) lot rural residential subdivision at Lot 3 DP 1056285, 156 Sibley Road, Gundaroo (*the Subject Site*).

The development proposal is located on land designated bushfire-prone by the Council and, as a result, is subject to Division 4.8 of the Environmental Planning and Assessment Act (1979) (EP&A Act) and Section 100B of the Rural Fires Act (1997).

Under the Rural Fires Act (1997), the development proposal must be shown to conform with the broad aim and objectives of the NSW Rural Fire Service (NSW RFS) document Planning for Bushfire Protection (2019) (PBP 2019) and, therefore, is the key reference document for this assessment.

This assessment was prepared through a desktop study of the Subject Site and an in-person survey on behalf of BPAD Level 3 practitioner Jeff Dau from EMBER Bushfire Consulting on 28.6.25.

1.2 AIM AND OBJECTIVES

The report aims to:

- Evaluate the potential bushfire threat to the Subject Site.
- Assess the capacity of the proposed subdivision to provide the minimum bushfire protection necessary to offer life safety to the occupants, improve property protection and facilitate fire service intervention during a bushfire event.
- Assess the capacity of the proposed subdivision to achieve the relevant performance criteria using the acceptable solutions provided in PBP 2019.

The specific objectives required for the proposed development are detailed in Chapter 5 – Residential and Rural Residential Subdivisions PBP 2019 and include:

- minimise perimeters of the subdivision exposed to the bush fire hazard;
- minimise vegetated corridors that permit the passage of bush fire towards buildings;
- provide for the siting of future dwellings away from ridge-tops and steep slopes, within saddles and narrow ridge crests;

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

Accordingly, the following bushfire protection measures are to be assessed:

- Asset Protection Zones (APZs);
- Landscaping;
- Access;
- Water, Electricity and Gas Supplies (Services);
- Construction and other protection requirements; and
- Emergency Management.

1.3 LIMITATIONS AND DISCLAIMER

This report is primarily concerned with assessing the capacity of the proposed development to withstand the impacts of a bushfire, including ember attack, radiant heat and flame contact.

Where necessary, Ember Bushfire Consulting will recommend measures to provide satisfactory protection to the occupants and structures.

The proponent should remember that the prescribed measures cannot guarantee that the proposed development will survive a bushfire event on every occasion. This is primarily due to the reliance on vegetation management, the unpredictable behaviour of fire, and extreme weather conditions.

EMBER Bushfire Consulting has prepared this report with all reasonable diligence. The information in this report has been gathered from field investigations of the site and plans provided by the developer.

1.4 COPYRIGHT NOTICE

1.5 STAKEHOLDERS

Table 1 - Stakeholders

Stakeholder	Role	Contact	Detail
David Corbett	Property Owner	David Corbett	Not Given
RD Planning & Development	Town Planner	Rachel Doberer	0409 880 034
Yass Valley Council	Consent Authority	Not Given	02 6226 1477
NSW RFS	Consent Authority	Not Given	02 4475 1300

1.6 THE DEVELOPMENT PROPOSAL

The development proposal divides an 83.85 ha rural property into two (2) separate title lots: Lot 1 – 20 ha and Lot 2 – 63.85 ha (Figure 1).

The proposed lots will have the following provisions:

- **Lot 1.**
    - Greenfield site for rural residential use with boundary setbacks, an indicative building envelope.
    - An APZ that is proportionate to accommodate a single dwelling with a rating of BAL-19, electricity supply from the grid and a min 40,000 L of water supplies.
    - The indicative property access road is >200 m long. Upon construction the access road will be a gravel, all-weather, two-wheel-drive road surface with a minimum road width of 4 m from the property boundary access point to the proposed building envelope.
- **Lot 2.**
    - Is an existing rural residential lot.
    - Has one (1) existing residence (Class 1a building) with detached studio (>6 m from primary residence), two (2) water tanks (~45,000 L total capacity), fences, gates and tracks throughout the property.
    - The existing residence has an established and well-maintained APZ and an all-weather, two-wheel drive property access road that is ~1200 m long from Sibley Road to the residence.
    - The APZ dimensions currently available for the existing residence will yield a maximum radiant heat flux of no greater than 29 kW/m^2.

The development proposal is limited to the formal subdivision of the lots, the preparation of a building envelope for Lot 1 and property access. The proposal does not intend to include any further subdivisions or the erection of any new structures or water tanks.

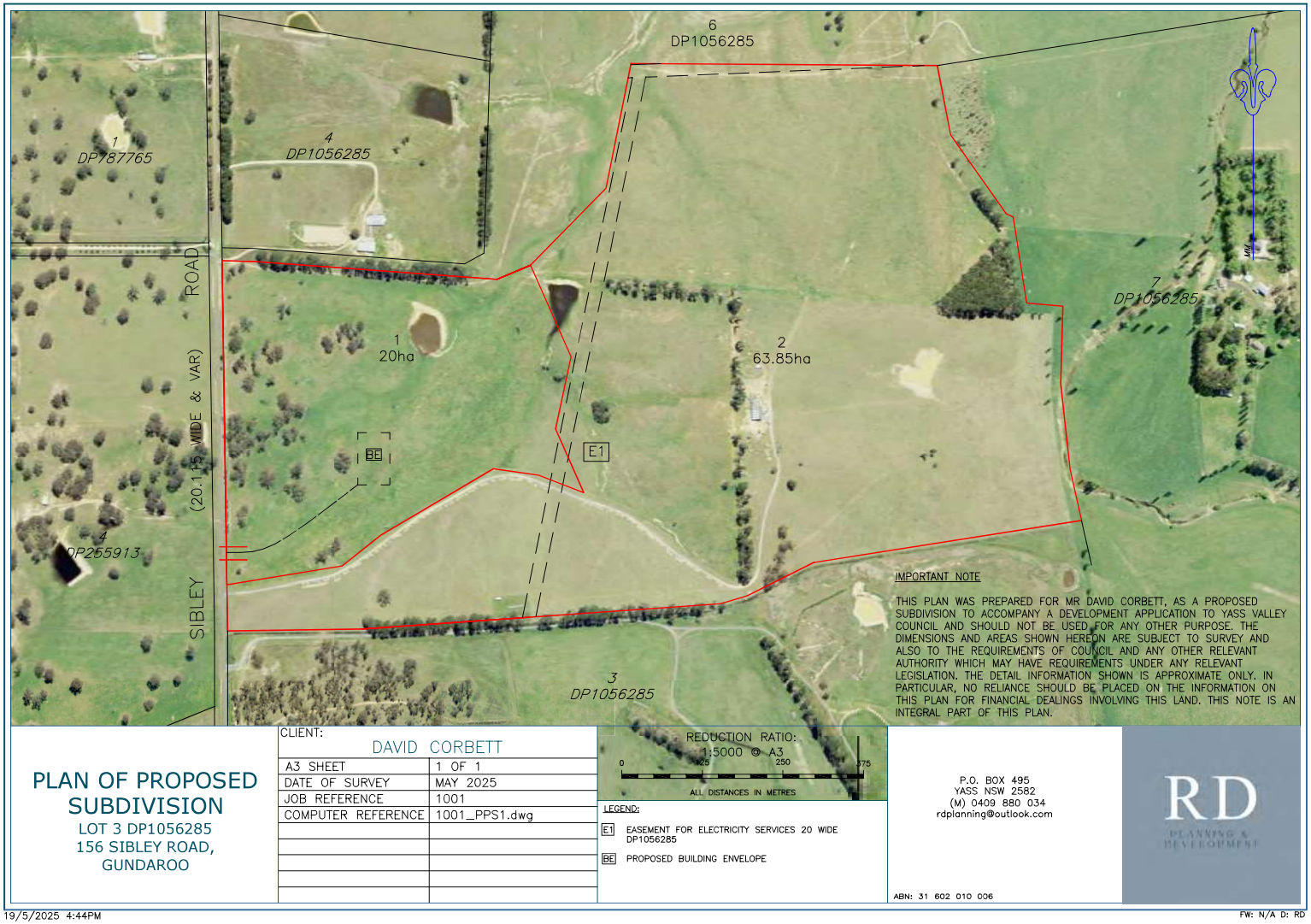


Figure 1 - Proposed Subdivision (RD Planning & Development, 2025)

1.7 SUBJECT SITE LOCATION

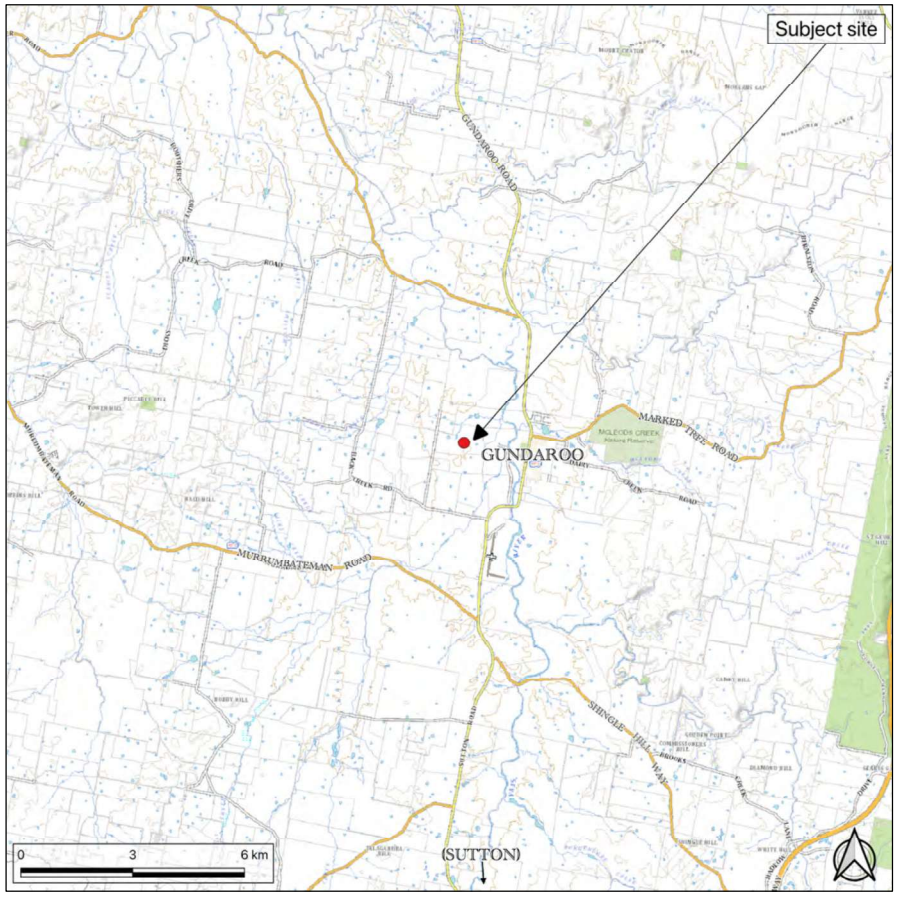


Figure 2 - Subject Site regional context (TANX Environmental, 2025)

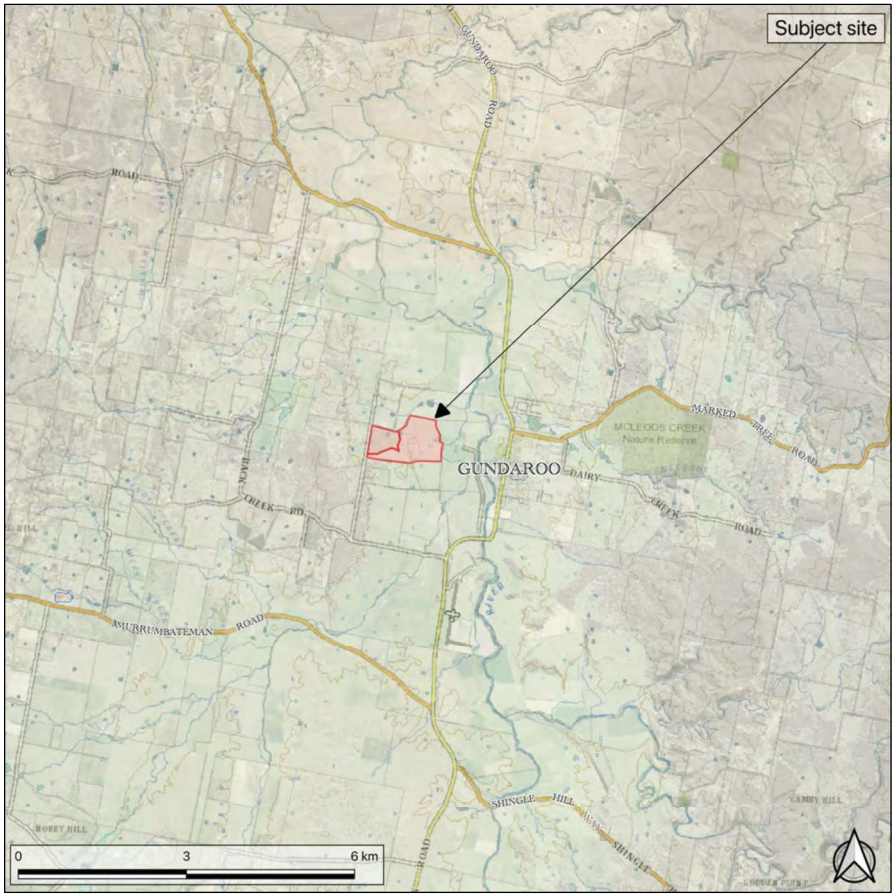


Figure 3 - Subject Site local context (TANX Environmental, 2025)

1.8 SUBJECT SITE DESCRIPTION

Location:

The subject site is on the outskirts of the rural village of Gundaroo, in the Southern Tablelands region of NSW, approximately 20 km north of Sutton village and 40 km north of central Canberra (Figure 2).

Administration:

The 83.85 ha rural lot falls under the administration of the Yass Valley Council.

Land use:

The dominant land use of the area is rural lifestyle and small-scale farming properties (Figure 3). Accordingly, the subject site is zoned RU1 – Primary Production, as are the neighbouring lots.

Topography:

The topography of the Subject Site is primarily open with a small hill in the middle of the eastern lot (Lot 2). To the east of this hill, the site slopes down further to the east towards Back Creek, a tributary of the nearby Yass River. The region more broadly is characterized by open, gentle undulations with the dominant topographical feature being a small vegetated ridge to the west of the site.

Vegetation:

The subject site is dominated by Grassland, consistent with its use for primary production (grazing). The western portion of proposed Lot 1 includes a small patch of Southern Tableland Grassy Box Woodland and several isolated mature paddock trees. The remainder of Lot 1 and all of Lot 2 comprises predominantly grassland with isolated paddock trees and several wind rows. Further afield to the west (offsite) is a small vegetated ridge comprising a mixture of Scribbly Gum Forest and Stringybark Grassy Forest.

Vegetation formations have been cross-checked against the SEED State Vegetation Type Map (Figure 5) with patches of Southern Tableland Grassy Box Woodland on proposed Lot 1, and the remainder being Unclassified (identified as Grassland during the site survey).

Grassy Woodand and Grassland are the dominant vegetation types influencing the site.

Access:

The access/egress route and road length from the subject site to the public road network is:

- The Subject Site has direct access to Sibley Road which is a well-maintained, sealed public no through road. Sibley Road joins Back Creek Road (a through road) to the south. Both Lot 1 and Lot 2 will have direct access to Sibley Road with both access roads being over 200 m in length.
- Lot 1 will have direct access to Sibley Road via a 4 m wide all-weather, two-wheel drive gravel road surface ~250 m in length between the proposed building envelope and Sibley Road (distance dependent on the actual road path to be established).
- Lot 2 has direct access to Sibley Road via the existing 4 m wide all-weather, two-wheel drive gravel road surface driveway, which is ~1200 m in length.

2 BUSHFIRE HAZARD ANALYSIS

2.1 METHODOLOGY

The methodology adopted to prepare this report is as follows:

Table 2 - Report Methodology

Method	Task	Considerations
Desktop analysis	Review available mapping resources, policy documents & development plans	Online Maps Development Control Plans Local Environmental Plan
Site inspection	Evaluate the site's context, determine bushfire threat, asset protection zones, access roads, and infrastructure options.	Ground truth online mapping data, validate vegetation class, obtain site measurements, assess existing structures and infrastructure.
Assessment of proposal against the NSW RFS Planning for Bushfire Protection (PBP 2019).	Assess the development proposal against the performance criteria of PBP 2019.	Does the proposal comply with the performance criteria provided under PBP 2019?
Report	Preparation and publication of bushfire assessment report	Demonstrate the proposal can meet the aims and objectives of PBP 2019.

2.2 DESIGN FIRE ATTRIBUTES

The following attributes are adopted to determine the potential bushfire hazard posed to the subject site (design fire).

Table 3 - Bushfire behaviour factors

Factor	Value
Fire Weather Area	Southern Ranges
FDI	100
Predominant Vegetation Classification	Grassy Woodland, Grassland
Slope	Ranging from upslope to >5 - 10° downslope.

Note: A detailed bushfire hazard analysis is detailed below.

- *Vegetation formations within 140 m of the Subject Site are classified following Section 1.2 of PBP 2019.*
- *Slopes out to 100 m from planned APZs and lot boundaries are assessed following A1.4 & A1.5 of PBP 2019.*
- *The fire danger index for the site has been determined per the NSW Rural Fire Service.*

2.3 SUBJECT SITE BUSHFIRE-PRONE MAPPING

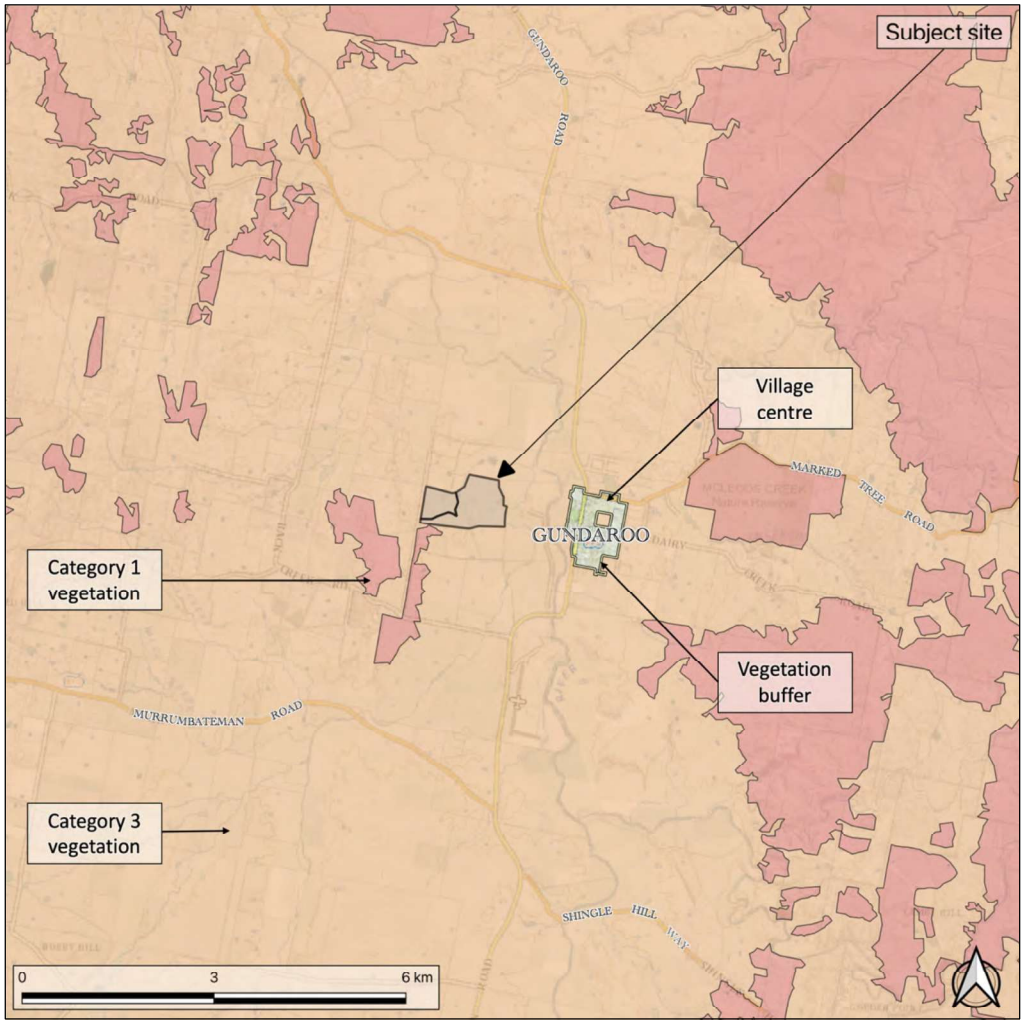
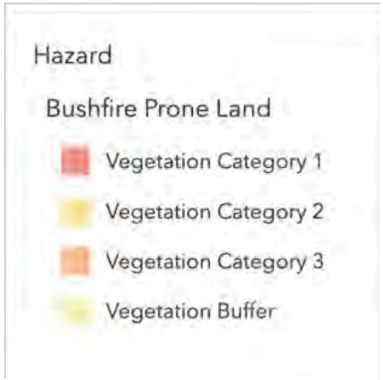


Figure 4 – Subject Site Bushfire Prone Land Map. (TANX Environmental, 2025)

Bushfire prone mapping relative to the Subject Site (Figure 4) showing adjacent land and the Subject Site containing areas of Category 1 Vegetation (Forest) and Category 3 Vegetation (Grassland) identified as bush fire prone land by the Council and NSW RFS.

During the site survey conducted on 28th June 2025, these vegetation categories were verified, and the bushfire prone map found to be an accurate representation of the identified hazard.

Hazard classification key:



2.4 VEGETATION FORMATIONS INFLUENCING THE SUBJECT

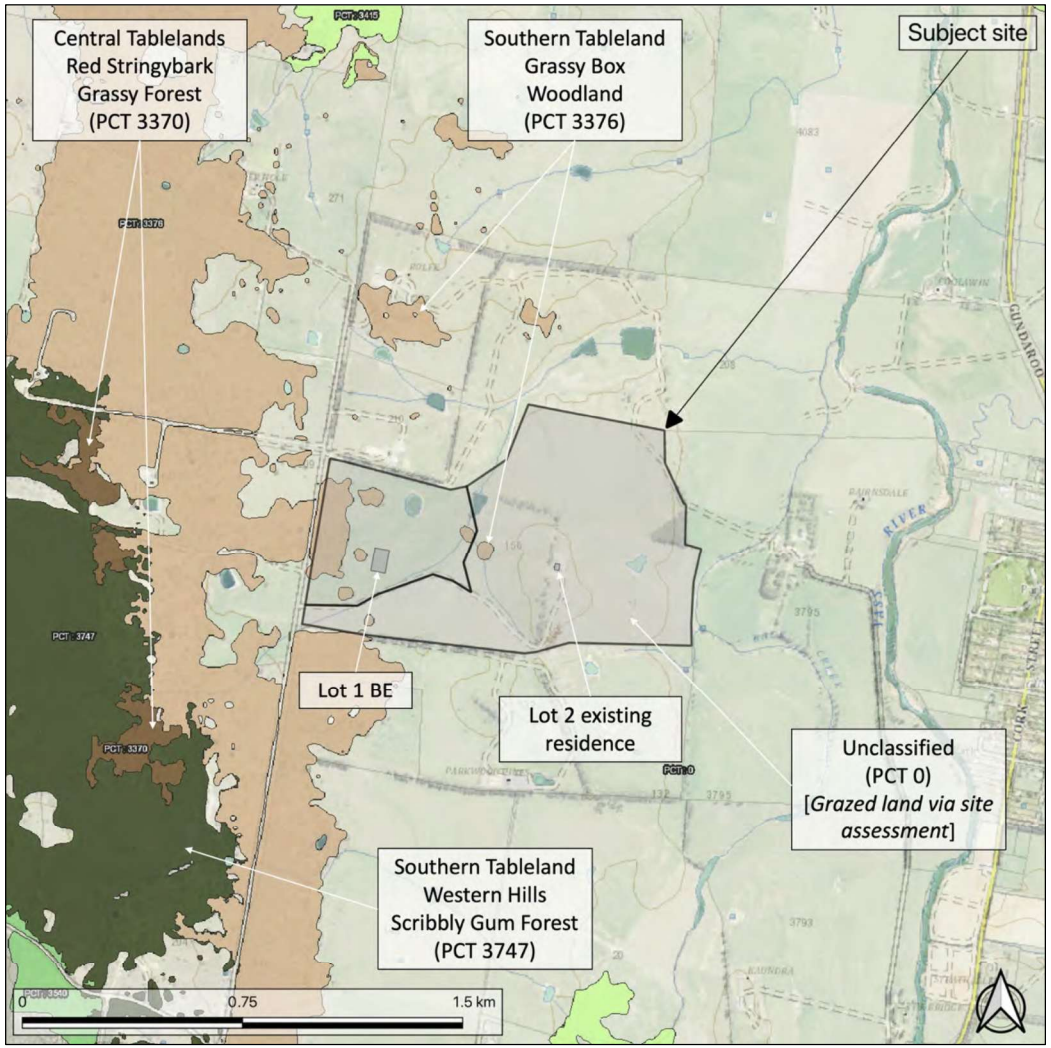


Figure 5 – Subject Site Vegetation Formation Map. (TANX Environmental, 2025)

<u>State based vegetation classification.</u>

Subject Site vegetation formations (Figure 5) as defined by SEED (NSW Government, 2025) NSW State Vegetation Type Map.

Vegetation mapping indicates that the Subject Site is dominantly influenced by –

- Grassy Woodland (high threat level); and
- Grassland (moderate threat level).

2.5 BIODIVERSITY VALUES MAP

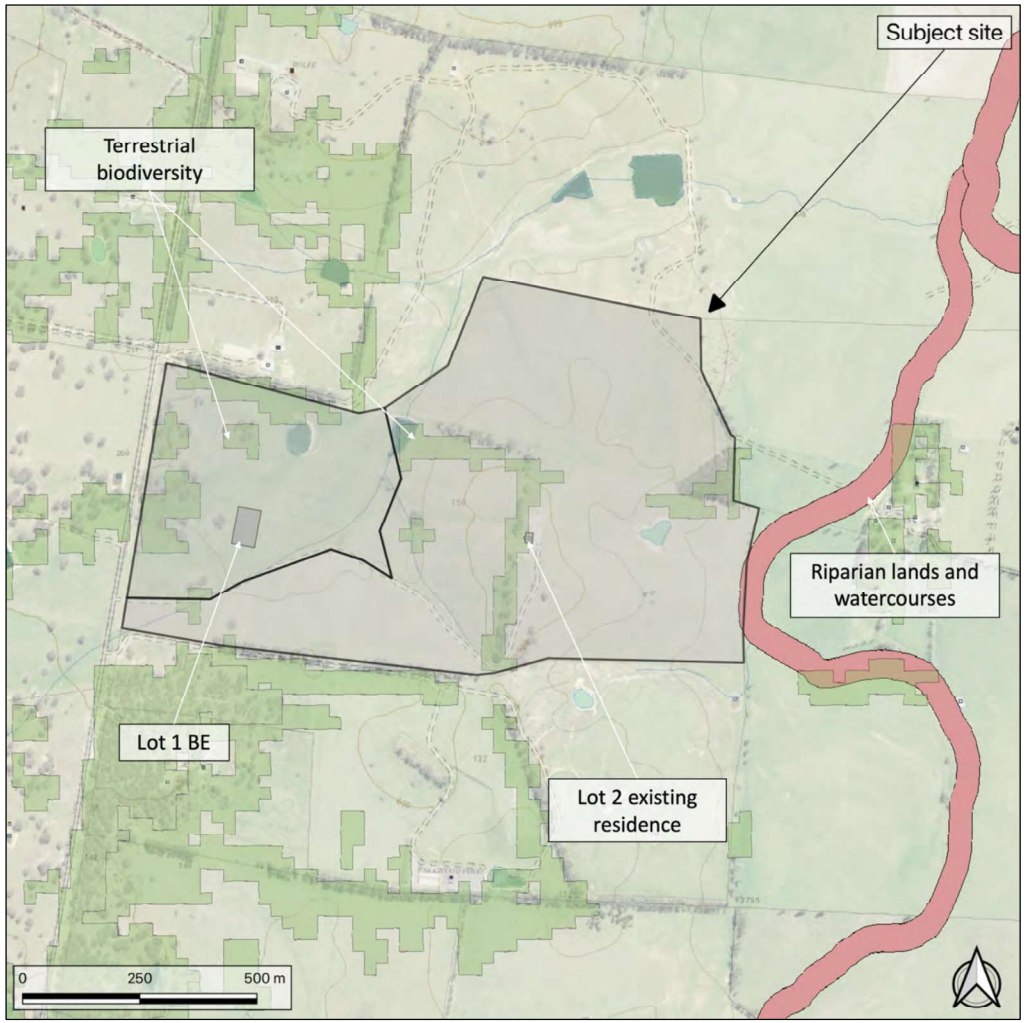


Figure 6 – Showing Biodiversity value vegetation influencing the Subject Site. (TANX Environmental, 2025)

The Biodiversity Values Map identifies land with high biodiversity value that is particularly sensitive to impacts from development and clearing.

The map forms part of the Biodiversity Offsets Scheme threshold, which is one of the factors for determining whether the Biodiversity Offset Scheme applies to a clearing or development proposal.

The map is prepared by the Department of Planning and Environment under Part 7 of the Biodiversity Conservation Act 2016 (BC Act).

The proposed development sites comprise limited areas identified as having high terrestrial biodiversity value, predominantly centred on the western portion of Lot 1 (corresponding with areas of Grassy Woodland), and wind rows through Lot 2 and therefore the clearing or management of land for the purposes of APZs or property access in those areas may be problematic.

Note, this is for indicative purposes and not intended to be a replacement for a comprehensive ecological assessment.

2.6 LOT 1 BUSHFIRE HAZARD ANALYSIS

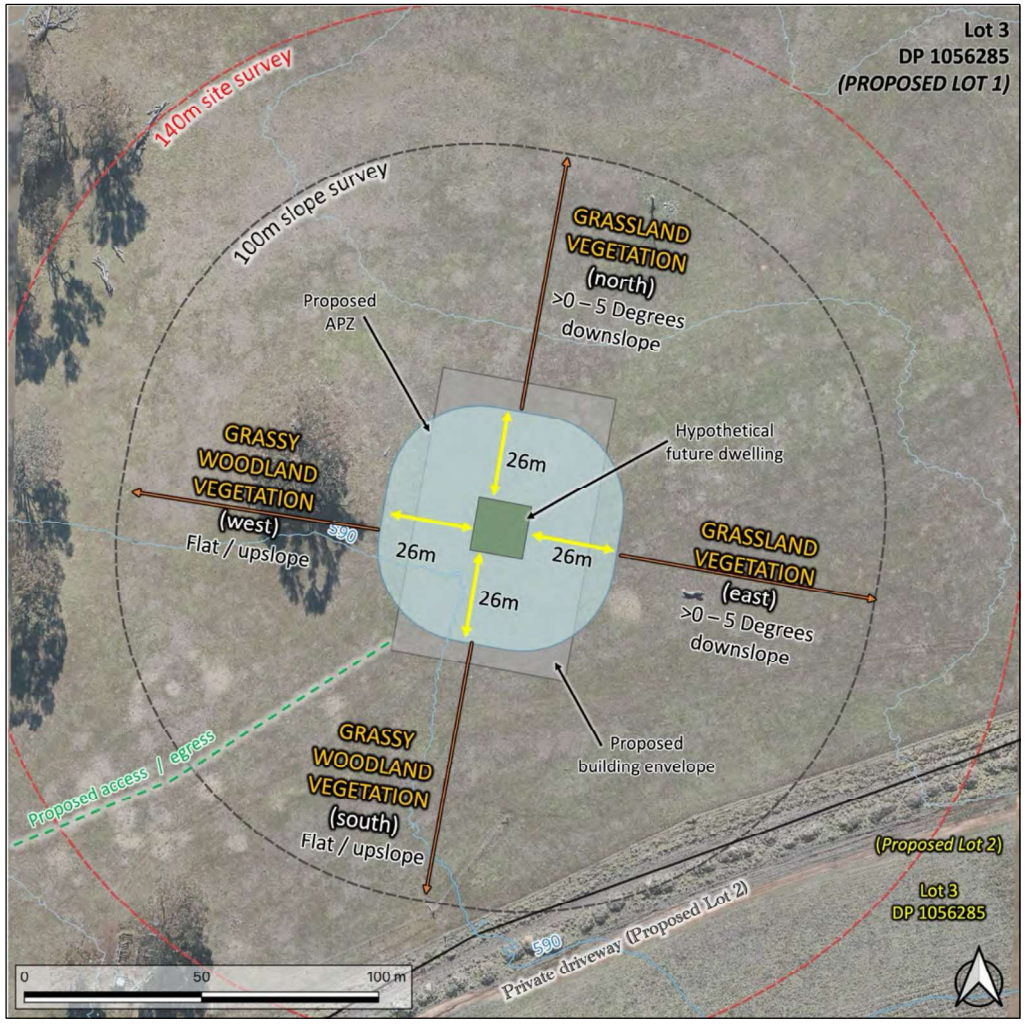


Figure 7 – Showing proposed 12.5 kW/m² APZ setback distances, vegetation classification and slope for Lot 1. Indicative only, not to scale (TANX Environmental, 2025)

HAZARD and APZ ASSESSMENT:

Vegetation Classification

Grassy Woodland (South and West) and Grassland (North and East).

Distances required for the creation of APZ setbacks.

The distances below are the minimum setbacks required for a BAL-12.5 APZ, measured from the future dwelling (assumed 15m x 15m) to surrounding unmanaged vegetation to ensure a maximum radiant heat flux of no greater than 12.5 kW/m².

North – 26 m

East – 26 m

South – 26 m

West – 26 m

LOT 1 PHOTO POINTS

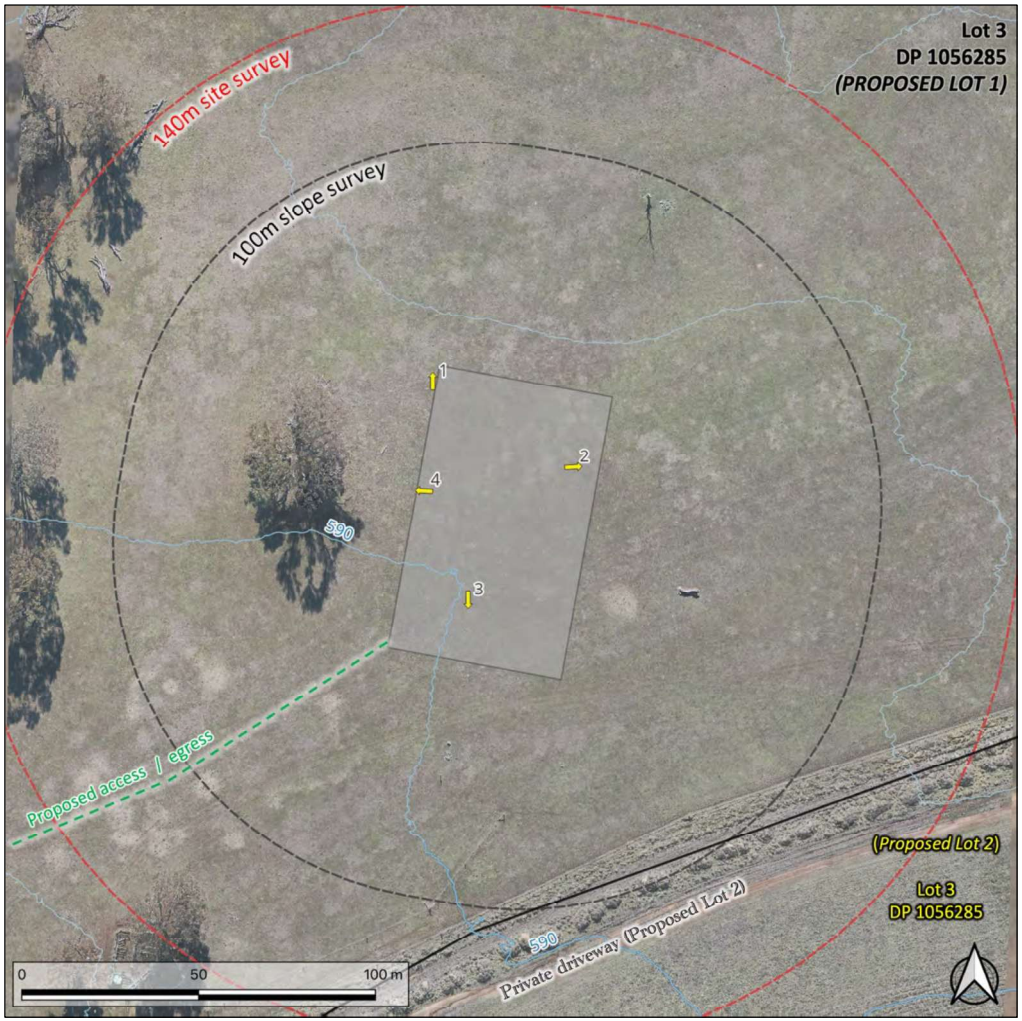


Figure 8 – Lot 1 Photo points. (TANX Environmental, 2025)

PHOTOGRAPHIC OVERVIEW OF PROPOSED LOT 1 BUILDING ENVELOPE

Photo point 1 Looking north from proposed building envelope at Grassland vegetation on proposed Lot 1. (TANX Environmental, 2025)

Photo point 3 Looking south from proposed building envelope at Grassy Woodland/Grassland mixed vegetation on proposed Lot 1. (TANX Environmental, 2025)

Photo point 2 Looking east from proposed building envelope at Grassland grassland vegetation on proposed Lot 1. (TANX Environmental, 2025)

Photo point 4 Looking west from proposed building envelope at Grassy Woodland vegetation on proposed Lot 1. (TANX Environmental, 2025)

2.7 LOT 2 EXISTING RESIDENCE BUSHFIRE HAZARD ANALYSIS

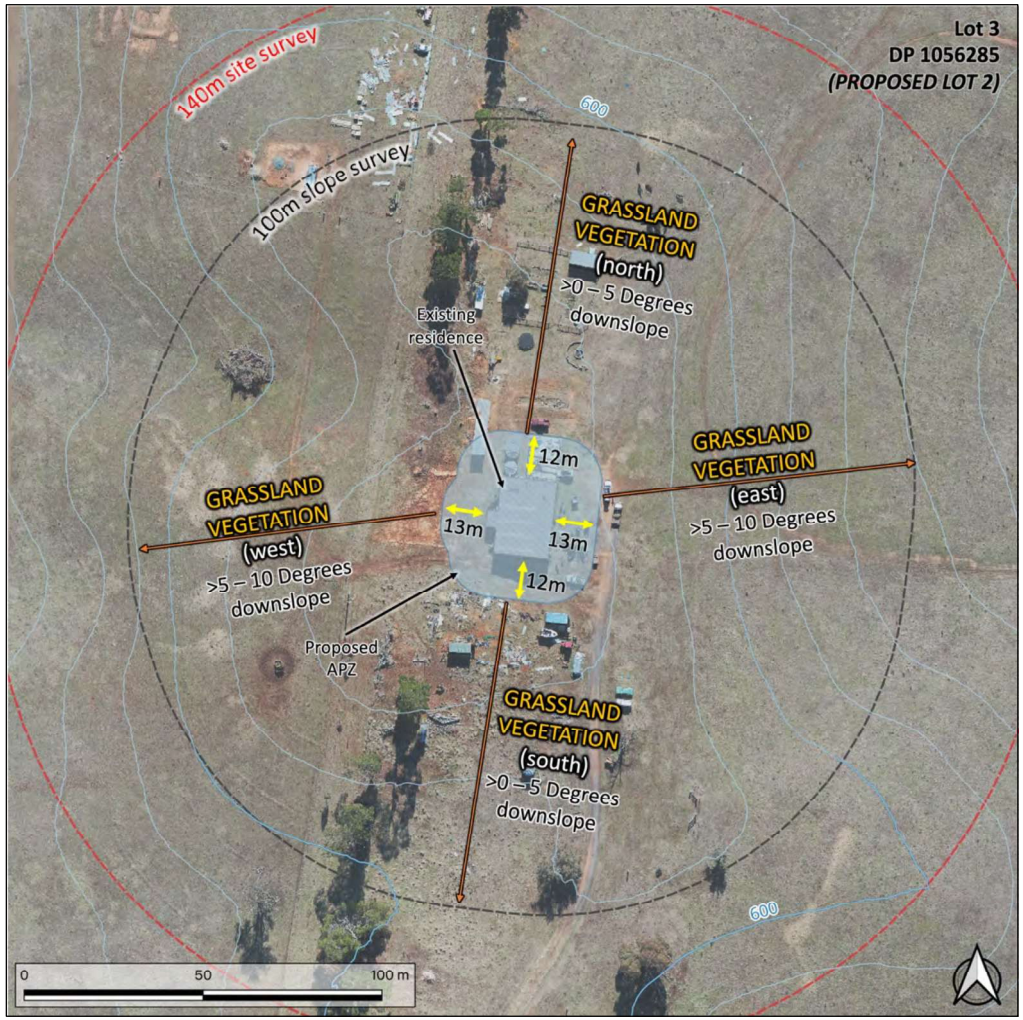


Figure 11 – Showing proposed 29 kW/m² APZ setback distances, vegetation classification and slope for the existing residence on proposed Lot 2. Indicative only. Not to scale. (TANX Environmental, 2025)

HAZARD and APZ ASSESSMENT:

Vegetation Classification

Grassland (North, East, South and West)

Distances required for the creation of APZ setbacks.

The distances below are the minimum setbacks required for a BAL-29 APZ, measured from the existing dwelling to hazard vegetation to ensure a maximum radiant heat flux of no greater than 29 kW/m².

North – 12 m

East – 13 m

South – 12 m

West – 13 m

LOT 2 EXISTING RESIDENCE PHOTO POINTS

Figure 12 – Lot 2 existing residence associated photo points. (TANX Environmental, 2025)

PHOTOGRAPHIC OVERVIEW OF THE EXISTING RESIDENCE ON PROPOSED LOT 2

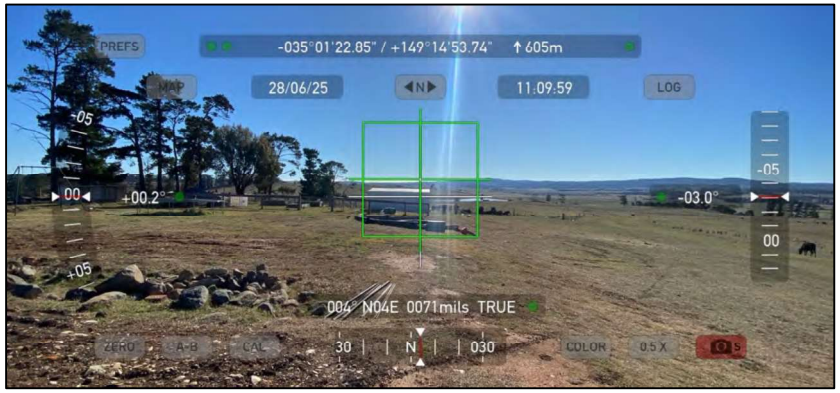


Photo point 5 Looking north at the established and well maintained APZ north of the existing residence. (TANX Environmental, 2025)

Photo point 7 Looking south at the established and well maintained APZ south of the existing residence. (TANX Environmental, 2025)

Photo point 6 Looking east at the established and well maintained APZ east of the existing residence. (TANX Environmental, 2025)

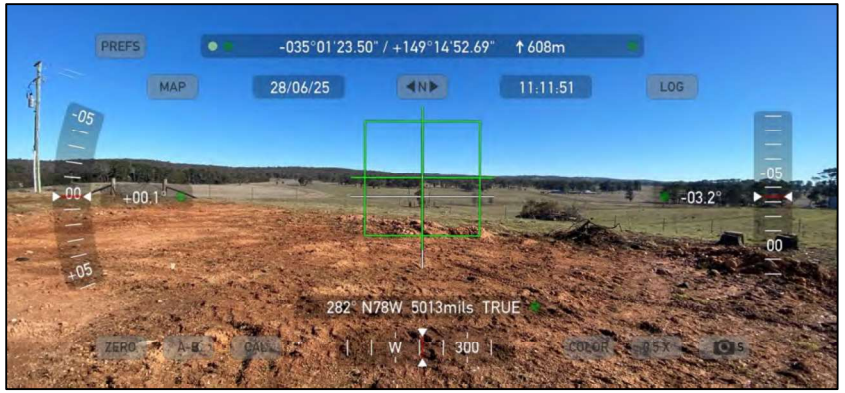


Photo point 8 Looking west at the established and well maintained APZ west of the existing residence. (TANX Environmental, 2025)

Photo point 9 Looking south-east at the existing residence, 2 x ~22,500 L tanks seen on left, eave and shadow of studio (>6 m from residence) visible on far right. (TANX Environmental, 2025)

Photo point 11 Looking north-west at existing residence. (TANX Environmental, 2025)

Photo point 10 Looking south-west at existing residence. (TANX Environmental, 2025)

Photo point 12 Looking north-east at existing residence. (TANX Environmental, 2025)

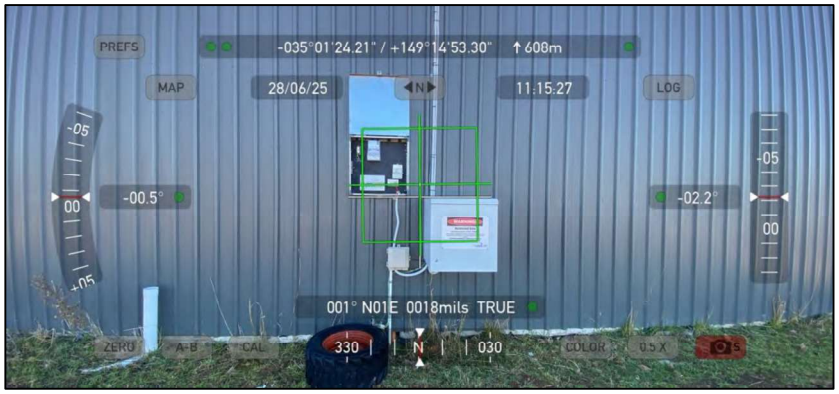


Photo point 13 Looking at mains power supply, southern side of residence . (TANX Environmental, 2025)

Photo point 15 Looking at water supply (note unmeshed vent above hot water tank) . (TANX Environmental, 2025)

Photo point 14 Looking at example of glazed element (note no flyscreens and example of gaps at intersection of cladding and timber framing. (TANX Environmental, 2025)

Photo point 16 Looking at southern side of detatched studio (left of centre) and main residence (on right). (TANX Environmental, 2025)

Photo point 17 Looking at western side of detatched studo (left) and main residence (right). (TANX Environmental, 2025)

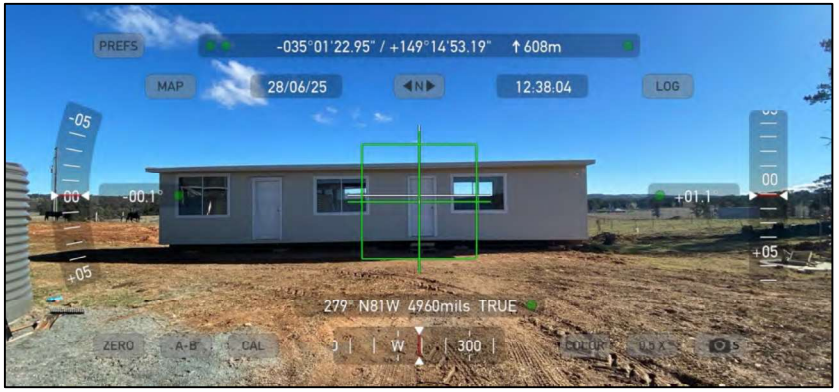


Photo point 19 Looking at eastern side of detatched studio. (TANX Environmental, 2025)

Photo point 18 Looking at northern side of detatched studio . (TANX Environmental, 2025)

2.8 PHOTOGRAPHIC OVERVIEW OF ACCESS

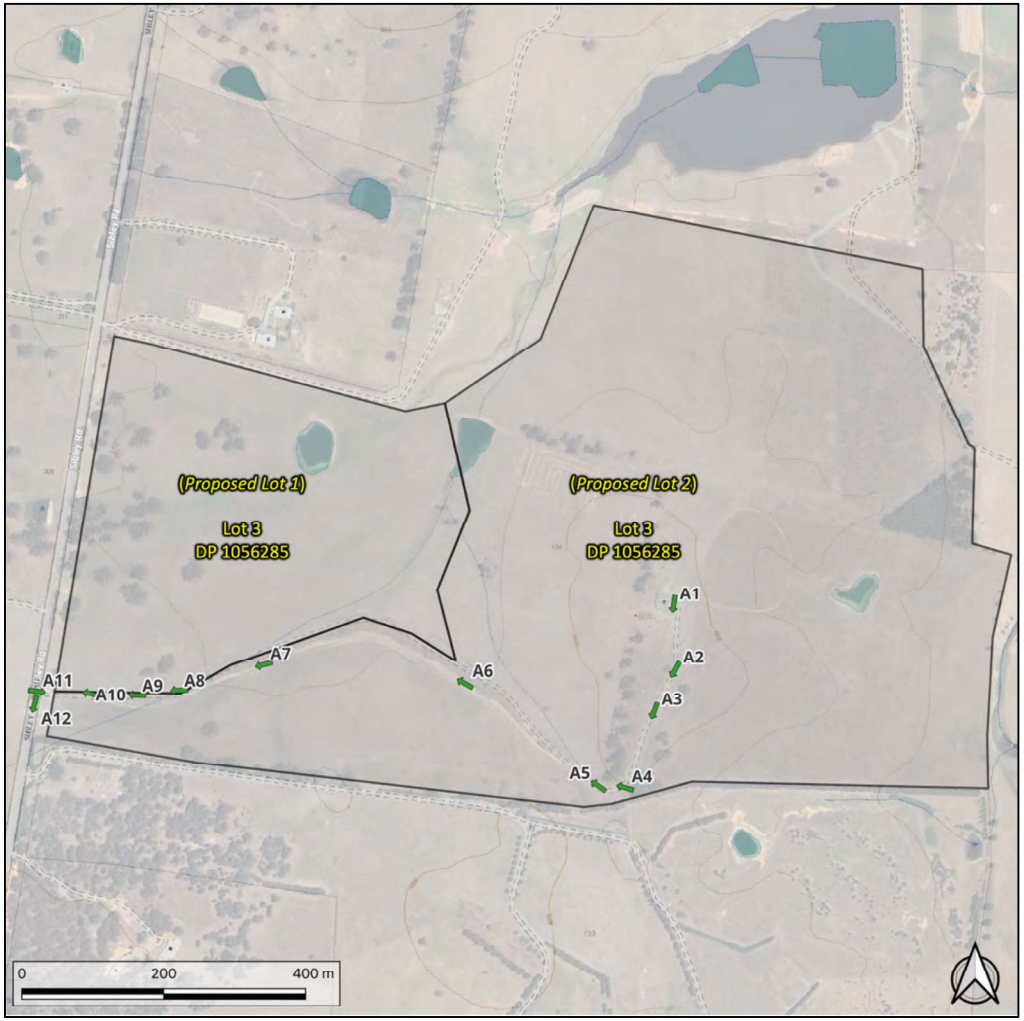


Figure 13 – Access / egress photo points (points A12 & A13 south of map extent. (TANX Environmental, 2025)

Egress photo point A1 Looking south along egress route, existing residence on right. (TANX Environmental, 2025)

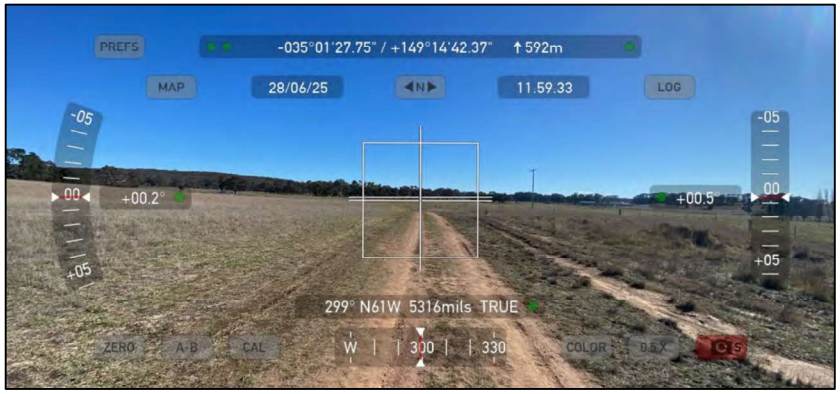
Egress photo point A2 Looking south along egress route. (TANX Environmental, 2025).

Egress photo point A3 Looking south along egress route . (TANX Environmental, 2025)

Egress photo point A4 Looking west along egress route. (TANX Environmental, 2025)

Egress photo point A5 Looking west along egress route. (TANX Environmental, 2025)

Egress photo point A7 Looking west along egress route. (TANX Environmental, 2025)



Egress photo point A6 Looking west along egress route. (TANX Environmental, 2025).

Egress photo point A8 Looking west along egress route. (TANX Environmental, 2025)

Egress photo point A9 Looking west along egress route. (TANX Environmental, 2025)

Egress photo point A11 Looking at entrance to proposed Lot 2 from Sibley Road (proposed Lot 1 on left behind white vehicle. (TANX Environmental, 2025)

Egress photo point A10 Looking west along egress route. (TANX Environmental, 2025).

Egress photo point A11 Looking south from entrance to subject site along Sibley Road. (TANX Environmental, 2025)

Egress photo point A12 Looking north-east at intersection of Sibley Road (a no through road) and Back Creek Road (a through road). (TANX Environmental, 2025)

Egress photo point A13 Looking east along Back Creek Road towards Gundaroo. (TANX Environmental, 2025).

2.9 BUSHFIRE THREAT ANALYSIS CONCLUSIONS

VEGETATION FORMATIONS

Vegetation formations within 140 m of the Subject Site were identified and classified in accordance with Appendix A1.2 of PBP (2019).

Lot	Aspect	Formation
1 BE	N | E	Grassland
1 BE	S | W	Grassy Woodland
2 Residence	N | E | S | W	Grassland

FIRE DANGER INDEX

The fire danger index for the site has been determined per the NSW RFS.

NSW Fire Area	Fire Danger Index (FDI)
Southern Ranges	100

SLOPE AND APZ SETBACK ASSESSMENT

Site slope APZ setbacks (currently available and anticipated) were assessed per A1.4, A1.5 and Table A1.12.5 PBP 2019.

BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT

The resultant BAL ratings (Table 3) were determined per Table A1.12.5 of PBP (2019).

Table 4 – BAL Table

Lot	Aspect	Vegetation Formation	Slope	APZ Setback	Max Radiant Heat
1	N	Grassland	0° - <5° Downslope	26 m	12.5 kW/m²
1	E	Grassland	0° - <5° Downslope	26 m	12.5 kW/m²
1	S	Grassy Woodland	Flat / upslope	26 m	12.5 kW/m²
1	W	Grassy Woodland	Flat / upslope	26 m	12.5 kW/m²
2	N	Grassland	0° - <5° Downslope	12 m	29 kW/m²
2	E	Grassland	>5° - <10° Downslope	13 m	29 kW/m²
2	S	Grassland	0° - <5° Downslope	12 m	29 kW/m²
2	W	Grassland	>5° - <10° Downslope	13 m	29 kW/m²

GENERAL STATEMENT ON BUSHFIRE HAZARD

Given:

- the prominence of Grassy Woodland and Grassland vegetation surrounding the proposed building envelope and existing dwelling providing relatively moderate fuel conditions,
- the slightly undulating topography moderating fire intensity and making fire behaviour comparatively less erratic and more predictable than steep topography, and
- the extensive setbacks available for the creation and management of APZs,

The Subject Site broadly presents a low to moderate hazard bushfire environment. In response, the proposed development generally requires the standard suite of protection measures per PBP 2019 to address this hazard.

However, access to the allocated building envelope in Lot 1 is extended via no through roads, a departure from the acceptable solutions, resulting in a performance-based design approach, as discussed in the next chapter.

3 BUSHFIRE PROTECTION MEASURES

DISCUSSION AND RECOMMENDATIONS:
In response to the bushfire threat analysis, a suite of Bushfire Protection Measures (BPMs) will be adopted for the proposed subdivision per Section 5 Residential and Rural Residential Subdivisions.

A statement of compliance of the proposed subdivision against PBP 2019 is provided in Appendix A of this report.

3.1 ASSET PROTECTION ZONES:

Discussion:

Table 5 (below) details the minimum APZ setback dimensions for any future dwelling on Lot 1 and the existing dwelling on Lot 2 to ensure that these dwellings are not exposed to radiant heat levels exceeding 29 kW/m^2.

The APZ setback dimensions proposed for Lot 1 exceed the minimum requirements specified by Table A1.12.2 PBP 2019 and, therefore, satisfies the acceptable solutions for APZs.

The APZ setback dimensions for proposed Lot 1 has been specified to ensure that future dwellings are not exposed to radiant heat levels exceeding 12.5 kW/m^2 and, therefore, exceed the minimum requirements.

The radiant heat level of 12.5 kW/m^2 is less than the allowable 29 kW/m^2. This intended design feature will provide a higher level of safety and resilience to the future dwellings of Lots 1. This design feature forms part of a performance-based design to address extended access/egress discussed in Section 3.3.

Recommendations:

- Lot 1 APZ setback dimensions are to comply with the minimum dimensions provided in Table 5 below.
- Lot 1 APZ setback dimensions shall not be decreased during future development.
- Lot 1 APZ setback dimensions may be increased during future development to reduce the radiant heat exposure and therefore the corresponding BAL rating of any future works.
- At the commencement of building works and in perpetuity, all land within the area identified as APZ is to be managed as APZ Inner Protection Area in accordance with the requirements of Asset Protection Zone Standards - Appendix 4 of PBP (2019) (Attachment B).

Table 5- Lots 1 and 2 APZ setback and BAL requirements

Lot	Aspect	Vegetation Formation	Slope	APZ Setback	Max Radiant Heat
1	N	Grassland	0° - <5° Downslope	26 m	12.5 kW/m²
1	E	Grassland	0° - <5° Downslope	26 m	12.5 kW/m²
1	S	Grassy Woodland	Flat / upslope	26 m	12.5 kW/m²
1	W	Grassy Woodland	Flat / upslope	26 m	12.5 kW/m²
2	N	Grassland	0° - <5° Downslope	12 m	29 kW/m²
2	E	Grassland	>5° - <10° Downslope	13 m	29 kW/m²
2	S	Grassland	0° - <5° Downslope	12 m	29 kW/m²
2	W	Grassland	>5° - <10° Downslope	13 m	29 kW/m²

3.2 LANDSCAPING:

Recommendations:

- All landscape within the areas identified as APZ shall be managed in perpetuity and following the Asset Protection Zone Standards requirements - Appendix 4 of PBP (2019) (Attachment B).

3.3 ACCESS:

Discussion (Performance solution):

The existing residence on Lot 2 has direct access to Sibley Road (a public no through road) via an existing well-maintained gravel property access road ~1200 m in length with a trafficable road width of 4m. No modifications or improvements are proposed for access to Lot 2.

Any future dwellings on Lot 1 will be accessed from Sibley Road (a public no through road) via a ~250 m property access road that is a dead end.

At a minimum, the property access roads to Lot 1 will be constructed of a gravel, all-weather, two-wheel-drive road surface with a minimum road width of 4m and an unobstructed clearance height of 4m.

The proposed property access road arrangements for the subdivision will meet most of the acceptable solutions provided in PBP (2019), except for the following departures –

- all roads are through roads;
- dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end;

Performance criteria to be addressed (general access)-

> *Firefighting vehicles are provided with safe, all-weather access to structures.*

Instead of adopting the acceptable solutions offered in PBP 2019, a performance-based design is proposed to satisfy the performance criteria for general access.

Understanding the issue.

Firstly, it should be noted that property access across the subdivision is mainly compliant. Apart from access road length to Lot 1, all other acceptable solutions for access can be adopted.

Secondly, the intent of the 200 m limitation on access should be understood when assessing the performance of the development proposal. In the context of a bushfire event, 200 m is deemed the maximum allowable distance to the relative safety of a public road when through road access cannot be provided, i.e., a dead-end road.

Property access to Lot 1 from a public no through road is up to 250 m.

While traversing the 200 m distance in a typical bushfire-prone environment, there is the potential risk to evacuating residents or responding fire crews from radiant heat exposure, flame contact, reduced visibility and the prospect of a blocked road from falling trees or oncoming traffic, all of which could lead to entrapment. Simply put, the longer that one-way access is, the higher the risk and the less safe egress/access becomes.

Assessment and response to the issue.

If the radiant heat levels at the future dwellings can be reduced to below the minimum acceptable level, the future dwelling is made more resilient through higher levels of construction and additional water supplies provided. The site becomes safer overall for attending fire crews and occupants and places less reliance on access as a safety measure.

In addition to the above, if the radiant heat levels at the building envelope can be reduced to below the minimum acceptable level, the future dwelling made more resilient through higher levels of construction, and additional water supplies provided, then the site becomes overall safer for both attending fire crews and occupants and placing less reliance on access as a safety measure.

To increase access safety, several improvements to the future dwelling on Lot 1 are proposed:

- Enlarged and fixed APZs, reducing radiant heat levels to 12.5 kW/m^2 down from 29 kW/m^2 making the property more defendable.
- Improved construction of BAL-19, up from BAL-12.5 making the future dwellings more resilient and providing a higher level of safety

should fire crews seek shelter during the active defense of the dwelling.

- Min. of 40,000 L of static water supply (non-combustible tank/s) in place of a stand-alone 20,000 L, enabling fire crews and occupants to undertake active protection for extended periods.

This performance-based design will enable future occupants and attending fire crews to conduct a protect-in-place strategy more safely, if needed, during a bushfire event, given the enlarged APZ dimensions, improved construction rating, and increased water supplies, reducing the reliance on access for safety.

Access for the proposed subdivision is deemed to satisfy the performance requirements for access as per PBP (2019).

Recommendations for Access: -

- Access to the proposed Lots 1, and 2 per the requirements for Access – Table 5.3 b of PBP (2019) provided here in (Attachment A) except that the property access road for Lot 1 can be greater than 200 m without an alternative access route.

3.4 WATER SUPPLIES

Discussion:

Lot 2 has the following sources of existing water supplies:

- 2 x ~22,500 L poly water tank located on the northern side of the existing residence within the APZ.

Lot 2 existing residence has sufficient water supplies exceeding 20,000 L, therefore complying with the requirements of Section 5.1.3 of PBP 2019.

The provision and siting of water supplies for Lot 1 will occur at the time of construction of a future dwelling.

Recommendations:

- Lot 1 future dwelling will be provided with a minimum of 40,000 L of static water supplies at the time of future development as part of the performance-based design, with all other Water Supply requirements as per the requirements for Water Supplies – Table 5.3 c of PBP (2019) provided herein (Attachment A).
- All fittings and specifications per Table 7.4a PBP 2019 for water supplies are detailed in Attachment A.

3.5 ELECTRICITY SERVICES

Discussion:

Lot 2 residence electricity supply is existing and outside the scope of this assessment and therefore nil recommendations.

Future development of Lot 1 will be provided with electricity fed from the grided network.

Recommendations:

- Electrical services for Lot 1 are to be provided per Table 7.4a PBP 2019, detailed here in Attachment A.

3.6 GAS SERVICES

Discussion:

Lot 2 residence currently has no gas supply and therefore nil recommendations for this Lot.

The provision of gas supplies may occur during the construction of any future dwellings on Lot 1.

Recommendations:

- If applicable, bottled gas supplies for Lot 1 future dwellings are to be provided per Table 7.4a PBP 2019, detailed in Attachment A.

3.7 CONSTRUCTION REQUIREMENTS

Discussion:

The APZ setback dimensions for Lots 1 and 2 are provided (Table 5) to ensure that the existing dwelling on Lot 2 can achieve a radiant heat flux of less than 29 kW/m^2 and any future dwelling on Lot 1 can achieve a radiant heat flux of less than 12.5 kW/m^2 and therefore comply with Table A1.12.2 of PBP 2019.

The level of construction required for a future dwelling on Lot 1 is fixed, however, at BAL-19 as part of a performance-based design to address extended property access/egress.

While all new dwellings within a subdivision must comply with PBP 2019, existing homes can also benefit from Bushfire Protection Measures such as improved ember protection. Therefore, conditions may be applied to the subdivision consent.

Recommendations:

- The construction of a future dwelling on Lot 1 must comply with Sections 3 and Section 6 (BAL-19) of Australian Standard AS3959-2018 Amd 2 Construction of buildings in bushfire-prone areas as amended or NASH Standard (1.7.14 updated) National Standard Steel Framed Construction in Bushfire Areas – 2014 as appropriate,

- A legally binding covenant (Section 88b instrument) stating that any future residence on Lot 1 must be constructed to no less than BAL-19 to ensure the level of future construction is complied with.

To improve ember protection of the existing residence on Lot 2 (where currently not available), several enhancements are recommended as per NSW RFS Upgrading of Existing Buildings, 2014, including:

  - Enclose all openings, including subfloor areas, openable windows, vents, weep holes and eaves;
  - Cover openings with a non-corrosive metal screen mesh with a maximum aperture of 2mm;
  - Fit external doors with draft excluders; and
  - Install non-combustible gutter and valley leaf guard as required.

3.8 Emergency Management Planning

Recommendation:

- Before occupying any new dwelling, residents should develop an *NSW RFS Bushfire Survival Plan.*
- EMBER Bushfire Consulting strongly recommends a "leave early" approach, specifically when fire conditions reach a Fire Danger Rating of Extreme.

3.9 Environmental Considerations

Information regarding the potential impact that the proposed development may have on the environmental and cultural values of the site is required as part of the issuing of the bush fire safety authority by the NSW RFS.

EMBER Bushfire Consulting understands from the proponent that any necessary environmental and cultural investigations are being taken as part of the development application process and will be submitted as part of the Statement of Environmental Effects.

Furthermore, if the recommended protection measures impact any environmental or culturally sensitive areas of the lot, a consultation will be made to provide alternative protection measures.

At the time of this bushfire assessment, no known environmental or cultural values or significant environmental features have been identified on the Subject Site, beyond the generic terrestrial biodiversity and riparian lands and watercourses displayed in Figure 6 above.

3.10 BUSHFIRE PROTECTION MEASURES CONCLUSION

The subdivision has been assessed and found capable of the following:

- APZs can provide sufficient space and reduced fuel loads to ensure radiant heat levels at the building will not exceed 29 kW/m^2.
- Landscaping can be managed to minimise flame contact, reduce radiant heat levels, minimise embers and reduce the effect of smoke on residents and firefighters.
- Safe operational access can be provided to structures and water supplies for emergency services while providing for evacuating residents, and suitable access is provided for fire management and APZ management purposes.
- Providing water for the protection of buildings during and after the passage of a bush fire, and
- Gas and electricity will be located so as not to contribute to the risk of fire to a building.

4 BUSHFIRE MANAGEMENT PLAN - SUMMARY OF RECOMMENDATIONS.

4.1 ASSET PROTECTION ZONES

- Lots 1 and 2 APZ setback dimensions are to comply with the minimum dimensions provided in Table 5 below.
- Lot 1 APZ setback dimensions shall not be decreased during future development.
- Lot 1 APZ setback dimensions may be increased during future development to reduce the radiant heat exposure and therefore the corresponding BAL rating of any future works.
- At the commencement of building works and in perpetuity, all land within the area identified as APZ is to be managed as APZ Inner Protection Area in accordance with the requirements of Asset Protection Zone Standards - Appendix 4 of PBP (2019) (Attachment B).

Table 5- Lots 1 & 2 APZ setback and BAL requirements

Lot	Aspect	Vegetation Formation	Slope	APZ Setback	Max Radiant Heat	BAL Rating Adopted
1	N	Grassland	0° - <5° Downslope	26 m	12.5 kW/m²	BAL 19
1	E	Grassland	0° - <5° Downslope	26 m	12.5 kW/m²	
1	S	Grassy Woodland	Flat / upslope	26 m	12.5 kW/m²	
1	W	Grassy Woodland	Flat / upslope	26 m	12.5 kW/m²	
2	N	Grassland	0° - <5° Downslope	12 m	29 kW/m²	N/A
2	E	Grassland	>5° - <10° Downslope	13 m	29 kW/m²	
2	S	Grassland	0° - <5° Downslope	12 m	29 kW/m²	
2	W	Grassland	>5° - <10° Downslope	13 m	29 kW/m²	

4.2 LANDSCAPING

- All landscape within the areas identified as APZ shall be managed in perpetuity and following the Asset Protection Zone Standards requirements - Appendix 4 of PBP (2019) (Attachment B).

4.3 ACCESS

- Nil requirements for access to the existing residence on Lot 2.
- Access to the proposed Lot 1 per the requirements for Access – Table 5.3 b of PBP (2019) provided here in (Attachment A) except that the

property access road for Lot 1 can be greater than 200 m without an alternative access route.

4.4 WATER SUPPLIES, ELECTRICITY AND GAS

- Nil requirements for water supplies to the existing residence on Lot 2.
- Lot 1 future dwelling will be provided with a minimum of 40,000 L of static water supplies at the time of future development as part of the performance-based design and otherwise are as per the requirements for Water Supplies – Table 5.3 c of PBP (2019) provided herein (Attachment A).
- All fittings and specifications per Table 7.4a PBP 2019 for water supplies are detailed in Attachment A.

4.5 CONSTRUCTION

- The construction of a future dwelling on Lot 1 must comply with Sections 3 and Section 6 (BAL-19) of Australian Standard AS3959-2018 Amd 2 Construction of buildings in bushfire-prone areas as amended or NASH Standard (1.7.14 updated) National Standard Steel Framed Construction in Bushfire Areas – 2014 as appropriate; and
- A legally binding covenant (Section 88b instrument) stating that any future residence on Lot 1 must be constructed to no less than BAL-19 to ensure the level of future construction is complied with.

To improve ember protection of the existing residence on Lot 2 (where currently not available), several enhancements are recommended as per NSW RFS Upgrading of Existing Buildings, 2014, including:

  - Enclose all openings, including subfloor areas, openable windows, vents, weep holes and eaves;
  - Cover openings with a non-corrosive metal screen mesh with a maximum aperture of 2mm;
  - Fit external doors with draft excluders; and
  - Install non-combustible gutter and valley leaf guard as required.

4.6 EMERGENCY MANAGEMENT PLANNING

Recommendation:

- Before occupying any new dwelling, residents should develop an *NSW RFS Bushfire Survival Plan.*
- EMBER Bushfire Consulting strongly recommends a "leave early" approach, specifically when fire conditions reach a Fire Danger Rating of Extreme

5 CONCLUSION

This report documents the findings from a bush fire assessment conducted for a proposed two (2) lot rural residential subdivision at Lot 3 DP1056285, 156 Sibley Road, Gundaroo.

APZ setback dimensions within the proposed Lots 1 and 2 will ensure that the existing and future dwellings are not exposed to radiant heat levels exceeding 29 kW/m^2 and will comply with Table A1.12.2 of PBP 2019.

Access to Lots 1 and 2 of the proposed subdivision is well provided for and will generally comply with the acceptable solutions set out in PBP (2019). Where the acceptable solutions cannot be met, a performance-based assessment of the proposal is undertaken, which considers the compliant APZ dimensions, higher levels of construction and increased water supplies, all of which improve the level of safety, resilience and defendability of the future structures while placing less reliance on access as a safety measure.

As part of the Performance-Based Design to address extended egress, however, any future dwelling on Lot 1 is required to be constructed to BAL-19 per the relevant sections of Australian Standard 3959-2018 Construction of buildings in bushfire-prone areas.

Electricity, water and gas supplies will be provided during future development and must comply with the general specifications provided here.

At the time of this report, the development is not known to have any significant environmental or cultural values within the subdivision areas requiring consideration as part of this assessment.

Based on the bushfire assessment and the recommendations contained in this report, the proposed development is deemed to comply with the specific and broad objectives of PBP (2019) and the requirements of the Rural Fire regulations (2013) and, therefore, is suitable for submission to the NSW RFS for the issuing of a bush fire safety authority.

Be advised that the NSW RFS may alter recommendations or impose additional conditions as it feels necessary to offer further protection to the structures, occupants and firefighters during a bushfire.

6 REFERENCE

- Keith D. (2004) "Ocean Shores to Desert Dunes", Department of Environment and Conservation, Sydney.
- NSW Rural Fire Service. (2019) "Planning for Bushfire Protection". Sydney
- Standards Australia, (2018) "AS/NZS 3959-2018 Construction of buildings in bush fire prone areas."
- Six Maps, NSW Department of Finance and Services, accessed 28 June 2025, https://maps.six.nsw.gov.au/#
- ePlanning Spatial Viewer, Department of Planning Industry and Environment, accessed 28 June 2025, https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address

ATTACHMENT A – PBP 2019 COMPLIANCE ASSESSMENT

The following compliance assessment tables show the performance criteria for each protection measure for the proposed development. The table also identifies which avenue is used to achieve compliance, details of the acceptable solution and specific information on how this is achieved for the proposed development. Where performance-based solutions are proposed, further details are provided in Section 3 – Bushfire Protection Measures.

Performance Criteria	Method of Compliance	Acceptable Solution	Comments / Details
ASSET PROTECTION ZONES			
• Potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m^2 on each proposed lot.	Will meet the acceptable solutions.	• APZs are provided per Tables A1.12.2 and A1.12.3 based on the FFDI.	Can Comply
• APZs are managed and maintained to prevent the spread of a fire towards the building.	Will meet the acceptable solutions.	• APZs are managed per the requirements of Appendix 4.	Can Comply
• The APZs is provided in perpetuity.	Will meet the acceptable solutions.	• APZs are wholly within the boundaries of the development site.	Can Comply
• APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	Will meet the acceptable solutions.	• APZs are located on lands with a slope less than 18 degrees.	Can Comply
LANDSCAPING			
• Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Will meet the acceptable solutions.	• landscaping is per Appendix 4; and • fencing is constructed per section 7.6.	Can Comply

ACCESS (General Requirements)			
• firefighting vehicles are provided with safe, all-weather access to structures.	Performance-Based Design.	• property access roads are two-wheel drive, all-weather roads; • perimeter roads are provided for residential subdivisions of three or more allotments; • subdivisions of three or more allotments have more than one access in and out of the development; • traffic management devices are constructed to not prohibit access by emergency services vehicles; • maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient; • all roads are through roads; • dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end; • where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road; • 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; and • 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.	Performance based design per Section 3.3 of this report.
• the capacity of access roads is adequate for firefighting vehicles.	Will meet the acceptable solutions.	• the capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges / causeways are to clearly indicate load rating.	Can comply
• there is appropriate access to water supply.	Will meet the acceptable solutions.	• hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression; • hydrants are provided per the relevant clauses of AS 2419.1:2005 - Fire hydrant installations System design, installation and commissioning; and • there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	Can comply
PERIMETER ROADS			
• access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during	Perimeter roads are not applicable.	• are two-way sealed roads; • minimum 8m carriageway width kerb to kerb; • parking is provided outside of the carriageway width; • hydrants are located clear of parking areas;	Perimeter roads are not applicable.

firefighting and emergency management on the interface.		• are through roads, and these are linked to the internal road system at an interval of no greater than 500m; • curves of roads have a minimum inner radius of 6m; the maximum grade road is 15 degrees and average grade of not more than 10 degrees; • the road crossfall does not exceed 3 degrees; and • a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	
NON-PERIMETER ROADS			
• access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Non-Perimeter roads are not applicable.	• minimum 5.5m carriageway width kerb to kerb; • parking is provided outside of the carriageway width; • hydrants are located clear of parking areas; • roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m; • curves of roads have a minimum inner radius of 6m; • the road crossfall does not exceed 3 degrees; and • a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	Non-Perimeter roads are not applicable.
PROPERTY ACCESS			
• firefighting vehicles can access the dwelling and exit the property safely.	Will meet the acceptable solutions.	• 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. In circumstances where this cannot occur, the following requirements apply: ○ minimum 4m carriageway width; ○ in forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay; ○ a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; ○ provide a suitable turning area per Appendix 3; ○ curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress; ○ the minimum distance between inner and outer curves is 6m; ○ the crossfall is not more than 10 degrees; ○ maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and ○ a development comprising more than three dwellings has access by dedication of a road and not by right of way.	Can comply.

		Note: Some short constrictions in the access may be accepted where they are not less than 3.5m wide, extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above.	
WATER SUPPLIES			
• adequate water supplies is provided for firefighting purposes.	Will meet the acceptable solutions.	• reticulated water is to be provided to the development where available; • a static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and • static water supplies shall comply with Table 5.3d.	40,000 L static water supplies is proposed to Lot 1 residence as part of a performance based design to address extended egress.
• water supplies are located at regular intervals; and • the water supply is accessible and reliable for firefighting operations.	Fire hydrants are not applicable.	• fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2005; • hydrants are not located within any road carriageway; and • reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	Not applicable.
• flows and pressure are appropriate.	Fire hydrants are not applicable.	• fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.	Not applicable.
• the integrity of the water supply is maintained.	Will meet the acceptable solutions.	• all above-ground water service pipes are metal, including and up to any taps; and • above-ground water storage tanks shall be of concrete or metal.	Can comply
ELECTRICITY SERVICES			

• location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	Will meet the acceptable solutions.	• where practicable, electrical transmission lines are underground;
		• where overhead, electrical transmission lines are proposed as follows:
		  ○ lines are installed with short pole spacing of 30m, 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 ISSC3 Guideline for Managing Vegetation Near Power Lines.
			Can comply

GAS SERVICES			
• location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	Will meet the acceptable solutions.	• reticulated or bottled gas is installed and maintained per AS/NZS 1596:2014 - The storage and handling of LP Gas, the requirements of relevant authorities, and metal piping is 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 metal; • polymer-sheathed flexible gas supply lines are not used; and • above-ground gas service pipes are metal, including and up to any outlets.	Can comply

ATTACHMENT B – APZs,
LANDSCAPING, FENCES AND GATES

In Australia, bush fires are a natural and essential aspect of the landscape as many plants and animals have adapted to fire as part of their life cycle. However, development adjacent to bush land areas has increased the risk of fire impacting on people and their assets. The impact on property and life can be reduced with responsible preparation and management of bush fire hazards.

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

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

A4.1 Asset protection zones

An APZ is a fuel-reduced area surrounding a built asset or structure.

For a complete guide to APZs and landscaping, download the NSW RFS document *Standards for Asset Protection Zones* at: www.rfs.nsw.gov.au/resources/publications.

An APZ provides:

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

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

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

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

The APZ should be located between an asset and the bush fire hazard.

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

In forest vegetation, the APZ can be made up of an inner protection area (IPA) and an outer protection area (OPA).

Inner protection areas (IPAs)

The IPA is the area closest to the asset and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and be a defendable 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 dwelling, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

Trees:

- 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 ground
- canopies should be separated by 2 to 5m
- preference should be given to smooth barked and evergreen trees.

Shrubs:

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings
- 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.

Grass:

- 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.

Outer protection areas (OPAs)

An OPA is located between the IPA and the unmanaged vegetation. Vegetation within the OPA can be managed to a more moderate level. The reduction of fuel in this area substantially decreases the intensity of an approaching fire and restricts the pathways to crown fuels; 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.

In practical terms the OPA is an area where there is maintenance of the understorey and some separation in the canopy.

When establishing and maintaining an OPA the following requirements apply:

Trees:

- tree canopy cover should be less than 30%
- trees should have canopy separation
- canopies should be separated by 2 to 5m

Shrubs:

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

Grass:

- should be kept mown (as a guide grass should be kept to no more than 100mm in height)
- leaf and other debris should be mown, slashed or mulched.

An APZ should be maintained in perpetuity to ensure ongoing protection from the impact of bush fires. Maintenance of the IPA and OPA to the standards given above should be undertaken on an annual basis, in advance of the fire season, as a minimum.

FENCES & GATES (SECTION 7.6 PBP 2019)

Fences and gates in bush fire prone areas may play a significant role in the vulnerability of structures during bush fires. In this regard, all fences in bush fire prone areas should be made of either hardwood or non-combustible material.

However, in circumstances where the fence is within 6m of a building or in areas of BAL-29 or greater, they should be made of non-combustible material only.

ATTACHMENT C - ACCESS

A3.3 Vehicle turning head requirements

Dead ends that are longer then 200m must be provided with a turning head area that avoids multipoint turns. "No parking" signs are to be erected within the turning head.

The minimum turning radius shall be in accordance with Table A3.2. Where multipoint turning is proposed the NSW RFS will consider the following options:

Figure A3.3

Multipoint turning options.