



BUSHFIRE ASSESSMENT REPORT

20 OLD SCHOOL ROAD,
NARRANDERA

Lot 11 DP 880390

Proposed Rural Residential Subdivision

Prepared for Ed Spencer

26.7.23

First Issue



EXECUTIVE SUMMARY

EMBER Bushfire Consulting has been engaged by Ed Spencer to prepare a bushfire assessment report for a proposed rural residential subdivision at 20 Old School Road, Narrandera.

The proposed subdivision is located on bushfire-prone land as designated by Narrandera Shire Council.

This assessment adopts a methodology provided under the NSW RFS document Planning for Bushfire Protection 2019 (PBP 2019) to assess the adequacy of bushfire protection of the subdivision as planned.

The development proposal is to divide a ~3.55 ha rural residential lot into two (2) separate title rural lots, including allocated or indicative building envelopes, Asset Protection Zone's (APZs), electricity supply and property access roads.

This report establishes the level of bushfire threat to the proposed subdivision. It examines bushfire protection for any future residence on Lot 2 for measures such as Asset Protection Zones (APZs), access and water, gas and electricity services and construction standards.

The existing dwelling on proposed lot 1 is also assessed for complying water supplies and upgrades to improve ember protection.

The APZ dimensions within the proposed Lot 2 will ensure that the future dwelling is not exposed to radiant heat levels exceeding 29 kW/m², therefore complying with Table A1.12.3 of PBP 2019.

Access to Lot 2 of the proposed subdivision is well provided for and will comply with the acceptable solutions in PBP 2019.

The new lot will require firefighting water supplies and utilities under the requirements of PBP 2019 upon further development of the lot.

The existing residence has well-established and well-maintained APZs and reticulated water supplies, satisfying the requirements of PBP 2019. Ember protection improvements are recommended where not already provided. Access, electricity and gas are existing and considered outside the scope of this report, therefore, no improvements to these are proposed.

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 (2022) 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 20 Old School Road, Narrandera
EMBER Reference:	Narrandera JD2.228.23
Lot & DP Number	Lot 11 DP 880390
Street Address	20 Old School Road, Narrandera
Local Government Area	Narrandera Shire Council
Description of the development	Rural Residential Subdivision
Type of assessment under PBP 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 bushfire-prone land that could lawfully be used for residential or rural residential purposes.
Has a pre-DA lodgment or bushfire design brief been provided to the NSW RFS?	NO
Highest radiant heat flux determined for the development.	<29kW/m ²
Highest level of construction applicable:	Bushfire Attack Level (BAL) - 29
Accreditation Scheme / Level of accreditation	Bushfire Planning and Design (BPAD) Accreditation Scheme administered by the Fire Protection Association Australia (FPAA)
Prepared by:	Peter Hague (EMBER Bushfire Consulting)
Verified by:	Jeff Dau – BPAD 33128 - Level 3

The author (Jeffrey Dau) hereby certifies that:

- A thorough, in-person survey of the subject site was carried out by Peter Hague from EMBER Bushfire Consulting on 11th June 2023;
- 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 2019;
- That I am a person recognised by NSW RFS as a qualified consultant in bush fire risk assessment; and
- That subject to the recommendations in this report, the proposed development conforms to the relevant specifications and requirements of PBP.

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



26/7/2023



DOCUMENT CONTROL

Information	Detail
Document Title:	Bushfire Assessment Report 20 Old School Road, Narrandera
EMBER Reference:	Narrandera JD2.228.23
Other Reference:	Job Reference:
Version:	1.0
Version Control:	1.0 – First Issue – 26.7.23
Status:	Issued

KEY DETAILS OF DEVELOPMENT

Information	Detail
Zoning of subject land	RU5 – Village
Zoning of adjoining lands	RU5 – Village
Lot size	~3.55 ha
Staging issues	Nil
Development classification	Rural Residential Subdivision
Type of assessment	Rural Residential Subdivision
Fire weather area	Northern Riverina
Fire Danger Index	80
Predominant vegetation	Grassland and Grassy Woodlands Vegetation
Slope	Ranging from upslope to 5° downslope
Environmental constraints	Typical Biodiversity Offset Scheme (BOS)
Cultural constraints	Nil known
Method of meeting performance requirements	Using acceptable solutions.

HOW TO READ THIS DOCUMENT

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

Section 2 Assessing the bushfire threat - Identification of critical factors contributing to bushfire threat, planning considerations and assessment of the overall threat.

Section 3 Bushfire Protection Measures – Assessment and discussion of the recommended bushfire protection measures 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.

Section 5 Conclusion – Concluding statement.

Attachment A Compliance Assessment – A table detailing how the development satisfies the aims and objectives of Planning for Bushfire Protection 2019.

TABLE OF CONTENTS

1	<u>INTRODUCTION AND OVERVIEW</u>	6	3.2	LANDSCAPING:	28
1.1	BACKGROUND	6	3.3	ACCESS:	28
1.2	AIM AND OBJECTIVES	6	3.4	WATER SUPPLIES	29
1.3	LIMITATIONS AND DISCLAIMER	7	3.5	ELECTRICITY SERVICES	29
1.4	SUBJECT SITE LOCATION	8	3.6	GAS SERVICES	29
1.5	SUBJECT SITE DESCRIPTION	9	3.7	CONSTRUCTION REQUIREMENTS	29
1.6	THE DEVELOPMENT PROPOSAL	10	3.8	EMERGENCY MANAGEMENT PLANNING	30
2	<u>ASSESSING THE BUSHFIRE THREAT</u>	12	3.9	ENVIRONMENTAL CONSIDERATIONS	30
2.1	METHODOLOGY	12	3.10	BUSHFIRE PROTECTION MEASURES CONCLUSION	31
2.2	GENERAL BUSHFIRE ENVIRONMENT	12	4	<u>BUSHFIRE MANAGEMENT PLAN -SUMMARY OF RECOMMENDATIONS.</u>	32
2.3	SUBJECT SITE BUSHFIRE PRONE MAPPING	13	4.1	ASSET PROTECTION ZONES	32
2.4	VEGETATION FORMATIONS INFLUENCING THE SUBJECT	14	4.2	LANDSCAPING	32
2.5	SUBJECT SITE LAND USE AND ZONING	15	4.3	ACCESS	32
2.6	BIODIVERSITY VALUES MAP	16	4.4	WATER SUPPLIES, ELECTRICITY AND GAS	32
2.7	LOT 1 THREAT ANALYSIS AND SUPPORTING INFORMATION	17	4.5	CONSTRUCTION	33
2.8	LOT 2 THREAT ANALYSIS AND SUPPORTING INFORMATION	22	4.6	EMERGENCY MANAGEMENT PLANNING	33
3	<u>BUSHFIRE PROTECTION MEASURES</u>	27	5	<u>CONCLUSION</u>	34
	DISCUSSION AND RECOMMENDATIONS:	27	6	<u>REFERENCE</u>	35
3.1	ASSET PROTECTION ZONES:	27			

1 INTRODUCTION AND OVERVIEW

1.1 BACKGROUND

Ed Spencer has engaged EMBER Bushfire Consulting to prepare a bushfire assessment report for a proposed two (2) lot rural residential subdivision at Lot 11 DP 880390, also known as 20 Old School Road, Narrandera (*the subject site*).

The development proposal is located on land designated bushfire prone by 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 completed on 11.6.23 by Peter Hague from EMBER Bushfire Consulting and peer-reviewed by BPAD Level 3 Accredited Bushfire Practitioner Jeff Dau.

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 bushfire hazard and future dwellings are effectively designed to address the relevant bushfire 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 will recommend protection measures to provide satisfactory protection to the occupants and the 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 discussions and plans provided by the owner.

Table 1 - Stakeholders

Stakeholder	Role	Contact	Detail
Ed Spencer	Property Owner	Ed Spencer	0458 477 948
NAME	Surveyor	Not Given	Phone No.
Narrandera Shire Council	Consent Authority	Not Given	02 6959 5510
NSWRFS	Consent Authority	Not Given	02 4475 1300

1.4 SUBJECT SITE LOCATION



Figure 1 - Subject site regional context (FPA FireMaps, 2023)

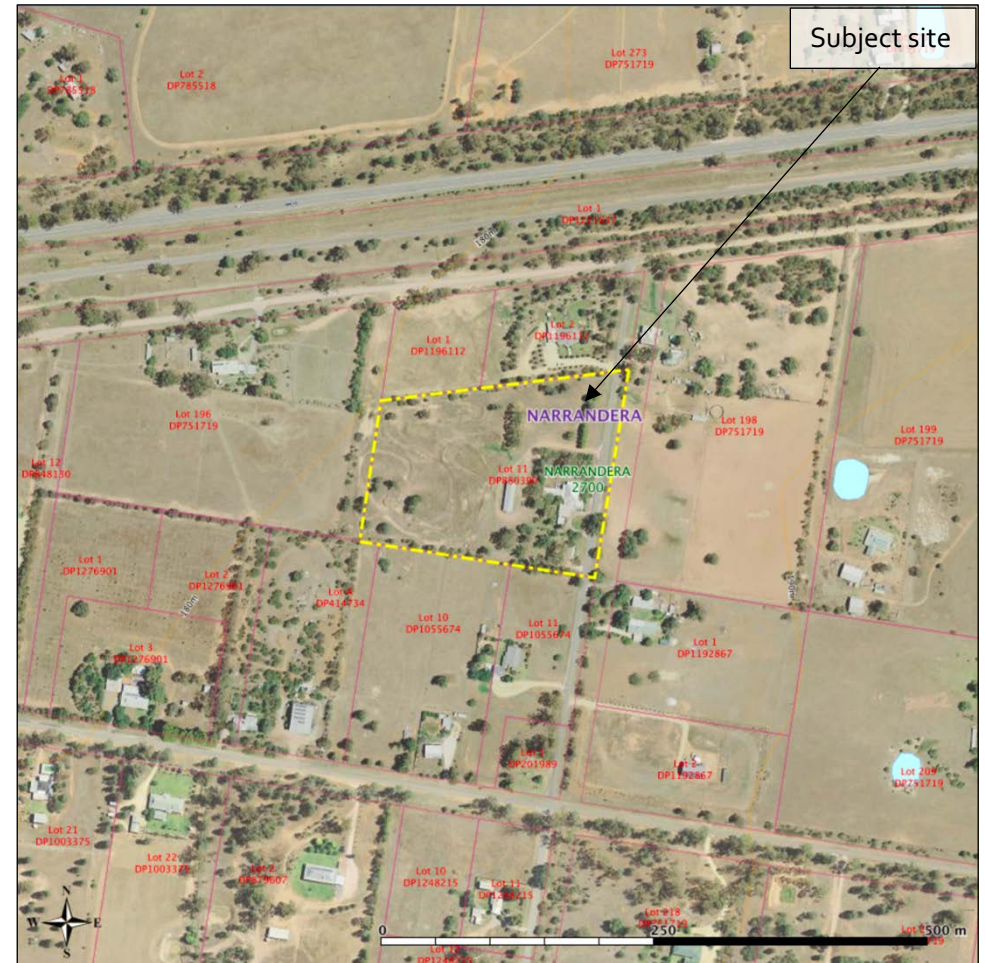


Figure 2 - Subject site local context (FPA FireMaps, 2023)

1.5 SUBJECT SITE DESCRIPTION

Location:

The subject site is located in the regional town of Narrandera, in the Riverina region of southern NSW. The subject site lies approximately 3.25 kilometres east of Narrandera CBD. (Figure 1&2).

Administration:

The ~3.55 Ha rural residential lot falls under the Narrandera Shire Council administration.

Land use:

The dominant land use of the surrounding area is large lot residential properties. Accordingly, the subject site is zoned RU5 – Village, as are the surrounding lots (Figure 6).

Topography:

The subject site is situated on relatively flat land with a gentle slope to the northwest. The dominant geographic features surrounding the subject site are the Newell Highway to the north and Lake Talbot and the Main Canal (Bundidgerry Creek) to the South.

The topography in the area is mainly considered flat, with open plains typically associated with the area's diversely productive agricultural region.

Vegetation:

The subject site presents large areas of open grassland interspersed with scattered paddock trees throughout, with most of the woody vegetation abutting the property's boundaries. The existing residence, located in the southeast corner of the subject site, is surrounded by managed woody vegetation of varying density within the existing APZ.

Vegetation formations have been cross-checked with the State Vegetation Type Map (SEED), with the vegetation formation within the subject site being grassland with areas of grassy woodlands to the north in proximity to the subject site and abutting the Newell Highway (Figure 5).

For this assessment, the dominant vegetation formation is cleared land, which is treated as grassland and grassy woodlands.

Access:

Lots 1 and 2 will be accessed via Old School Road, which is a sealed main public through road.

- Lot 1 existing dwelling will be accessed via the existing property access road. No further changes are proposed.
- Lot 2, indicative future dwelling, will be accessed via a new property access road that is ~35 m in length and will incorporate an all-weather, two-wheel-drive road surface with a minimum trafficable road width of 4m and an unobstructed clearance height of 4m.

1.6 THE DEVELOPMENT PROPOSAL

The development proposal is to divide a ~3.55 ha rural residential block into two (2) separate title lots comprising Lot 1 – 2.425 ha and Lot 2 – 1.125 ha (Figure 3).

The proposed lots will have the following provisions:

- **Lot 1.**
 - Is an existing rural residential lot.
 - Has one (1) existing residence (Class 1a building).
 - It also has a carport, several garages, a large shed, fences and gates throughout.
 - The existing residence has well-established, expansive, and well-maintained APZs to the dimensions that will yield a maximum radiant heat flux of no greater than 19kW/m^2 .
- **Lot 2.**
 - Is a greenfield site for rural residential use with boundary setbacks and an indicative building envelope.
 - An APZ that is proportionate to accommodate a dwelling with a rating of BAL-29, underground powerline access to the main electricity grid and reticulated water supplies from the town's main supply.
 - Indicative property access road that is ~35 m long and will be an all-weather, two-wheel-drive road surface with a

minimum trafficable road width of 4m from the property boundary entrance point off Old School Road to the proposed building site.

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

**THIS FIGURE
TO BE UPDATED WHEN
THE DRAWING IS
AVAILABLE**

Figure 3 - Proposed Subdivision (Provided by owner, 2023)

2 ASSESSING THE BUSHFIRE THREAT

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 GENERAL BUSHFIRE ENVIRONMENT

The following environmental factors are adopted across the site to determine the potential bushfire threat posed to the subject site.

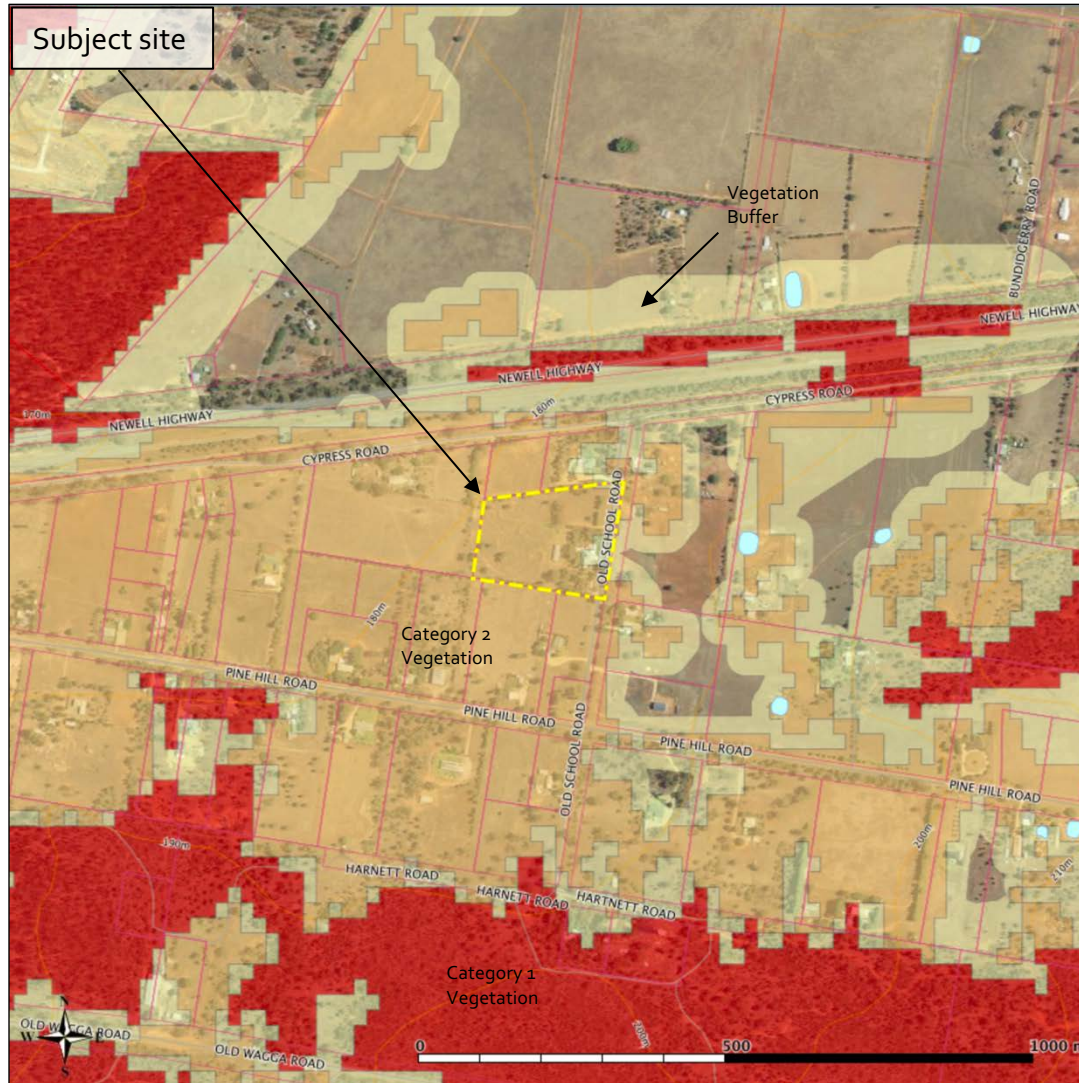
Table 3 - Bushfire behaviour factors

Factor	Value
Fire Weather Area	Northern Riverina
FDI	80
Predominant Vegetation Classification	Grassland and Grassy Woodlands
Slope	Ranging from Upslope to 5° downslope.

Note: A detailed bushfire hazard analysis is detailed below.

- *Vegetation formations within 140 m of the subject site are classified following Section A1.2 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



Bushfire prone land mapping relative to the subject site (Figure 4) showing adjacent land and the subject site containing areas of Category 2 and Buffer Vegetation identified as bush fire prone land by Council and NSW RFS.

During the site survey conducted on 11th June 2023, the vegetation mapping was verified. While the BPLM captures the extent of Category 1 and Category 2 Vegetation well, areas of grassland vegetation (more consistent with Category 3 Vegetation) within the subject and on adjacent lots surrounding the property have been omitted from the BPLM, therefore, not a true representation of the actual on ground hazard.

Hazard classification key:

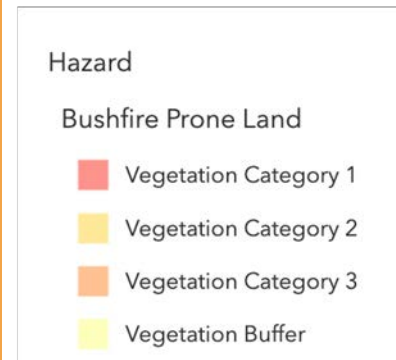
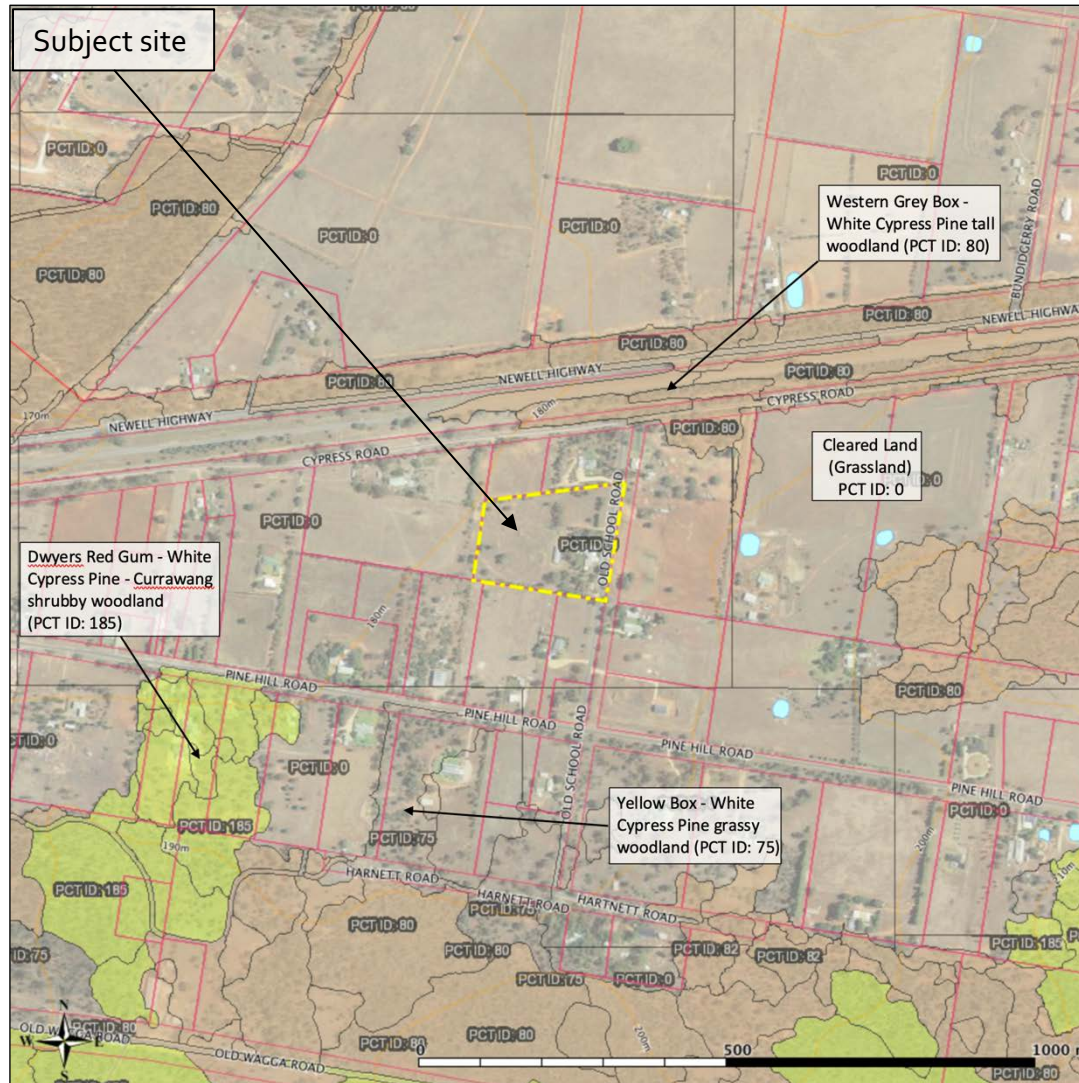


Figure 4 – Subject site Bushfire Prone Land Map. (FPA FireMaps, 2023)

2.4 VEGETATION FORMATIONS INFLUENCING THE SUBJECT



State based vegetation classification

Subject site vegetation formations (Figure 5) as defined by SEED (NSW Government, 2022) NSW State Vegetation Type Map.

Vegetation mapping indicates that the subject site is dominantly influenced by –

- Grassland (cleared land - low level threat)
- Grassy Woodlands (medium level threat)

Figure 5 – Subject site Vegetation Formation Map. (SEED, 2023)

2.5 SUBJECT SITE LAND USE AND ZONING

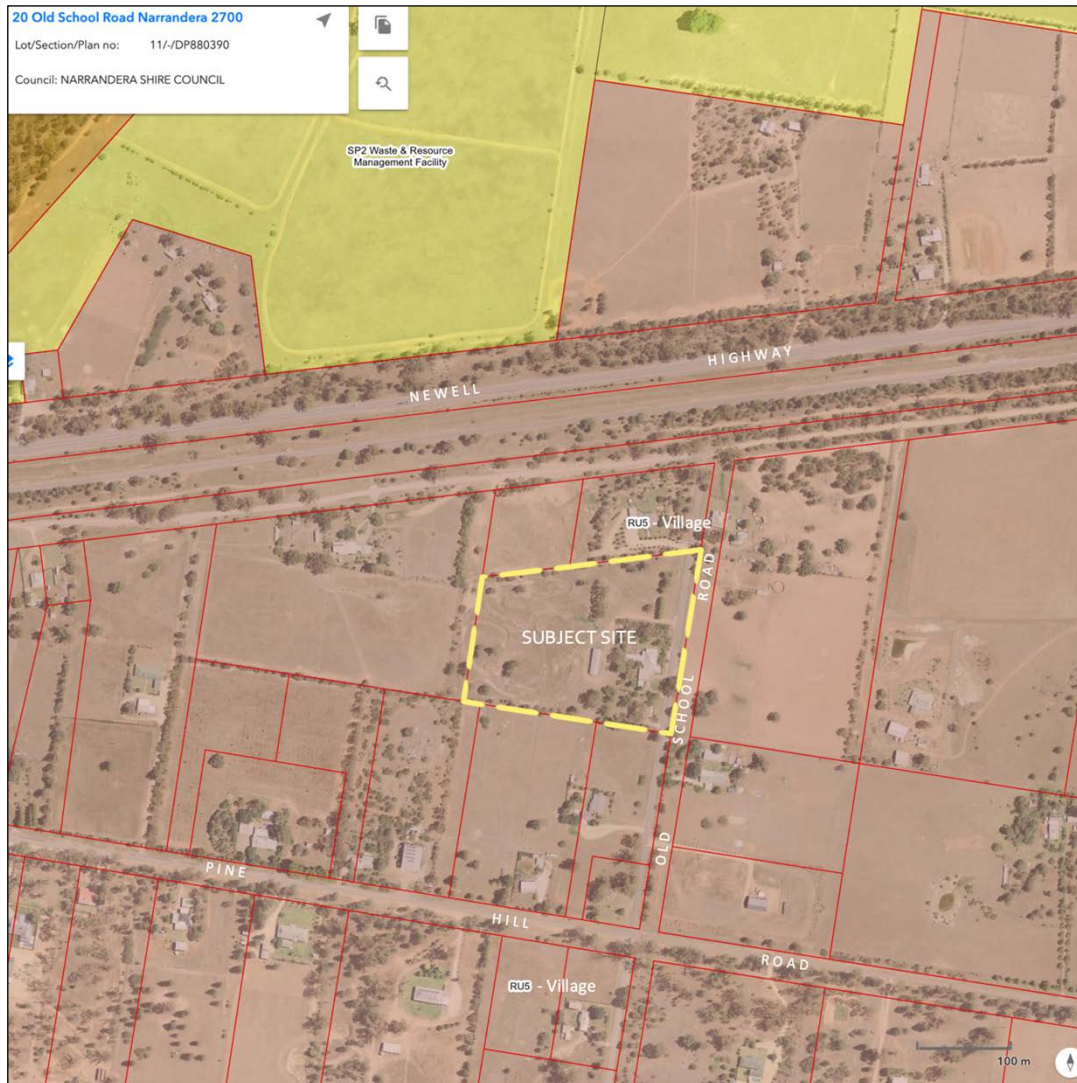


Figure 6 – Showing zoning of the subject site and adjoining lots. (NSW Planning Portal, 2023)

Subject site zoning as defined by (NSW Government, 2023) NSW Planning Portal – ePlanning Spatial Viewer.

An assessment of land use zoning aids in the evaluation of broadscale landscape practices and the ability to manage vegetation within and surrounding the subject site.

The land zoning map indicates that the subject site is zoned as RU5 – Village as are the surrounding lots indicating that land use practices and strategic landscape management allows for intensive management of vegetation (fuels).

2.6 BIODIVERSITY VALUES MAP

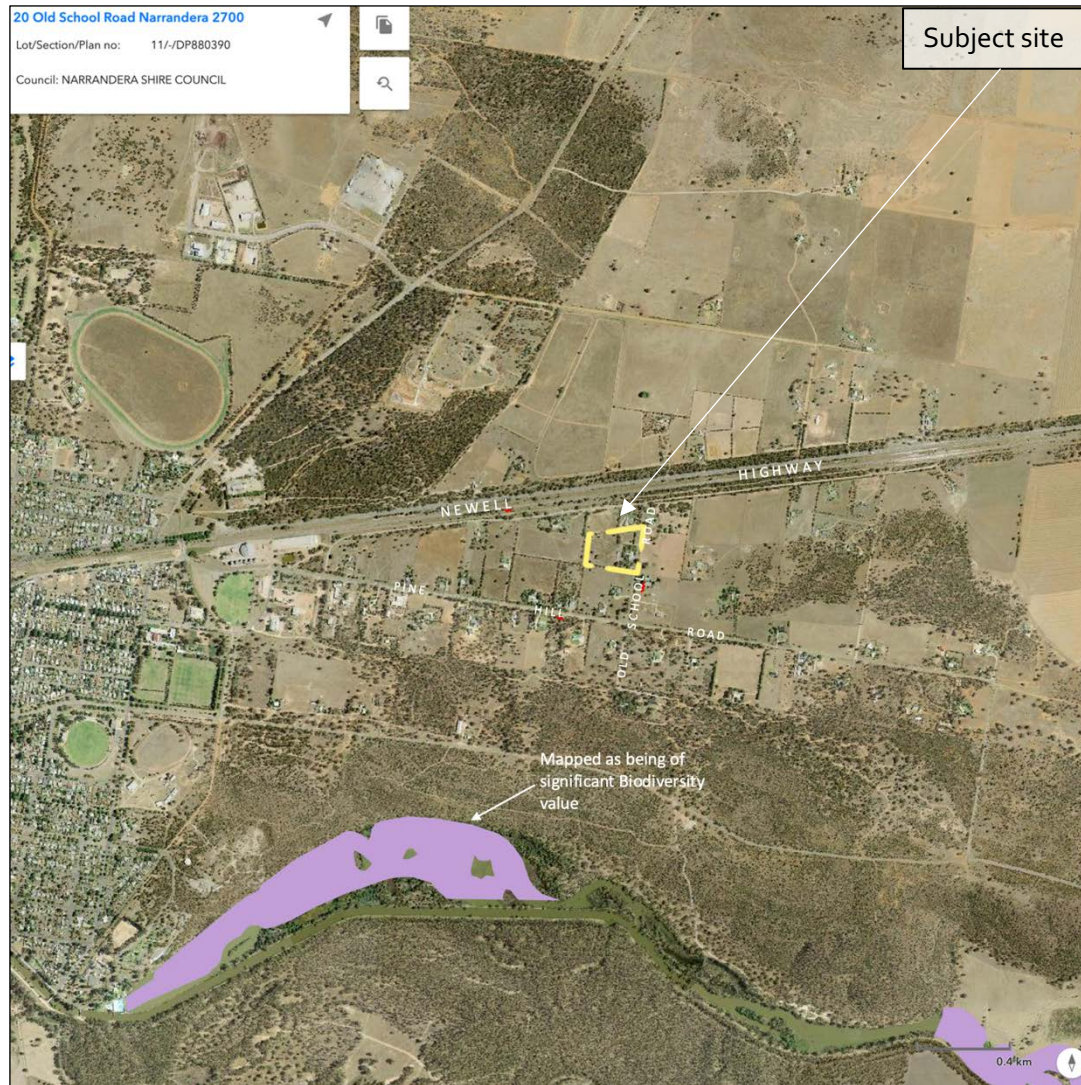


Figure 7 – Showing Biodiversity value vegetation influencing the subject site. (NSW Planning Portal, 2023)

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 site is clear of areas identified with high biodiversity value and therefore the clearing or management of land for the purposes of APZs or property access may be achievable.

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

2.7 LOT 1 THREAT ANALYSIS AND SUPPORTING INFORMATION

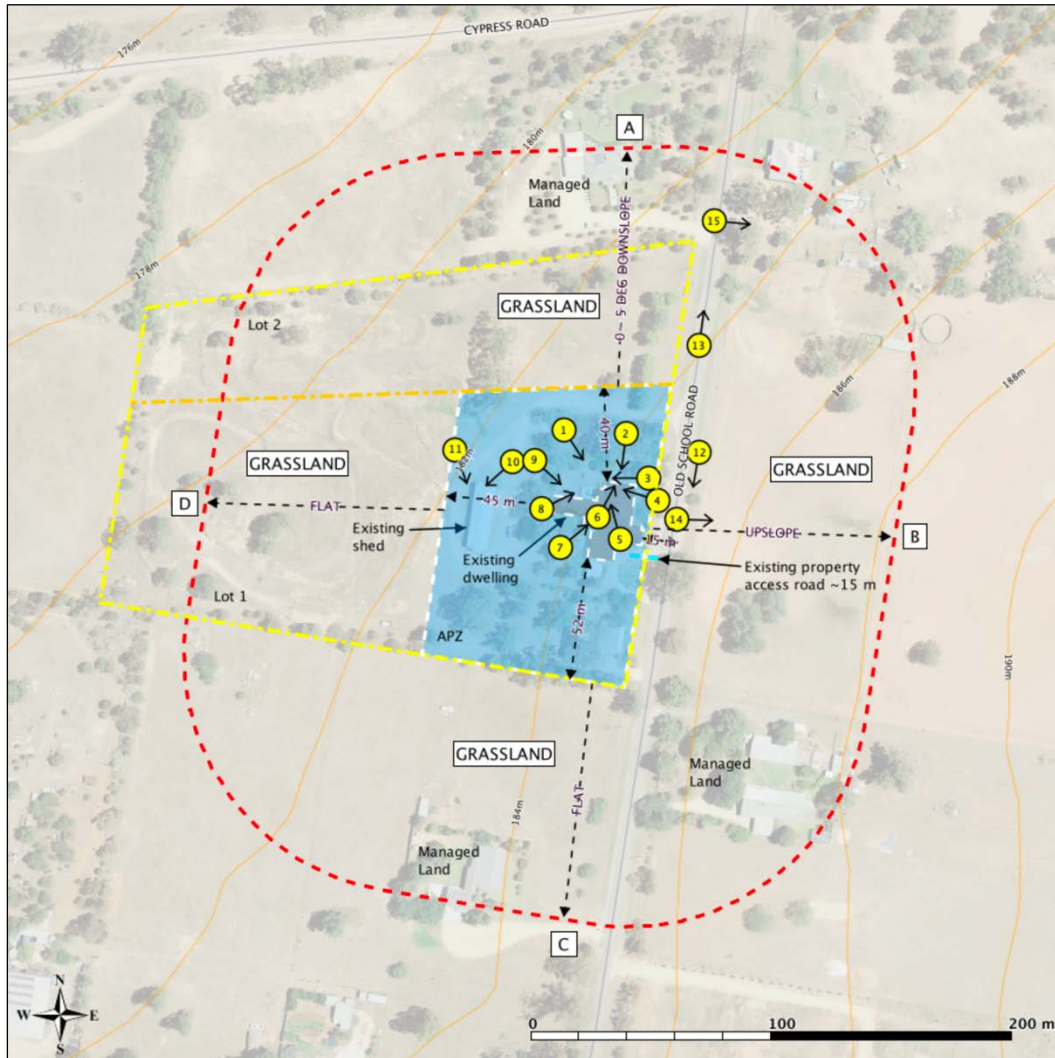


Figure 8 – Showing existing APZ setback distances, vegetation classification, slope and property access for Lot 1. (Hague, 2023)

HAZARD and APZ ASSESSMENT:

Vegetation Classification

Managed Land (North)

Grassland (North, East, South, West)

Assessment of current APZ/setbacks available.

The distances below are the current APZ or setback dimensions available. These dimensions provide for a maximum radiant heat flux of no greater than 19 kW/m^2 .

Table 4 – Radiant heat flux determination of existing residence

Aspect	Transect	Vegetation Formation	Slope	APZ avail	Max. Radiant Heat Flux (kW/m^2)
N	A	Grassland	$>0^\circ - 5^\circ$ Downslope	40 m	12.5
E	B	Grassland	Upslope	15 m	19
S	C	Grassland	Flat	52 m	LOW
W	D	Grassland	Flat	45 m	12.5

2.7.1 LOT 1 EXISTING RESIDENCE OVERVIEW



Photo point 1 Showing the established and well-maintained landscaped APZ to the north of the existing residence.



Photo point 3 Showing the general condition of the existing residence north elevation.



Photo point 2 Showing the established and well-maintained gardens to the north of the existing residence.

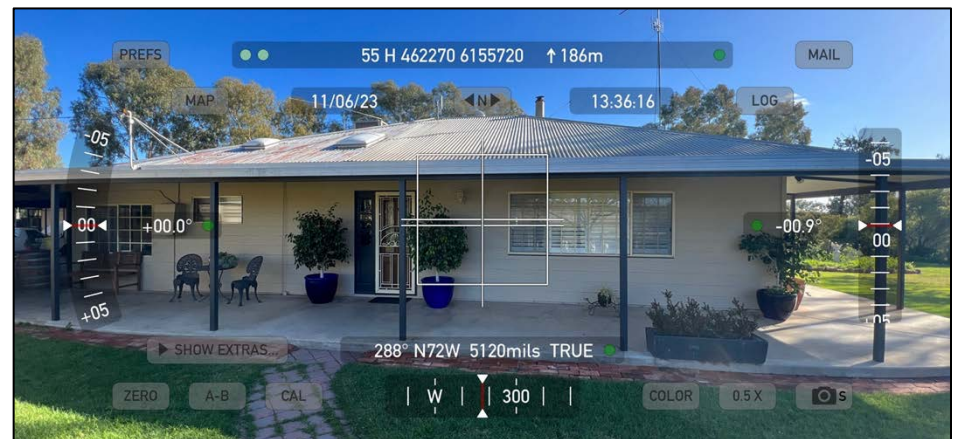


Photo point 4 Showing the general condition of the existing residence east elevation.



Photo point 5 Showing the general condition of the existing residence south elevation.



Photo point 7 Showing the established and well-maintained gardens to the southwest of the existing residence.



Photo point 6 Showing the general condition of the existing residence.

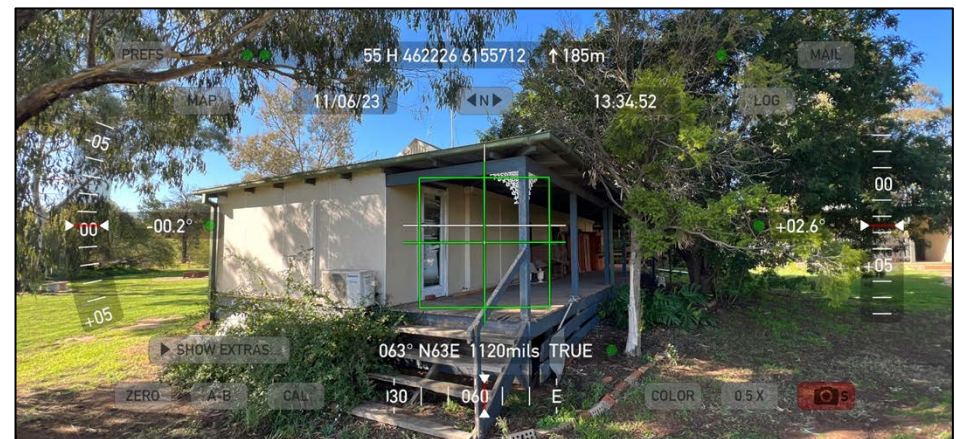


Photo point 8 Showing the general condition of the existing residence west elevation and surrounding landscaped gardens.



Photo point 9 Showing the established and well-maintained landscaped APZ to the northwest of the existing residence.



Photo point 11 Looking at the general condition of the existing shed to the west of the existing residence.



Photo point 10 Looking at the general condition of the existing shed to the west of the existing residence.



Photo point 12 Looking at the general condition of Old School Road heading south towards Pine Hill Road when exiting the Subject Site.



Photo point 13 Looking at the general condition of Old School Road heading north towards Cypress Road when exiting the Subject Site.



Photo point 15 Looking at the fire hydrant located north of the Subject Site on Old School Road.



Photo point 14 Looking at the fire hydrant located adjacent to the Subject Site on Old School Road.

2.8 LOT 2 THREAT ANALYSIS AND SUPPORTING INFORMATION



Figure 9 – Showing proposed BAL 29 APZ setback distances, vegetation classification, slope and property access for Lot 2. Indicative only. Not to scale. (Hague, 2023)

HAZARD and APZ ASSESSMENT:

Vegetation Classification

Managed Land (South)

Grassland (East, West)

Woodland (North)

Setbacks required for creation of APZ

The distances below are the minimum setbacks required for a BAL-29 APZ and measured from the future dwelling (assumed 15m x 15m) to surrounding unmanaged vegetation and/or property boundary to ensure a maximum radiant heat flux of no greater than 29 kW/m².

The setbacks below define the minimum APZ dimensions required for any future dwelling.

North – 13 m

East – 10 m

South – 10 m

West – 12 m

2.8.1 LOT 2 SLOPE ANALYSIS AND PHOTO POINTS

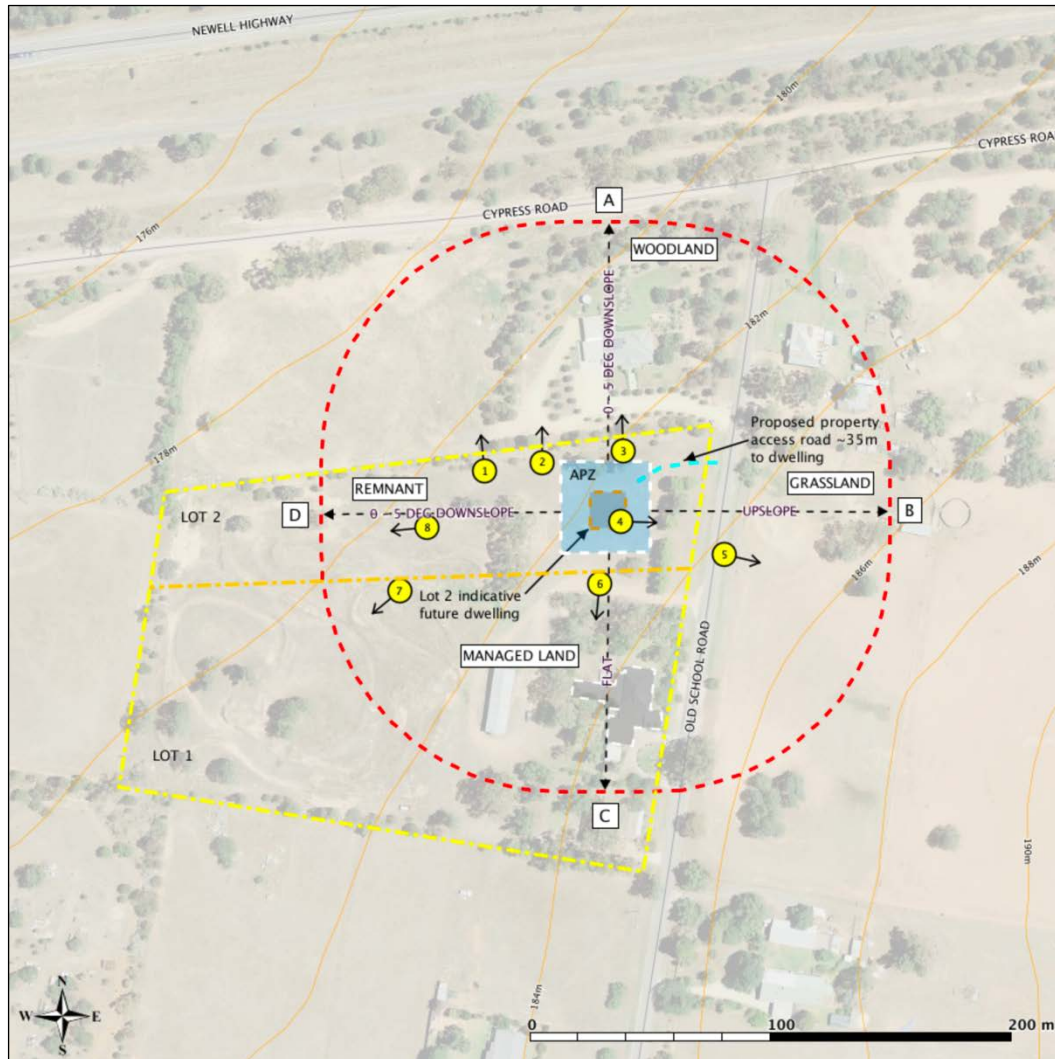


Table 5 – Radiant heat flux determination of existing residence

Aspect	Transect	Vegetation Formation	Slope	Min. APZ	Max. Radiant Heat Flux (kW/m ²)
N	A	Woodland	>0° – 5° Downslope	13 m	29
E	B	Grassland	Upslope	10 m	29
S	C	Managed Land	Flat	10 m	N/A
W	D	Remnant	>0° – 5° Downslope	12 m	29

Figure 10 – Slope analysis of Lot 2 indicative future dwelling site and associated photo points. (Hague, 2023)

2.8.2 LOT 2 OVERVIEW OF SITE VEGETATION



Photo point 1 Looking at hazard vegetation north of the proposed building envelope.



Photo point 3 Looking at managed land on the neighbouring property to the north of the proposed building envelope.



Photo point 2 Looking at managed land on the neighbouring property to the north of the proposed building envelope.



Photo point 4 Looking at remnant vegetation within the proposed Lot 2 east of the proposed building envelope.



Photo point 5 Looking at hazard vegetation east of the proposed building envelope.



Photo point 7 Looking at hazard vegetation southeast of the proposed building envelope.



Photo point 6 Looking at managed land on the neighbouring property (Lot 1) to the south of the proposed building envelope.



Photo point 8 Looking at hazard vegetation west of the proposed building envelope.

2.8.3 LOT 1 & 2 AERIAL OVERVIEW



Figure 11 – Aerial overview looking west showing existing residence (Lot 1) APZ, indicative building footprint (Lot 2) APZ, access, and vegetation classification of the site. Indicative only. Not to scale (Hague, 2023)

3 BUSHFIRE PROTECTION MEASURES

DISCUSSION AND RECOMMENDATIONS:

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

Under Section 5.1.3 of PBP 2019, existing dwellings are not subject to development consent in creating a subdivision. On this basis, only certain conditions are applied to Lot 1.

Appendix A of this report provides a statement of compliance of the proposed subdivision against PBP 2019.

3.1 ASSET PROTECTION ZONES:

Discussion:

Table 6 details the minimum APZ dimensions (including setbacks from lot boundaries) for the proposed Lot 1 existing residence and Lot 2 and ensures that the future or existing dwellings are not exposed to radiant heat levels exceeding 29 kW/m^2 , therefore, complying with the requirements of Table A1.12.3 of PBP 2019.

An established, well-maintained, landscaped APZ is provided for the existing dwelling on proposed Lot 1 and meets the acceptable solutions provided by PBP 2019.

The APZ dimensions proposed for Lot 2 meet the minimum requirements specified by Table A1.12.3 PBP 2019, satisfying the acceptable solutions provided by PBP 2019.

Recommendations:

- Lot 1 APZ is established and well-maintained. The current dimensions will ensure that the existing residence is not exposed to a radiant heat flux exceeding 19 kW/m^2 and therefore does not require expansion.
- Lot 2 APZ dimensions, including setbacks from lot boundaries, are to comply with the minimum dimensions provided in Table 6 below.
- Lot 2 APZ dimensions may be reassessed and increased at the time of future development to reduce radiant heat flux and, with it, the BAL rating of the future dwelling.
- All land within the APZ of the proposed Lots 1 & 2 is to be managed as an Inner Protection Area (IPA) in accordance with the specifications set out in Appendix 4, Asset Protection Zone Requirements, of PBP 2019.
- APZs must be maintained to the minimum distances in perpetuity to provide a minimum level of protection.

Note: Establishing an APZ requires converting the unmanaged landscape into a managed and maintained state, like an urban parkland. Each APZ is different and must consider the specific characteristics of the surrounding landscape.

Table 6- Lot 1 and 2 APZ requirements

Lot	Aspect	Vegetation Formation	Slope	Min. setback / APZ required	Max. Radiant heat (kW/m ²)	BAL Rating
1	N	Grassland	>0° – 5° Downslope	40 m	12.5	12.5
1	E	Grassland	Upslope	15 m	19	19
1	S	Grassland	Flat	52 m	LOW	LOW
1	W	Grassland	Flat	45 m	12.5	12.5
2	N	Woodland	>0° – 5° Downslope	13 m	29	29
2	E	Grassland	Upslope	10 m	29	29
2	S	Managed Land	Flat	10 m	N/A	N/A
2	W	Remnant	>0° – 5° Downslope	12 m	29	29

3.2 LANDSCAPING:

Recommendations:

- All landscape within the areas identified as APZ (Figures 8 & 9) are to be managed in perpetuity and following Appendix 4, Asset Protection Zone Requirements of PBP 2019, provided in Attachment B.

3.3 ACCESS:

Discussion:

The subject site has direct access to Old School Road, a sealed public through road that intersects with Cypress Road when heading north, exiting the subject site and Pine Hill Road when heading south.

Lot 1 property access is existing. No modifications or improvements are proposed.

Lot 2 indicative future dwelling will have direct access to Old School Road via a new ~35 m long all-weather, two-wheel-drive road surface with a minimum trafficable road width of 4m and an unobstructed clearance height of 4m.

Access for the proposed subdivision is deemed to comply with the acceptable solutions for access as per PBP 2019.

Recommendations for Access: -

- Access within the proposed subdivision is to be provided as per the requirements for Access – Table 5.3 b of PBP 2019 provided here in Attachment A.

3.4 WATER SUPPLIES

Discussion:

Narrandera's main reticulated water supply will serve the proposed Lots 1 & 2 with street hydrants which would appear to comply with AS2419.1:2005 - Fire Hydrant Installations.

Recommendations:

- Water supplies for the proposed subdivision are to be provided per the Water Supplies requirements – Table 5.3 c of PBP 2019 provided in Attachment A.
- All fittings and specifications per Table 7.4a of PBP 2019 for water supplies as detailed in Attachment A.

3.5 ELECTRICITY SERVICES

Discussion:

Future development of Lot 2 will be provided with a new underground electricity power supply. This supply will be from the main electricity network.

Lot 1 electricity supply is existing and is outside the scope of this assessment.

Recommendations:

- Electrical services for Lot 2 are to be provided as per Table 7.4a of PBP 2019, detailed here in Attachment A.

3.6 GAS SERVICES

Discussion:

The provision of gas supplies may occur at the time of construction of any future residence on Lot 2.

Lot 1 gas services are existing and are outside the scope of this assessment.

Recommendations:

- If applicable, bottled gas supplies for Lot 2 future residence will be provided as per Table 7.4a of PBP 2019, detailed in Attachment A.

3.7 CONSTRUCTION REQUIREMENTS

Discussion:

The APZ dimensions for a future residence on Lot 2 are provided (Table 6) to ensure that any future dwelling is not subjected to a radiant heat flux greater than 29 kW/m² and therefore complies with Table A1.12.3 of PBP 2019.

Lot 2 APZ dimensions may be reassessed and increased at the time of future development to reduce radiant heat flux level exposure.

For this reason, it is recommended that a subsequent BAL assessment be carried out before constructing any future dwelling to reassess the BAL rating.

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 BAL rating of any future dwelling on Lot 2 should be reassessed at the time of development to account for any increase in the APZ and therefore change in BAL rating.
- Lot 2 future dwelling must comply with the relevant sections 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
- Section 7.5 of Planning for Bush Fire Protection 2019.
- To improve ember protection of the existing residence on Lot 1 (where currently not available), several enhancements are recommended 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.
- Install non-combustible gutter and valley guard as required.

3.8 EMERGENCY MANAGEMENT PLANNING

Recommendation:

- Before occupying any new dwelling, residents should develop an *NSWRFS 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 NSWRFS.

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.

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/m².
- 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, 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

- Lot 1 APZ is established and well-maintained. The current dimensions will ensure that the existing residence is not exposed to a radiant heat flux exceeding 19 kW/m² and therefore does not require expansion.
- Lot 2 APZ dimensions, including setbacks from lot boundaries, are to comply with the minimum dimensions provided in Table 6.
- Lot 2 APZ dimensions may be reassessed and increased at the time of future development to reduce radiant heat flux and, with it, the BAL rating of the future dwelling.
- All land within the APZ of the proposed Lots 1 & 2 is to be managed as an Inner Protection Area (IPA) in accordance with the requirements of Appendix 4, Asset Protection Zone Requirements of PBP 2019.
- APZs must be maintained to the minimum distances in perpetuity to provide a minimum level of protection.

4.2 LANDSCAPING

- All landscape within the areas identified as APZ (Figures 8 & 9) are managed in perpetuity and as per the requirements of Appendix 4, Asset Protection Zone Requirements of PBP 2019 (Attachment B).

4.3 ACCESS

- Access within the proposed subdivision is to be provided as per the requirements for Access – Table 5.3 b of PBP 2019 provided here in Attachment A.
- Lot 1 property access is existing. No modifications or improvements are proposed.

4.4 WATER SUPPLIES, ELECTRICITY AND GAS

- Narrandera's main reticulated water supply will serve the proposed Lots 1 & 2 with street hydrants which would appear to comply with AS2419.1:2005 - Fire Hydrant Installations and satisfies the requirements of PBP 2019.
- Water supplies for the proposed subdivision are to comply with the Water Supplies requirements – Table 5.3 c of PBP 2019 provided here in Attachment A.
- All fittings and specifications per Table 7.4a PBP 2019 for water supplies are detailed in Attachment A.

- Lot 1 electricity and gas services are existing and, therefore, are outside the scope of this assessment.
- Electrical services for Lot 2 future residence are to be provided as per Table 7.4a of PBP 2019, detailed here in Attachment A.
- If applicable, bottled gas supplies for Lot 2 future residence will be provided as per Table 7.4a of PBP 2019, detailed in Attachment A.

4.5 CONSTRUCTION

- The BAL rating of any future dwelling on Lot 2 should be reassessed at the time of development to account for any increase in the APZ and therefore change in BAL rating.
- Lot 2 future dwelling must comply with the relevant sections 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
- Section 7.5 of Planning for Bush Fire Protection 2019.
- To improve ember protection of the existing residence on Lot 1, where currently not available, several enhancements are recommended 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.
- Install non-combustible gutter and valley guard as required.

4.6 EMERGENCY MANAGEMENT PLANNING

Recommendation:

- Before occupying any new dwelling, residents should develop an *NSWRFS 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 on a proposed subdivision at 20 Old School Road, Narrandera.

This report establishes the level of threat to the proposed development and, based on this, makes specific recommendations for bushfire protection measures such as asset protection, access and services and construction.

APZ dimensions within the proposed Lot 2 building envelope will ensure that the future dwelling is not exposed to radiant heat levels exceeding 29 kW/m² and will comply with Table A1.12.3 of PBP 2019.

Lot 2 APZ dimensions may be reassessed and increased at the time of future development to reduce radiant heat flux and, with it, the BAL rating of the future dwelling. The future dwelling on Lot 2 is required to construct as per the relevant sections of Australian Standard 3959-2018 Construction of buildings in bushfire-prone areas.

Access to Lot 2 future dwelling will be well provided for and will comply with the acceptable solutions in PBP 2019.

Electricity, water and gas supplies will be provided at the time of future development of Lot 2 and will be required to comply with the general specifications provided.

The existing residence has a well-established and well-maintained APZ and sufficient water supplies to satisfy the requirements of PBP 2019. Ember protection improvements are recommended where not already provided. Access, electricity, and gas are existing and considered outside the scope of this report, and therefore no improvements to these are proposed.

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, the requirements of the Rural Fire regulations (2022) and, therefore, suitable for submission to the NSWRFSA for the issuing of a bush fire safety authority.

Be advised that the NSWRFSA 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

- ePlanning Spatial Viewer, Department of Planning Industry and Environment, accessed 3 May 2023, <https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address>
- FireMaps (FPA Australia, 2021), <https://maps.fpaafiremaps.com.au>, accessed 18 July 2023,
- Keith D. (2004) "Ocean Shores to Desert Dunes", Department of Environment and Conservation, Sydney.
- NSW Rural Fire Service. (2019) "Planning for Bushfire Protection". Sydney (PBP 2019)
- SEED (NSW Government, 2021) NSW State Vegetation Types Map, accessed 18 July 2023, https://geo.seed.nsw.gov.au/Html5Viewer4.12/index.html?viewer=SEED_SEED&local=enau&runWorkflow=AppendLayerCatalog&CatalogLayer=SEED_Catalog.317.Plant%20Community%20Type%20with%20object%20labels,SEED_Catalog.318.Flora%20Sites,SEED_Catalog.317.NSW_VegetationFormation_5m,SEED_Catalog.317.NSW_VegetationClass_5m,SEED_Catalog.317.NSW_PlantCommunityType_5m,SEED_Catalog.317.Plant%20Community%20Type%20with%20labels
- Six Maps, NSW Department of Finance and Services, accessed 3 May 2023, <https://maps.six.nsw.gov.au/#>
- Standards Australia, (2018) "AS/NZS 3959-2018 Construction of buildings in bushfire-prone areas."

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			
<ul style="list-style-type: none"> Potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m² on each proposed lot. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> APZs are provided per Tables A1.12.2 and A1.12.3 based on the FFDI. 	APZ dimensions are compliant with Table A1.12.2 of PBP 2019.
<ul style="list-style-type: none"> APZs are managed and maintained to prevent the spread of a fire towards the building. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> APZs are managed per the requirements of Appendix 4. 	Landscaping within the APZ of any future residence is required to be in accordance with the principles provided in Appendix 4 – Asset Protection Zone Standards, PBP 2019 which is provided in Attachment B.
<ul style="list-style-type: none"> The APZs is provided in perpetuity. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> APZs are wholly within the boundaries of the development site 	All APZs are within the boundaries of the development site.
<ul style="list-style-type: none"> APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> APZs are located on lands with a slope less than 18 degrees. 	All APZs are located on land with slope less than 18 degrees.
LANDSCAPING			
<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> landscaping is per Appendix 4, and fencing is constructed per section 7.6. 	Landscaping within the APZ of any future residence is required to be in accordance with the principles provided in Appendix 4 – Asset Protection Zone Standards, PBP 2019 and Section 7.6 Fences and Gates which is provided in Attachment B.

ACCESS (General Requirements)			
<ul style="list-style-type: none"> firefighting vehicles are provided with safe, all-weather access to structures. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> 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. 	Access provisions will comply with the acceptable solutions required under PBP 2019 as detailed in the adjacent cell.
<ul style="list-style-type: none"> the capacity of access roads is adequate for firefighting vehicles. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> 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. 	The capacity of bridges/causeways will be sufficient to carry fully loaded firefighting vehicles; bridges / causeways will clearly indicate load rating. Bridges/causeways are not proposed.
<ul style="list-style-type: none"> there is appropriate access to water supply. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> 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. 	The proposed Lots 1 & 2 will be served by Narrandera's main reticulated water supply with street hydrants (Photo 14 & 15) which would appear to comply with AS2419.1:2005 Fire Hydrant Installations.

PERIMETER ROADS			
<ul style="list-style-type: none"> access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface. 	Perimeter roads are not applicable.	<ul style="list-style-type: none"> 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; 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. 	Perimeter roads are not applicable.
NON-PERIMETER ROADS			
<ul style="list-style-type: none"> access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating. 	Non-Perimeter roads are not applicable.	<ul style="list-style-type: none"> 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			
<ul style="list-style-type: none"> firefighting vehicles can access the dwelling and exit the property safely. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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; 	The property access provisions will comply with those required under PBP 2019 as detailed in the adjacent cell.

		<ul style="list-style-type: none"> ○ 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. <p>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.</p>	
WATER SUPPLIES			
<ul style="list-style-type: none"> • adequate water supplies is provided for firefighting purposes. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> • 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. 	The proposed Lots 1 & 2 will be served by Narrandera's main reticulated water supply with street hydrants (Photo 14 & 15) which would appear to comply with AS2419.1:2005 Fire Hydrant Installations.
<ul style="list-style-type: none"> • water supplies are located at regular intervals; and • the water supply is accessible and reliable for firefighting operations. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> • 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. 	The proposed Lots 1 & 2 will be served by Narrandera's main reticulated water supply with street hydrants (Photo 14 & 15) which would appear to comply with AS2419.1:2005 Fire Hydrant Installations.
<ul style="list-style-type: none"> • flows and pressure are appropriate. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> • fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005. 	The proposed Lots 1 & 2 will be served by Narrandera's main reticulated water supply with street hydrants (Photo 14 & 15) which would appear to comply with AS2419.1:2005 Fire Hydrant Installations.
<ul style="list-style-type: none"> • the integrity of the water supply is maintained. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> • 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. 	Where provided all above-ground water service pipes will be metal and above-ground water storage tanks shall be of concrete or metal.

ELECTRICITY SERVICES			
<ul style="list-style-type: none"> location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings. 	<p>Will meet the acceptable solutions.</p>	<ul style="list-style-type: none"> where practicable, electrical transmission lines are underground; where overhead, electrical transmission lines are proposed as follows: <ul style="list-style-type: none"> 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. 	<p>Future electricity supplies will be capable of meeting these requirements.</p>
GAS SERVICES			
<ul style="list-style-type: none"> location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings. 	<p>Will meet the acceptable solutions.</p>	<ul style="list-style-type: none"> 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. 	<p>Future gas supplies, if applicable, will be capable of meeting these requirements.</p>

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 defensible space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the 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 than 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.

