



BUSHFIRE ASSESSMENT REPORT

LOT 15 BLAKELYS CLOSE,
WOODBURY RIDGE ESTATE,
SUTTON

Lot 15 DP 1272209

Proposed Rural Residential Dwelling

Prepared for Troy and Amy Reid

5.6.24



EXECUTIVE SUMMARY

EMBER Bushfire Consulting has been engaged by Troy and Amy Reid C/- Adhami Pender Architecture, to prepare a bushfire assessment report for a proposed residential infill development at Lot 15 Blakelys Close, Sutton (the Subject Site).

The Subject Site is located on bushfire prone land as designated by Yass Valley Council and the NSW Rural Fire Service. The Subject Site is assessed as presenting a low hazard environment given the proximity of woodland vegetation, gentle terrain, and the ability to provide adequate 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).

Woodbury Ridge Estate is community title land with strict guidelines for landscape management within each lot.

Vegetation formations within the 140 m radius study area surrounding the proposed residence were assessed with grassland hazard vegetation identified but is greater than 50 m from the subject site and therefore returns a BAL-LOW outcome.

Access to the proposed dwelling is well provided for and will comply with the acceptable solutions in Planning for Bushfire Protection. 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 in this report, the proposed development is deemed to comply with the specific and broad objectives of PBP (2019) and, therefore, suitable for approval by the Consent Authority.

Bush Fire Management Plan Summary

Protection Measure	Recommendation
APZ	The entire Subject Lot and surrounding lots are defined as an APZ providing a setback of >50 m between the proposed dwellings and the closest hazard vegetation to the west.
Access	Currently complies with the access provisions of Table 7.4a PBP 2019. Nil further requirements.
Water Supply	The future residence will require 20,000 L of static water supplies to comply with the provisions for Water of Table 7.4a PBP 2019.
Services	Currently complies with the services provisions of Table 7.4a PBP 2019.
Construction	BAL-LOW nil constructions required, however BAL-12.5 is a recommended as a voluntary measure.
Landscaping	Comply with the landscaping requirements in Appendix A PBP 2019 (Attachment B here).

CERTIFICATION STATEMENT

Document Title:	Bushfire Assessment Report Lot 15 Blakelys Close, Sutton	
EMBER Reference:	JD.202.24	
Lot & DP Number	Lot 15 DP 1272209	
Street Address	Lot 15 Blakelys Close, Sutton	
Local Government Area	Yass Valley Council	
Description of the development	New Class 1a building and Class 10a garage	
Type of assessment under Planning for Bushfire Protection (2019)	Section 7 –Residential Infill Development	
Is referral of the proposal to the NSW RFS required?	No - Per Section 4.14 EP&A Act 1979.	
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.	<12.5 kW/m ²	
Highest level of construction applicable:	Assessed Recommended	BAL -LOW BAL-12.5
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 14 May 2024;
- 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.



11/6/2024

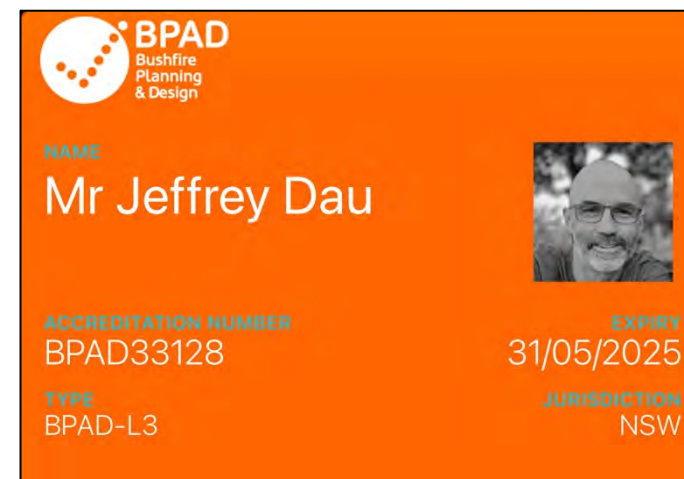


DOCUMENT CONTROL

Information	Detail
Document Title:	Bushfire Assessment Report Lot 15 Woodbury Drive, Sutton
EMBER Reference:	JD.202.24
Other Reference:	
Version:	1.0
Version Control:	1.0 – First Issue – 5.6.24
Status:	Issued

KEY DETAILS OF DEVELOPMENT

Information	Detail
Zoning of subject land	R5 – Large Lot Residential
Zoning of adjoining lands	Ru1 – Primary Production R5 – Large Lot Residential Ru5 - Village C3 – Environmental Management
Lot size	5000 m ²
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	Grassland Vegetation >50 m
Slope	0°-5° downslope
Environmental constraints	Nil known
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 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 Management Plan – Discussion and recommendation discussion of the recommended bushfire protection measures in response to the Bushfire Attack Assessment, necessary for life safety and compliance purposes.

Section 4 Conclusion – Concluding statement.

Appendix A – Compliance Report Table – A compliance report demonstrating how the proposed development complies with the Planning for Bushfire Protection 2019 requirements.

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 defensible 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.

1 INTRODUCTION AND OVERVIEW

1.1 BACKGROUND

EMBER Bushfire Consulting has been engaged by Troy and Amy Reid C/- Adhami Pender Architecture, to prepare a bushfire assessment report for a proposed residential infill development (Class 1a building) at Lot 15 DP 1272209 – Lot 15 Woodbury Drive, Sutton.

The development proposal is located on land designated bushfire prone by the Council and the NSW Rural Fire Service (NSW RFS) and, as a result, is subject to Section 4.14 of the Environmental Planning and Assessment Act (1979) (EP&A Act).

Under the EP&A Act, the development proposal must be shown to conform with the broad aims and objectives of the NSW RFS document Planning for Bushfire Protection (2019) (PBP 2019) and is, therefore, the key reference document for this assessment.

This assessment has been prepared through a desktop study of the Subject Site and an in-person area survey completed on 14.5.24 by Level 3 Accredited Bushfire Practitioner Jeff Dau from EMBER Bushfire Consulting.

1.2 AIM AND OBJECTIVES

The aim of this report is to:

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

The specific objectives for Residential Infill Developments are to:

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

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

- Asset Protection Zones (APZs)
- Landscaping,
- Access,
- Water Supplies,
- Utilities, and
- Construction Standards

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 exposure and flame contact.

Where necessary, protection measures will be recommended to provide a level of protection to the occupants and the structures themselves.

It should be kept in mind that the measures recommended cannot guarantee the proposed development will survive a bushfire event on every occasion.

This is primarily due to the dependence on ongoing 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 building designer.

1.4 COPYRIGHT NOTICE

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1.5 THE DEVELOPMENT PROPOSAL

The proposed building site is an undeveloped 5000 m² rural residential lot within the recently completed Woodbury Ridge Estate.

The proposed building work is to construct a residence with attached garage and shed (Figures 1 & 2) on the Subject Site, featuring:

- A single-storey, 5-bedroom residence (Class 1a building) on piers and concrete slab with attached 2 car garage and detached equipment shed (Class 10a building).
- A pool and large central alfresco area in the centre of the residence.

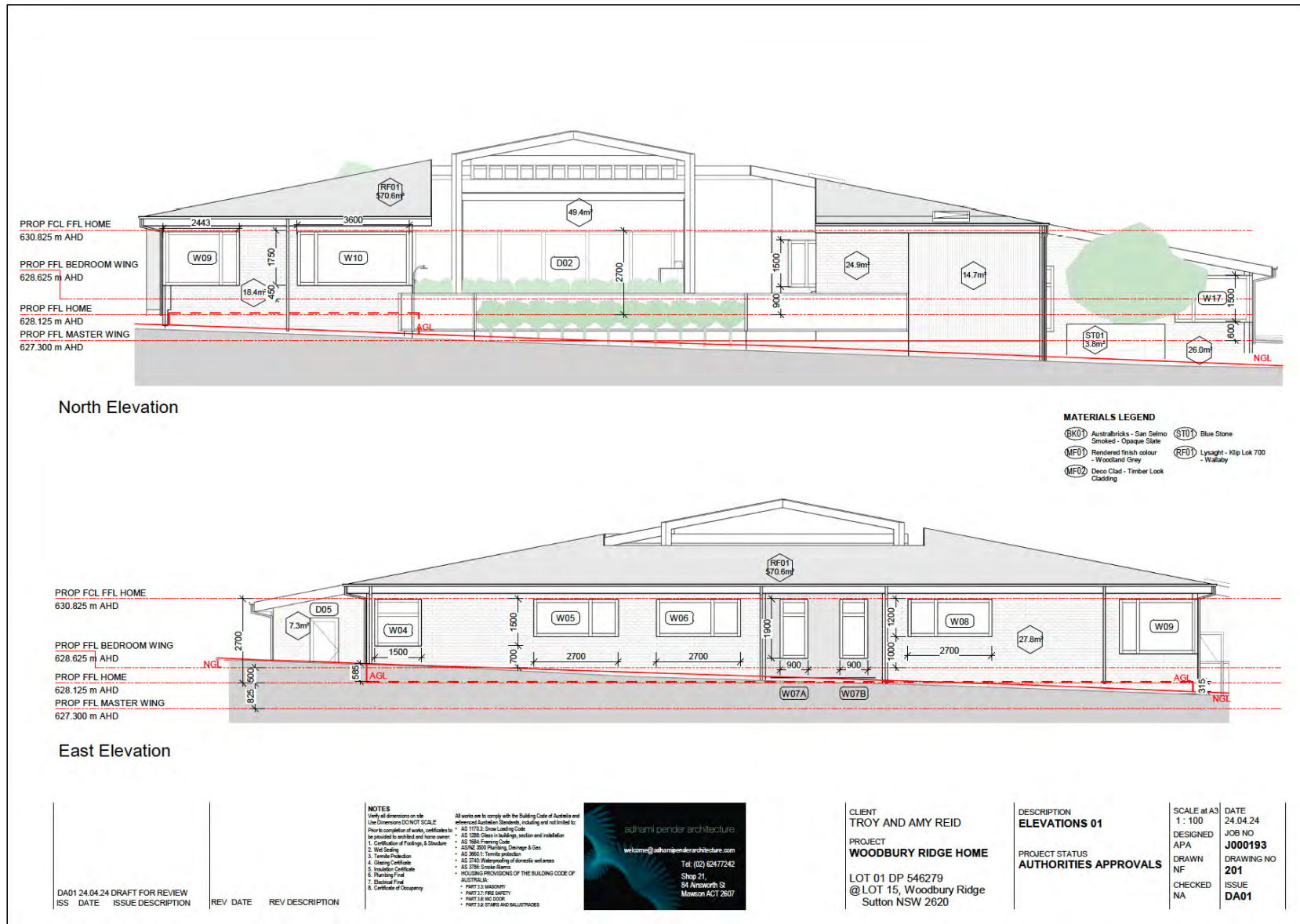


Figure 1 – General Elevations (Adhami Pender Architects, 2024)

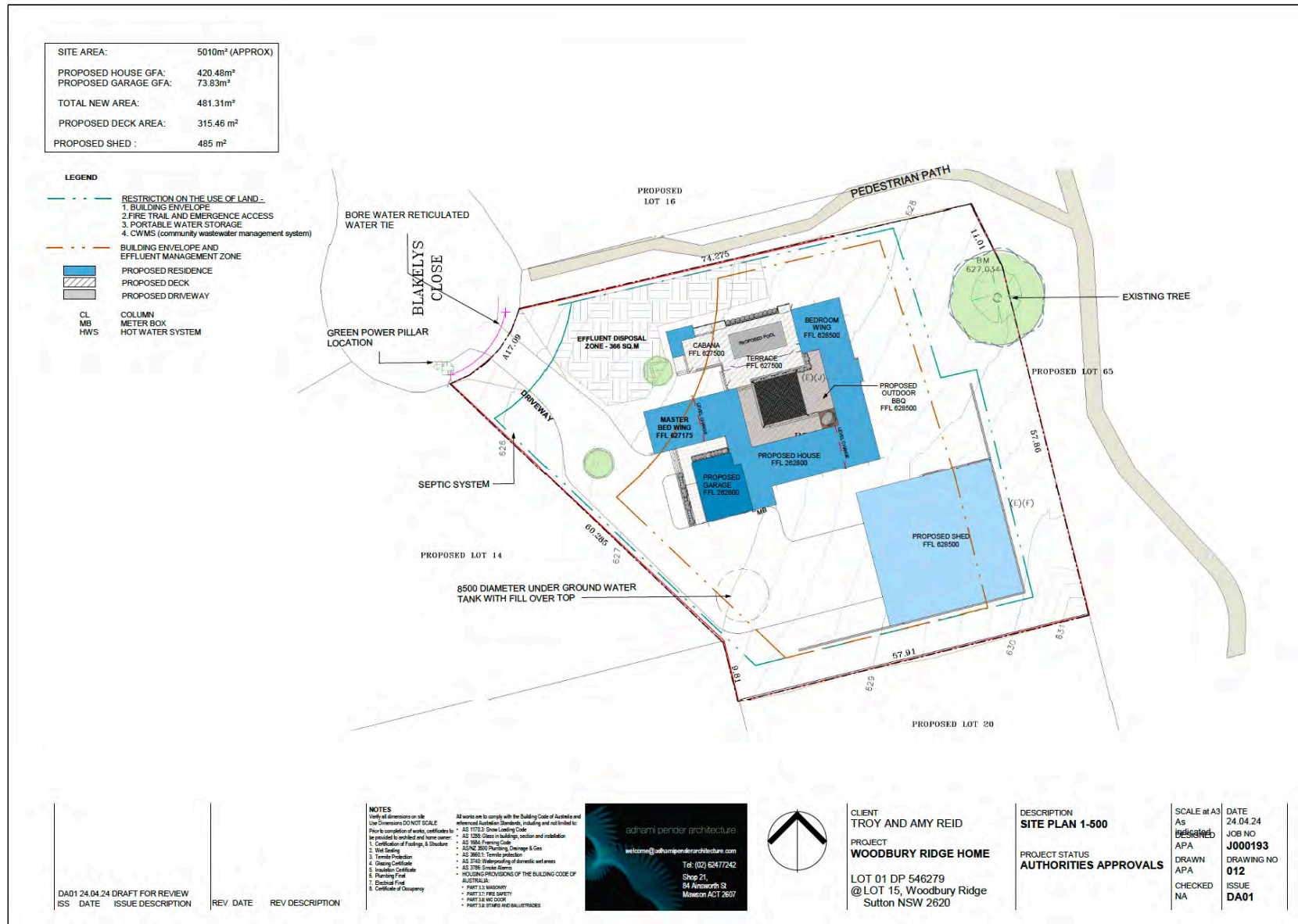


Figure 2 – Site plan (Adhami Pender Architects, 2024)

1.6 SUBJECT SITE LOCATION



Figure 3 – Regional context of Subject Site (FPA FireMaps, 2024)

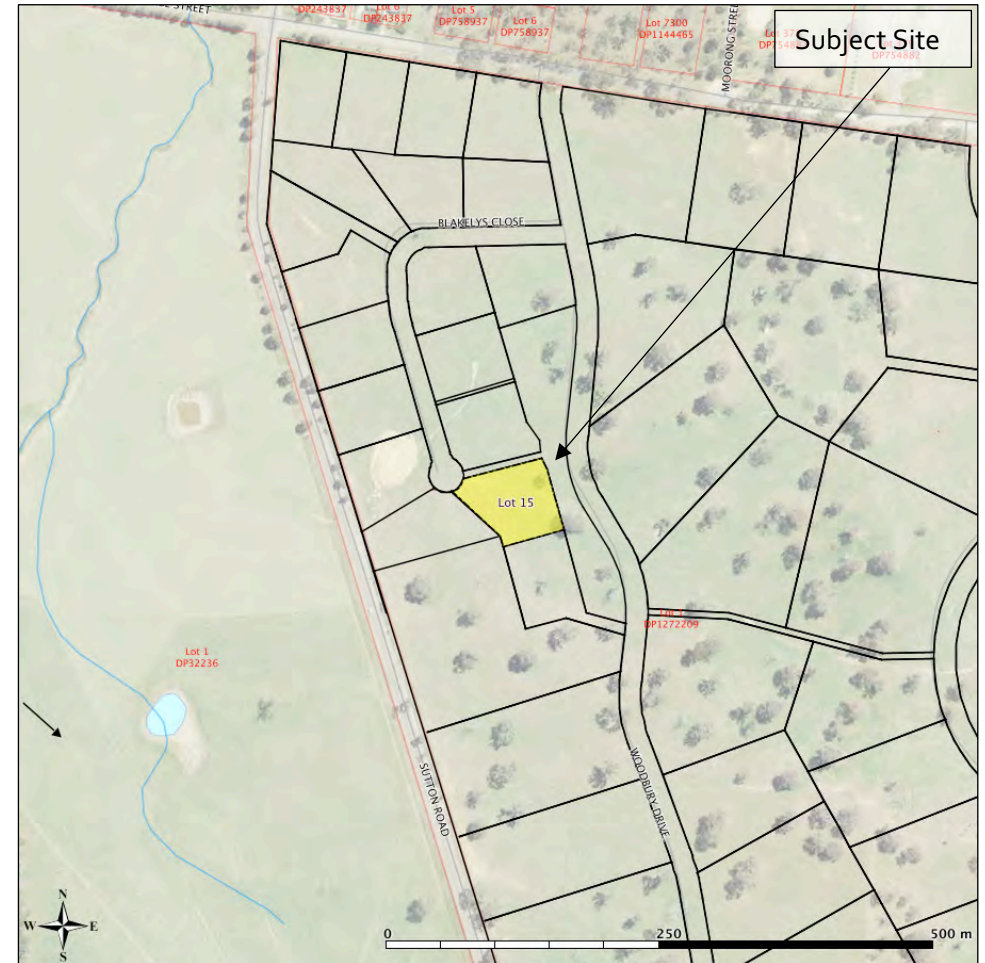


Figure 4 – Local context of Subject Site (FPA FireMaps, 2024)

1.7 BUSHFIRE PRONE LAND AND VEGETATION CLASSIFICATION MAPPING

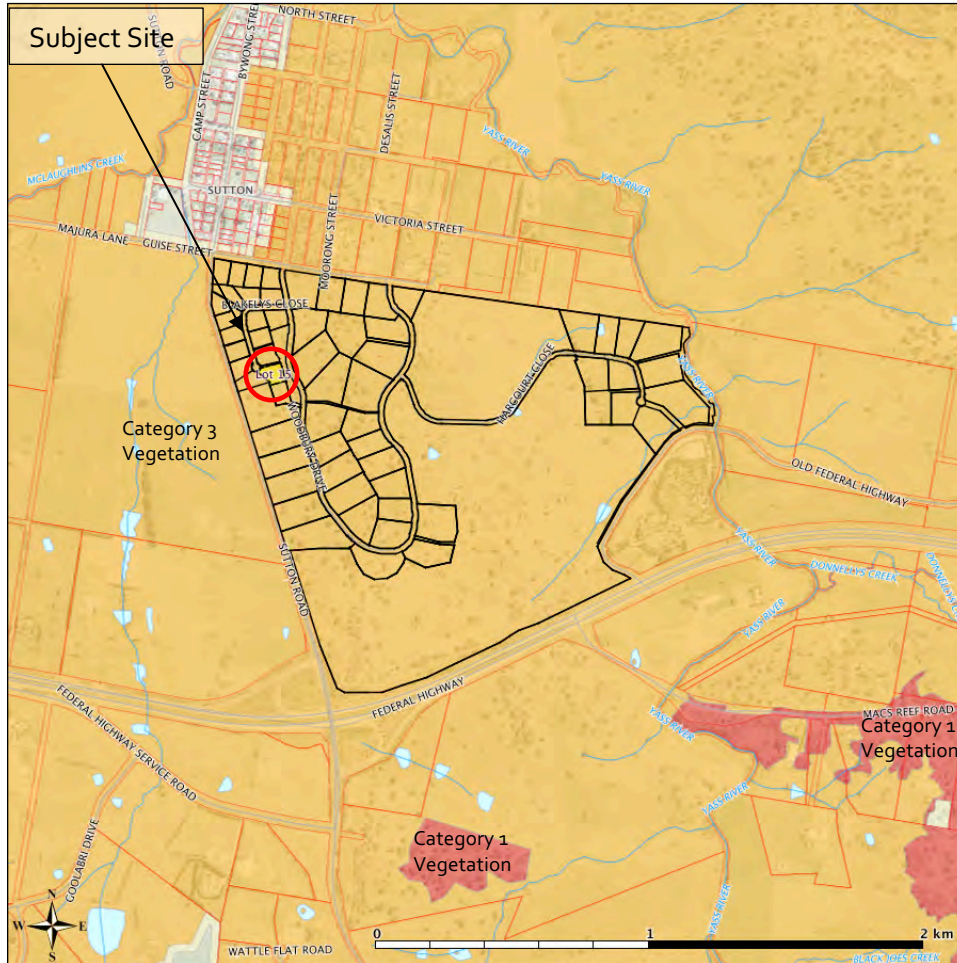


Figure 5 – Subject Site bushfire prone land map. (FPA FireMaps, 2024)

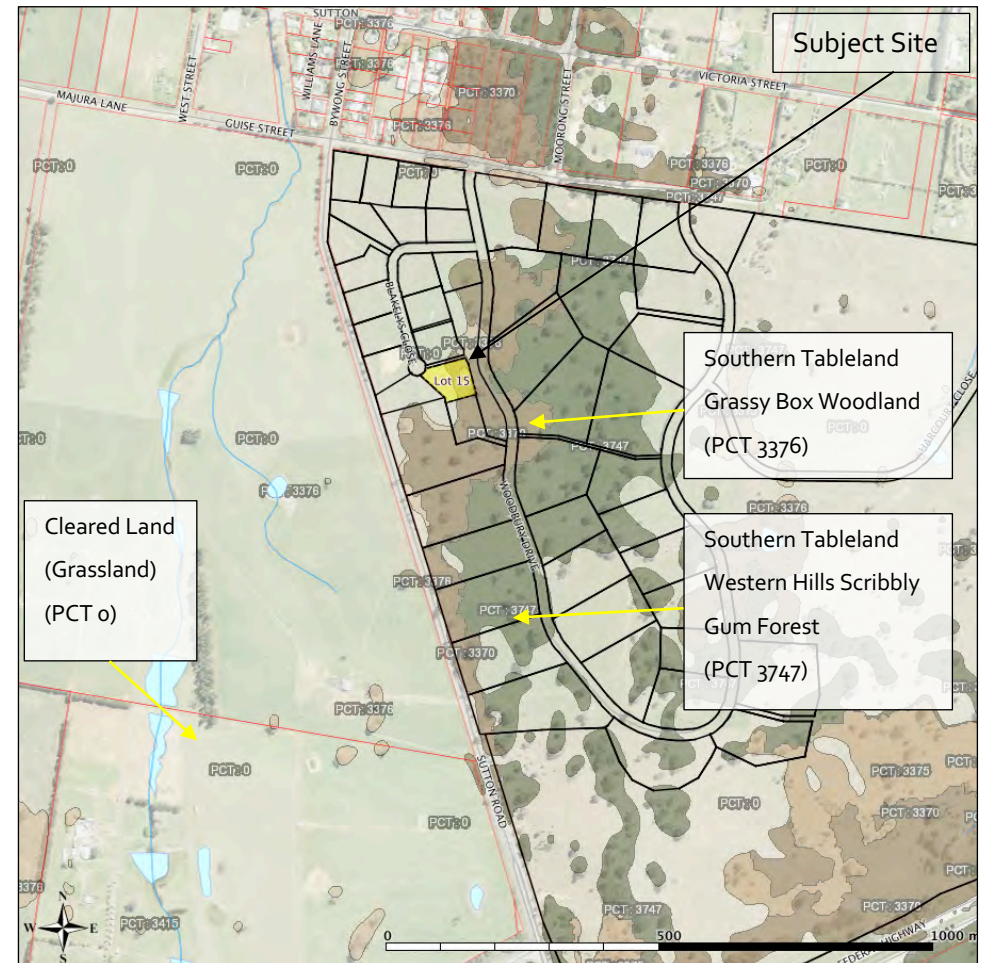


Figure 6 – Subject Site vegetation classification. (FPA FireMaps, 2024)

1.8 BUSHFIRE PRONE LAND AND VEGETATION CLASSIFICATION

DESCRIPTION

Council Bushfire Prone Land Mapping

Bushfire prone mapping relative to the Subject Site (Figure 5) shows adjacent land and the Subject Site containing areas of Category 3 Vegetation (Grassland and Woodland) bush fire prone land as identified by Council and NSW RFS.

Large areas of Category 1 Vegetation bush fire prone land are present southeast of the Subject Site.

These vegetation categories were verified during the site survey conducted on 14 May 2024.

While the bushfire prone map is a reasonable representation of the identified hazard.

State-based vegetation classification.

Subject Site vegetation formations (Figure 6) as defined by SEED (NSW Government, 2024) NSW State Vegetation Type Map.

Note: For consistency, this assessment adopts the same dominant vegetation classification used in the original bushfire protection assessment of the subdivision undertaken by Eco Logical Australia (ELA, 2020), which would have been based on a more detailed biodiversity study.

While broad areas of Forest (PCT 3747) and Woodland (3375) are identified throughout Woodbury Ridge Estate, the Estate is community title land with strict guidelines for landscape management within each lot, with most lots reasonably viewed as managed land. This is discussed further in Section 2.2.4.

2 BUSHFIRE THREAT ANALYSIS



Figure 7 – RPAS aerial image captured 14.5.24 showing closest hazard (grassland) greater than 50 m from the Subject Lot resulting in BAL-LOW outcome. (Dau, 2024)

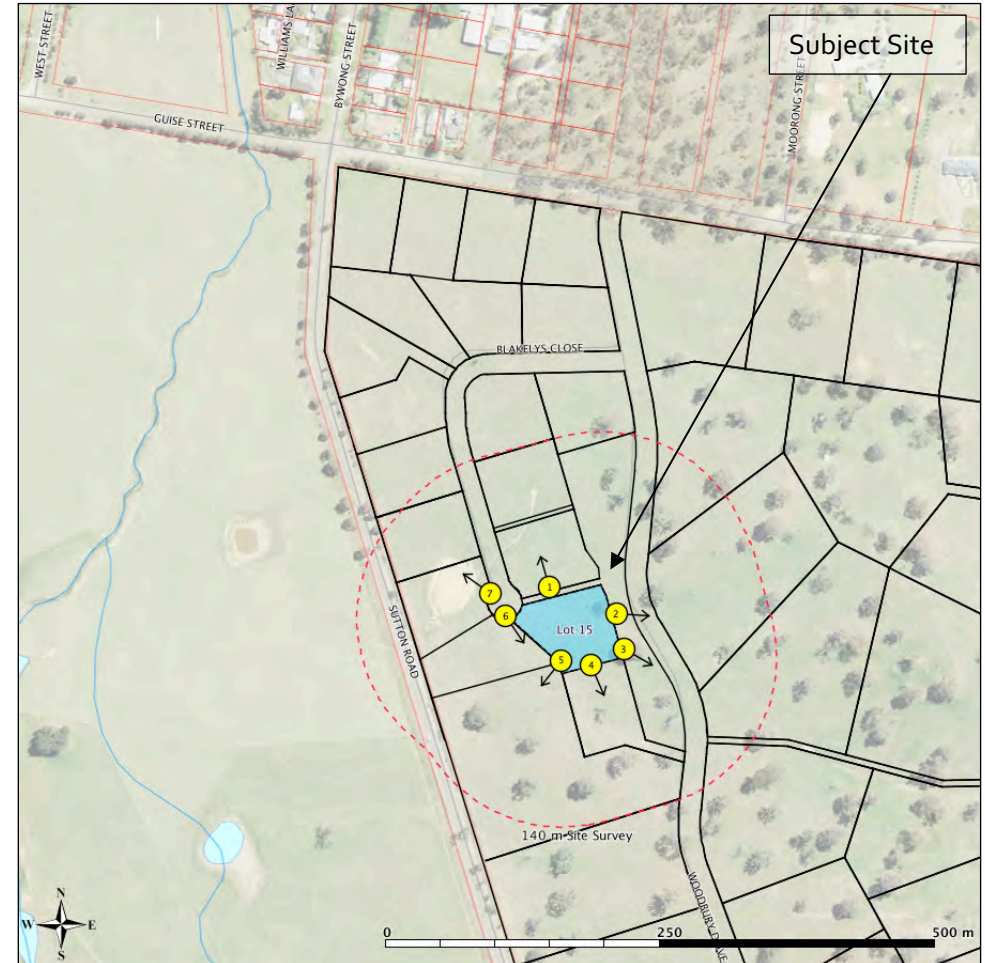


Figure 8 – Showing subject photo points and pathways of egress. (FPAA Fire Maps, 2024)

2.1 GROUND OVERVIEW OF SUBJECT SITE VEGETATION AND SLOPE



Photo point 1 Looking at managed land (lot 16) to the north of the Subject Site.



Photo point 3 Looking at managed land (community park) to the south east of the Subject Site.



Photo point 2 Looking at managed land (community park) to the east of the Subject Site.



Photo point 4 Looking at managed land (lot 14) to the south of the Subject Site

GROUND OVERVIEW OF SUBJECT SITE VEGETATION AND SLOPE



Photo point 5 Looking at managed land (lot 21) to the southwest of the Subject Site.



Photo point 7 Looking at managed land (lot 13) to the northwest of the Subject Site.



Photo point 6 Looking at underground electricity supplies for the Subject Site.

2.2 ANALYSIS CONCLUSIONS

2.2.1 VEGETATION FORMATIONS

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

Aspect	Formation / distance
West	Grassland / >50 m

2.2.2 FIRE DANGER INDEX

The fire danger index for the site has been determined per the NSW Rural Fire Service.

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

2.2.3 SLOPE, APZS AND BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT

Site slope and APZ setbacks (currently available and those required to be established) were assessed. The resultant BAL ratings (Table 1) were determined per Table A1.12.5 of PBP (2019).

Table 1 - BAL Table

Transect	Aspect	Vegetation Formation	Slope	APZ Setback Required	APZ Setback Available	BAL
A	W	Grassland	0°-5° downslope	11 m	>50 m	LOW

2.2.4 SITE ASSESSMENT NOTES

- The Subject Site is in the Village of Sutton in the Southern Tablelands region of NSW. It lies approximately 17 km northeast of Canberra.
- The Subject Site is in an area designated bushfire prone by the Council and the NSW Rural Fire Service.
- The Subject Site presents as an undeveloped parcel of land within the recently completed Woodbury Ridge Estate, and there is a good opportunity to provide the appropriate siting, design and construction to address the relative bushfire threat.
- The Subject Site slopes north-westerly downward at gentle gradients.
- Vegetation formations within the 140 m radius study area surrounding the proposed residence were assessed with grassland hazard vegetation identified but is greater than 50 m from the subject site and therefore returns a BAL-LOW outcome.
- Woodbury Ridge Estate is community title land with strict guidelines for landscape management within each lot.
- This BAL Assessment assumes the entirety of all road reserves, community lots and proposed Lots 12 to 14, 16 & 17, 20 & 21 and 49 to 52 are managed to the Inner Protection Area (IPA) specification of PBP 2019 (Appendix 4) per the NSW RFS General Terms of Approval (DA20210127 000313) dated 18 January 2022.

- Lot 15 is amongst the first of the lots within the Estate to be developed. Currently, the surrounding Lots are unmanaged, however, with 70% of the lots already sold and development imminent, the surrounding residential lots are reasonably assumed to be managed land.
- The dominant vegetation formations influencing the Subject Site have been cross-checked against the NSW BioNet Vegetation Classification database with no formations of unmanaged vegetation (hazard) identified (Figure 6).
- To maintain the BAL rating given, vegetation within the specified APZ (Figures 7 & 8) will require maintenance per RFS standards in perpetuity.
- The requirements for APZs can be found in Appendix 4 of Planning for Bushfire Protection 2019, provided here in Attachment B.
- Note: Establishing an APZ requires converting an 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.

3 BUSHFIRE MANAGEMENT PLAN

In response to the bushfire threat analysis, the proposed development will adopt a suite of Bushfire Protection Measures (BPMs) per Section 7 Residential Infill Development.

The BPMs for residential infill developments are provided to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.

A statement of compliance against the performance criteria and specific objectives of PBP 2019 is provided in Appendix A of this report.

3.1 ASSET PROTECTION ZONES

Discussion:

- This assessment assumes the entirety of lot 15 (and surrounding lots) is managed to the Inner Protection Area (IPA) specification of PBP 2019 (Appendix 4) provided here in Attachment B.
- On this basis, the future residence is >50 m from hazard vegetation (Grassland to the west) and therefore outside the scope of this assessment, and exceeds the requirements of Table A1.12.2 PBP 2019.

Recommendations:

- At the commencement of building works and in perpetuity, all land within the Subject Lot is to be managed as an Inner Protection Area (IPA) per the requirements of Asset Protection Zone Standards - Appendix 4 of PBP (2019) provided here in (Attachment B).

3.2 ACCESS REQUIREMENTS

Discussion:

- The Subject Site is located within an existing rural residential subdivision (Figure 4). It has direct access to the public road network (Blakelys Close) via a property access road <30 m in length from the proposed building envelope that will be a paved, all-weather two-wheel drive road surface with a minimum road width of 4m and an unobstructed clearance height of 4m.

Recommendations:

- A property access road is to be provided and maintained per Table 7.4a PBP 2019, provided here in Attachment A.

3.3 WATER SUPPLIES

Discussion:

- The Subject Site will have a minimum of 20,000 L (non-combustible water tank) static water supply within the APZ for firefighting purposes.
- Note: A reticulated supply with a firefighting outlet is provided along the road easement at the entrance to the property. However, it is unclear what standard this system is, and it is estimated to be greater than 70 m from the residence and, therefore, should not be relied upon.

Recommendations:

- A minimum of 20,000 L static water supplies are to be provided per Table 7.4a PBP 2019, detailed here in Attachment A.

3.4 ELECTRICITY SERVICES

Discussion:

The development proposal is provided with a new underground electricity power supply to the future residence. This supply will be from the main electricity network.

Recommendations:

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

3.5 GAS SERVICES

Discussion:

Reticulated or bottled gas supplies are not proposed.

Recommendations:

- Nil recommendations.

3.6 CONSTRUCTION

Recommendations:

- The future residence is to comply with Sections 3 and 4 (BAL LOW) of Australian Standard AS3959-2018 'Construction of buildings in bush fire-prone areas' or NASH Standard 'National Standard Steel Framed Construction in Bushfire Areas – 2014' as appropriate.
- Additional construction requirements to comply with Section 7.6 PBP 2019 are provided here in Attachment B.
- AS3959-2018 states that the BAL-LOW is based on insufficient risk to warrant specific bushfire construction requirements. It is predicated on low threat vegetation and non-vegetation areas.
- While there is no requirement to adopt bushfire construction, given the broad rural landscape setting, it is the authors recommendation, that BAL-12.5 be voluntary adopted for increased protection and resilience.

3.7 LANDSCAPING

Recommendations:

- All landscape within the subject lot is to be managed in perpetuity and in accordance with the requirements of Asset Protection Zone Standards - Appendix 4 of PBP (2019) provided here in (Attachment B).

4 CONCLUSION

This report documents a bushfire assessment for a proposed residential infill development (Class 1a Structure) at Lot 15 Blakelys Close, Sutton.

The assessment finds that the development proposal can meet the necessary performance requirements for infill development using all acceptable solutions and, therefore, satisfy the specific objectives of Planning for Bushfire Protection (2019).

On this basis, the development proposal is fit for DA approval from a bushfire protection perspective.

5 METHODOLOGY

- The methodology adopted for this assessment is based on the development proposal following a full Development Application (DA) process. On this basis, Planning for Bushfire Protection (2019) and AS3959:2018 have been the reference documents for the assessment.

- All distance and slope measurements were taken during an on-site survey of the block using a "Tru-Pulse 200" laser range finder and further validated using plans, data from NSW Spatial Services and Google Earth tools.
- Measurements taken were based on a site plan provided by Adhami Pender Architecture.
- Aerial imagery was captured with a DJI drone and processed in Maps Made Easy.

6 REFERENCE

- ePlanning Spatial Viewer, Department of Planning Industry and Environment, accessed 18 May 2024, <https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address>
- FireMaps (FPA Australia, 2024), accessed 18 May 2024, <https://maps.fpaofiremaps.com.au>
- 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 May 2024,
- Standards Australia, (2018) "AS/NZS 3959-2018 Construction of buildings in bushfire-prone areas."

ATTACHMENT A – COMPLIANCE REPORT

The following compliance report tables the performance criteria to be met under 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.

Performance Criteria	Method of Compliance	Acceptable Solution	Comments / Details
ASSET PROTECTION ZONES			
<ul style="list-style-type: none"> APZs are provided commensurate with the construction of the building; and A defensible space is provided. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> the building is provided with an APZ in accordance with Table A1.12.2 or Table A1.12.3 in Appendix 1. 	APZ dimensions in accordance with Table A1.12.2 will be provided.
<ul style="list-style-type: none"> APZs are managed and maintained to prevent the spread of a fire to the building. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> the APZ is managed in accordance with the requirements of Appendix 4 of this document and is wholly within the boundaries of the development site. 	Landscaping within the APZ is required to be managed as an Inner Protection Area (IPA) in accordance with the principles provided Appendix 4 – Asset Protection Zone Standards, PBP 2019 which is provided in Attachment B of this report.
<ul style="list-style-type: none"> The APZs is provided in perpetuity. 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 wholly within the boundaries of the development site; and APZs are located on lands with a slope less than 18 degrees. 	<p>All APZs are within the boundaries of the development site.</p> <p>No land within the area identified as APZ (Figure 8) is over 18°.</p>
ACCESS			
<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; 	Property access roads are two-wheel drive, all-weather roads.

Performance Criteria	Method of Compliance	Acceptable Solution	Comments / Details
<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 road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes), bridges and causeways are to clearly indicate load rating. 	The capacity of road surfaces and any bridges/causeways will be sufficient to carry fully loaded firefighting vehicles; 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 provided in accordance with the relevant clauses of AS 2419.1:2005 - Fire hydrant installations System design, installation and commissioning; There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available. 	A hydrant system is not proposed. Access to a static water supply will be provided for a Cat 1 fire appliance.
<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"> at least one alternative property access road is provided for individual dwellings or groups of dwellings that are located more than 200 metres from a public through road; 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 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; property access must provide a suitable turning area in accordance with 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; 	The Subject Site is located within the greater village of Sutton (Figure 3 & 4) and has direct access (less than 200 m) from the public road network.

Performance Criteria	Method of Compliance	Acceptable Solution	Comments / Details
		<ul style="list-style-type: none"> ○ 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 formalised access by dedication of a road and not by right of way. <ul style="list-style-type: none"> • 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			
<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 supply is provided where no reticulated water is available. 	The Subject Site will be provided with a minimum of 20,000 L (non-combustible water tank) static water supply within the APZ dedicated for firefighting purposes.
<ul style="list-style-type: none"> • water supplies are located at regular intervals; and • the water supply is accessible and reliable for firefighting operations. 	Not Applicable.	<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. 	Not applicable. A hydrant supply is not proposed.
<ul style="list-style-type: none"> • flows and pressure are appropriate. 	Not Applicable.	<ul style="list-style-type: none"> • fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005. 	Not applicable. A hydrant supply is not proposed.
<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 external to the building are metal, including and up to any taps. 	Where provided all above-ground water service pipes will be metal and above-ground water storage tanks shall be of concrete or metal.
<ul style="list-style-type: none"> • water supplies are adequate in areas where reticulated water is not available. 	Will meet the acceptable solutions	<ul style="list-style-type: none"> • where no reticulated water supply is available, water for firefighting purposes is provided in accordance with Table 5.3d; • a connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure; a 65mm Storz outlet with a ball valve is fitted to the outlet; • ball valve and pipes are adequate for water flow and are metal; 	The Subject Site will be provided with a minimum of 20,000 L (non-combustible water tank) static water supply within the APZ dedicated for firefighting purposes.

Performance Criteria	Method of Compliance	Acceptable Solution	Comments / Details
		<ul style="list-style-type: none"> • supply pipes from tank to ball valve have the same bore size to ensure flow volume; • underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank; • a hardened ground surface for truck access is supplied within 4m of the access hole; • above-ground tanks are manufactured from concrete or metal; • raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F AS 3959); • unobstructed access is provided at all times; • tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters; • underground tanks are clearly marked, • all exposed water pipes external to the building are metal, including any fittings; • where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack; • Any hose and reel for firefighting connected to the pump shall be 19mm internal diameter; and • fire hose reels are constructed in accordance with AS/NZS 1221:1997 and installed in accordance with the relevant clauses of AS 2441:2005 	<p>Static water supply is to be provided with all fittings and specifications in accordance with the acceptable solutions provided here in the adjacent column.</p>
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>The development proposal is provided with new underground electricity power supply to the future residence. This supply will be from the main electricity network. Electricity services to be provided in accordance with the specifications provided in PBP 2019 as described in the adjacent column.</p>
GAS SERVICES			

Performance Criteria	Method of Compliance	Acceptable Solution	Comments / Details
<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. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> reticulated or bottled gas is installed and maintained in accordance with 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; if gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2m away from any combustible material, so they do not act as a catalyst to combustion; polymer-sheathed flexible gas supply lines are not used; and above-ground gas service pipes are metal, including and up to any outlets. 	Reticulated or bottled gas supplies are not proposed.
CONSTRUCTION			
<ul style="list-style-type: none"> the proposed building can withstand bush fire attack in the form of wind, embers, radiant heat and flame contact. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> BAL is determined in accordance with Tables A1.12.5 to A1.12.7; and construction provided in accordance with the NCC and as modified by section 7.5. 	The future residence is to comply with Sections 3 and 4 (BAL LOW) of Australian Standard AS3959-2018 'Construction of buildings in bush fire-prone areas' or NASH Standard 'National Standard Steel Framed Construction in Bushfire Areas – 2014' as appropriate.
<ul style="list-style-type: none"> proposed fences and gates are designed to minimise the spread of bush fire. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> fencing and gates are constructed in accordance with section 7.6. 	Can comply
<ul style="list-style-type: none"> proposed Class 10a buildings are designed to minimise the spread of bush fire. 	Will meet the acceptable solutions.	<ul style="list-style-type: none"> Class 10a buildings are constructed in accordance with section 8.3.2. 	Can comply.
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 in accordance with Appendix 4; and fencing is constructed in accordance with section 7.6 of PBP 2019. 	Landscaping within the APZ is required to be managed as an IPA in accordance with the principles provided Appendix 4 – Asset Protection Zone Standards, PBP 2019 which is provided in Attachment B of this report.

ATTACHMENT B – APZs,

LANDSCAPING AND CONSTRUCTION

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.

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).

ADDITIONAL CONSTRUCTION REQUIREMENTS

(SECTION 7.5 PBP 2019)

To ensure the performance criteria for construction standards given in section 7.4 can be met, PBP adopts additional measures over and above AS 3959 and NASH Standard as follows:

- construction measures for ember protection at BAL-12.5 and BAL-19 provided by AS 3959;
- construction measures for development in BAL-FZ; and
- requirements over and above the performance criteria contained within AS 1530.8.1 and AS 1530.8.2 apply in regard to flaming.

7.5.2 NSW State Variations under G5.2(a) (i) and 3.10.5.0(c)(i) of the NCC

Certain provisions of AS 3959 are varied in NSW based on the findings of the Victorian Bush Fires Royal Commission and bush fire industry research.

The following variations to AS 3959 apply in NSW for the purposes of NSW G5.2(a)(i) of Volume One and NSW 3.10.5.0(c)(i) of Volume Two of the NCC;

- clause 3.10 of AS 3959 is deleted and any sarking used for BAL-12.5, BAL-19, BAL-29 or BAL-40 shall:
 - be non-combustible;
 - or comply with AS/NZS 4200.1, be installed on the outside of the frame and have a flammability index of not more than 5 as determined by AS 1530.2; and

- clause 5.2 and 6.2 of AS 3959 is replaced by clause 7.2 of AS 3959, except that any wall enclosing the subfloor space need only comply with the wall requirements for the respective BAL; and
- clause 5.7 and 6.7 of AS 3959 is replaced by clause 7.7 of AS 3959, except that any wall enclosing the subfloor space need only comply with the wall requirements for the respective BAL; and
- fascias and bargeboards, in BAL-40, shall comply with:
 - clause 8.4.1(b) of AS 3959; or
 - clause 8.6.6 of AS 3959.

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.