BUSHFIRE ASSESSMENT REPORT

SOUTH JERRABOMBERRA ESTATE STAGE 2 NORTH CATCHMENT DA

Prepared for Village Building Company Pty Ltd

1 September 2025

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ember
bushfire consulting

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Verified by:	Rob McGregor (BPAD- 33130)
Approved by:	Jeffrey Dau (BPAD – 33128)

Executive Summary

EMBER Bushfire Consulting has been engaged by Village Building Company to prepare a bushfire assessment report for the South Jerrabomberra Estate Stage 2 North Catchment subdivision.

South Jerrabomberra Estate Stage 2 North Catchment, represents the next phase of growth for the currently under construction of South Jerrabomberra Estate 2, with Stages 2a, 2b and 2c well underway and Stage 2e DA recently submitted for approval.

South Jerrabomberra Estate Stage 2 North Catchment is on bushfire prone land as designated by the Queanbeyan Palerang Regional Council.

This assessment adopts a methodology provided under the requirements of Section 100B of the Rural Fires Act and the Rural Fire Regulations 2013 to assess the adequacy for bushfire protection of the subdivision as planned.

This report establishes the level of bushfire threat to the proposed development and examines bushfire protection for measures such as asset protection, access and services.

Due to its mostly built out setting to the north and north east except for adjoining woodland and grassland to the east and south respectively the surrounding environment possesses a relatively low bushfire threat to the subject site. This remaining threat can be moderated given the standard suite of protection measures offered by PBP 2019 and for which the proposed development can largely comply.

The future development provides good space for the establishment and maintenance of the required APZs. A 100 m temporary APZ is to be established and maintained wrapping around the proposed subdivision to the southwest, south and southeast until future development is underway.

Access throughout the subdivision is well provided for and will comply with the acceptable solutions set out in Planning for Bushfire Protection 2019.

Planned services throughout the subdivision are to meet the standards and specifications set out with PBP (2019) and will be capable of complying with the acceptable solutions.

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

KEY DETAILS OF DEVELOPMENT

Information	Detail
Lot & DP Number	Lot 67 DP 1302790
Street Address	Environa Dr, Environa
Local Government Area	Queanbeyan Palerang Regional Council
Zoning of subject land	R2 – Low Density Residential
Zoning of adjoining lands	C2 – Environmental Conservation RE2 – Private Recreation R2 – Low Density Residential
Staging issues	This is Stage 2 of up to 8 stages
Development classification	Residential subdivision
Type of assessment	100B for Bushfire Safety Authority
Fire weather area	Southern Ranges
Fire Danger Index	100
Predominant vegetation	Grassland / Woodland
Slope	Ranging from upslope to 10° downslope
Environmental constraints	Standard Biodiversity Offset Constraints
Cultural constraints	Nil known

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1 INTRODUCTION AND OVERVIEW

1.1 BACKGROUND

EMBER Bushfire Consulting has been engaged by Village Building Company (VBC) to prepare a bushfire assessment report for South Jerrabomberra Estate Stage 2 North Catchment Development Application (the Subject Site).

The development proposal is located on land declared 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.

1.2 AIM AND OBJECTIVES

The aim of this report is to:

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

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

- minimise perimeters of the subdivision exposed to the bush fire hazard;
- minimise vegetated corridors that permit the passage of bush fire towards buildings;
- provide for the siting of future dwellings away from ridge-tops and steep slopes, within saddles and narrow ridge crests;
- ensure that APZs between a bush fire hazard and future dwellings are effectively designed to address the relevant bush fire attack mechanisms;
- ensure the ongoing maintenance of APZs;
- provide adequate access from all properties to the wider road network for residents and emergency services;
- provide access to hazard vegetation to facilitate bush fire mitigation works and fire suppression; and

- ensure the provision of an adequate supply of water and other services to facilitate effective firefighting.

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

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

1.3 LIMITATIONS AND DISCLAIMER

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

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

It should be kept in mind that the measures prescribed 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 behavior of fire, and extreme weather conditions.

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

1.4 COPYRIGHT NOTICE

1.5 STAKEHOLDERS

Table 1 - Stakeholders

Stakeholder	Role	Contact	Detail
Village Building Company	Planning Manager	Will Pearson	0401 574 366
Spiire	Surveyor / Civil Engineers	Chelsea Corcoran	Not given
Queanbeyan Palerang Regional Council	Consent Authority	Not Given	1300 735 025
NSWRFS	Consent Authority	Not Given	02 4475 1300

1.6 SUBJECT SITE LOCATION

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

The subject site is in the Southern Tablelands of NSW, 8 km southwest of Queanbeyan and directly adjacent to the west of the ACT / NSW Border and the ACT industrial estate of Hume. To the northeast of the subject site is the existing suburb of Jerrabomberra (Figure 1). The Subject Site falls within the administration area of the Queanbeyan Palerang Regional Council (QPRC).

The dominant land use surrounding the Subject Site is under construction, medium density, residential land associated with earlier stages of South Jerrabomberra Estate Stage to the Northeast and undeveloped ex-primary production land to the south and southeast (Figure 2). To the West is industrial land belonging to the ACT.

The dominant geographic features surrounding the subject site is the Tralee Hills which rises sharply to the south and east. Topography in the area is considered gently undulating and in general terms landform slopes downwards in a northerly and westerly direction at moderate gradients (5° – 10°) before flattening out towards natural water course areas in the north.

1.7 SUBJECT SITE DESCRIPTION

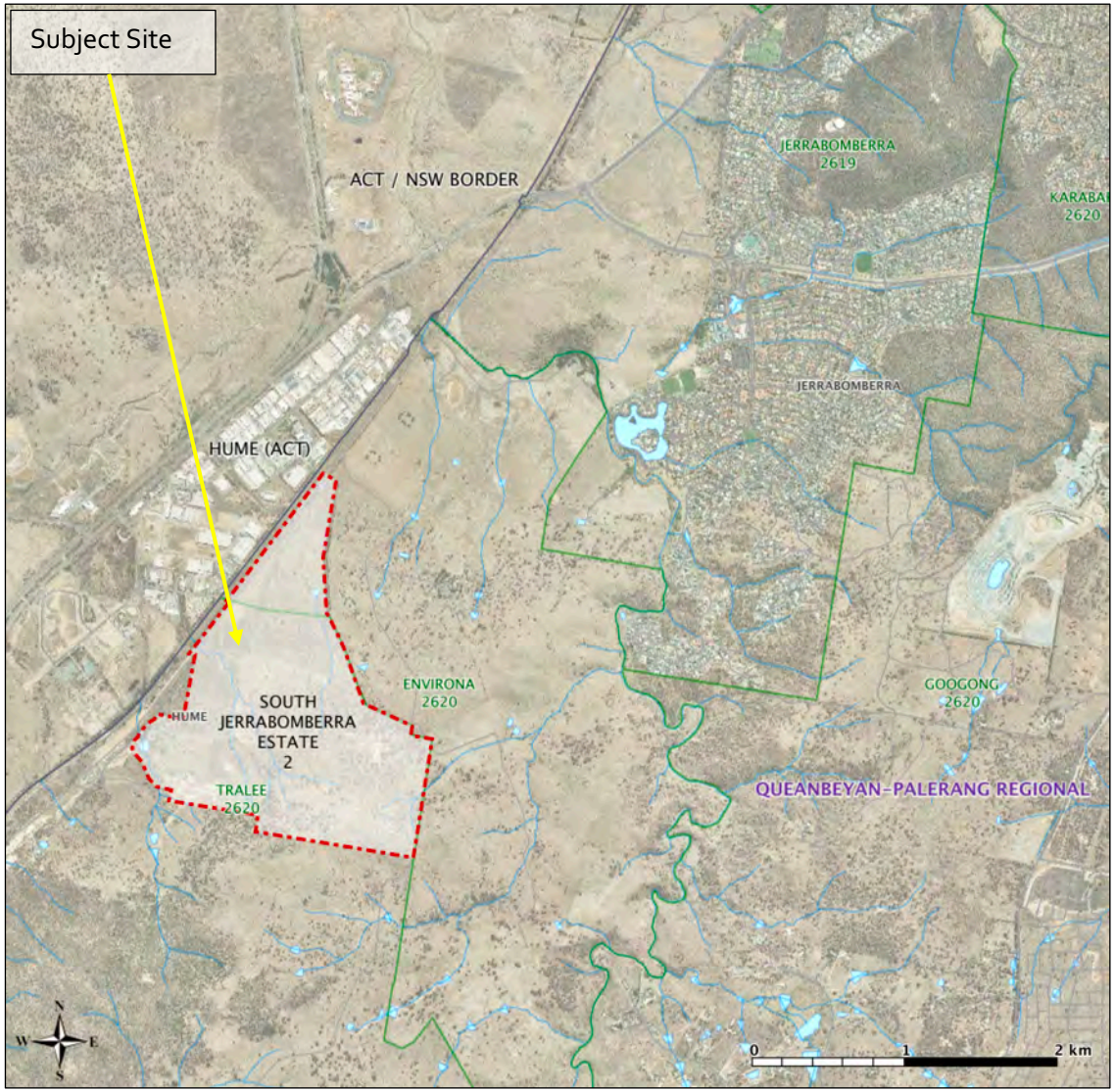


Figure 2 - Subject site local context (FireMaps, 2023)

The subject site connects with newly constructed Stage's 2b and 2c, and proposed 2e to the North. Undeveloped land to the South is earmarked for development and will eventually be built out, effectively removing any associated hazard. A temporary 100 m Asset Protection Zone (APZ) will wrap around the Subject Site to the southwest, south and southeast.

For this assessment, the dominant vegetation formations are grassland and woodland (Figure 7) which aligns with the Plant Community Type (PCT) Vegetation Zones identified in the biodiversity study (Figure 6).

Access to and from the subject site is through South Jerrabomberra Estate 1 & 2, primarily via Environa Road (an arterial road) which connects to the broader road network at Tompsitt Drive, Jerrabomberra (Figure 4).

The proposal is designed with an interconnected road network including perimeter roads and multiple connection points with South Jerrabomberra Estate 1 enabling through road access for the estate. Emergency Access (only) is available into the ACT through Hume.

1.8 DEVELOPMENT PROPOSAL

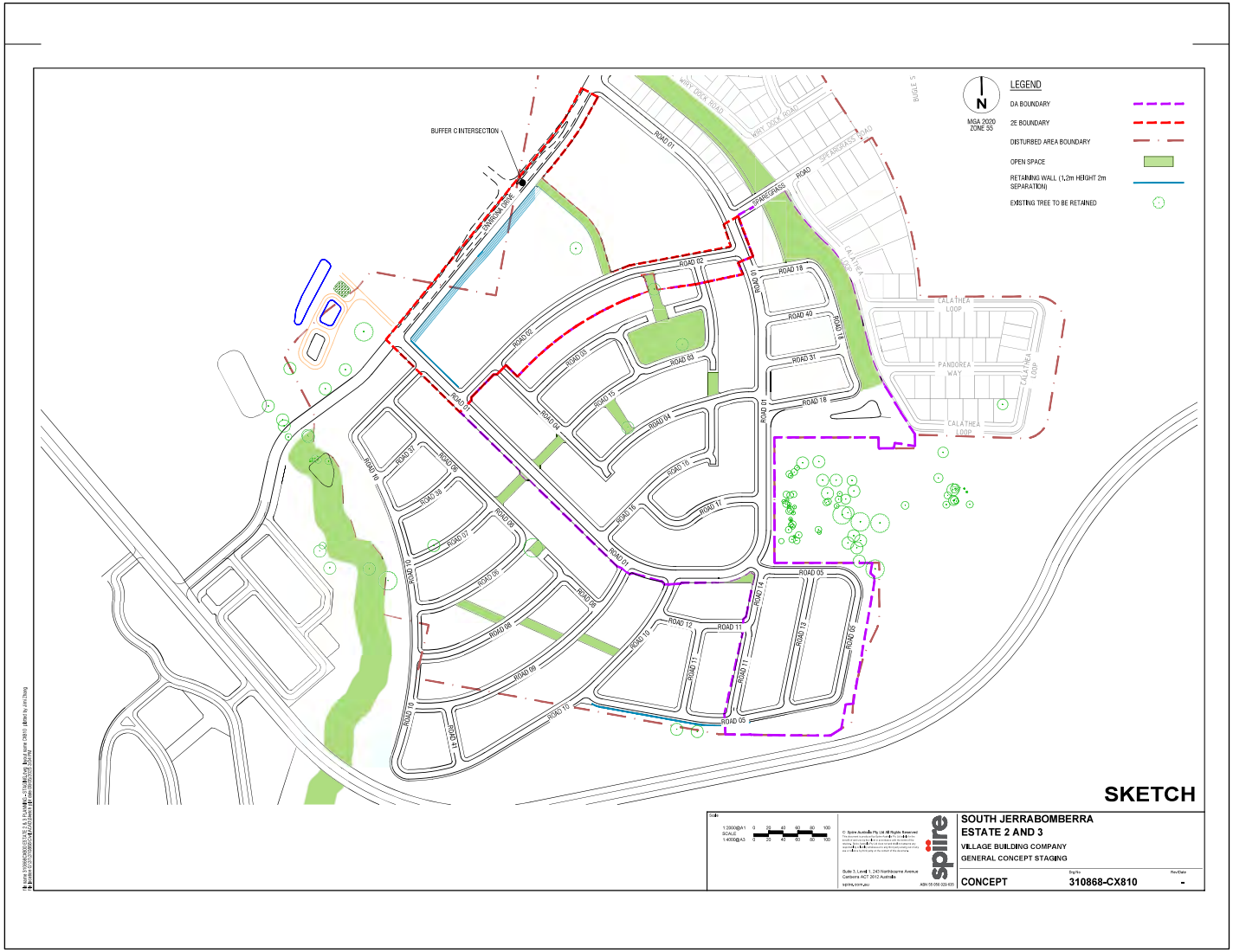


Figure 3 – South Jerrabomberra Estate 2e and North Catchment General Arrangement Plan (Spiire, 2025)

The subject site represents the next phase of growth for the currently under construction of South Jerrabomberra Estate 2, with Stages 2a, 2b and 2c well underway (Fig. 3). Stage 2e DA has recently been submitted for approval.

The proposed development will be entirely for residential purposes except for a thin ribbon of urban open space.

The scope of this bushfire assessment is isolated to the developable area within the boundaries identified as South Jerrabomberra Estate Stage 2 North Catchment.

1.9 ACCESS ARRANGEMENTS

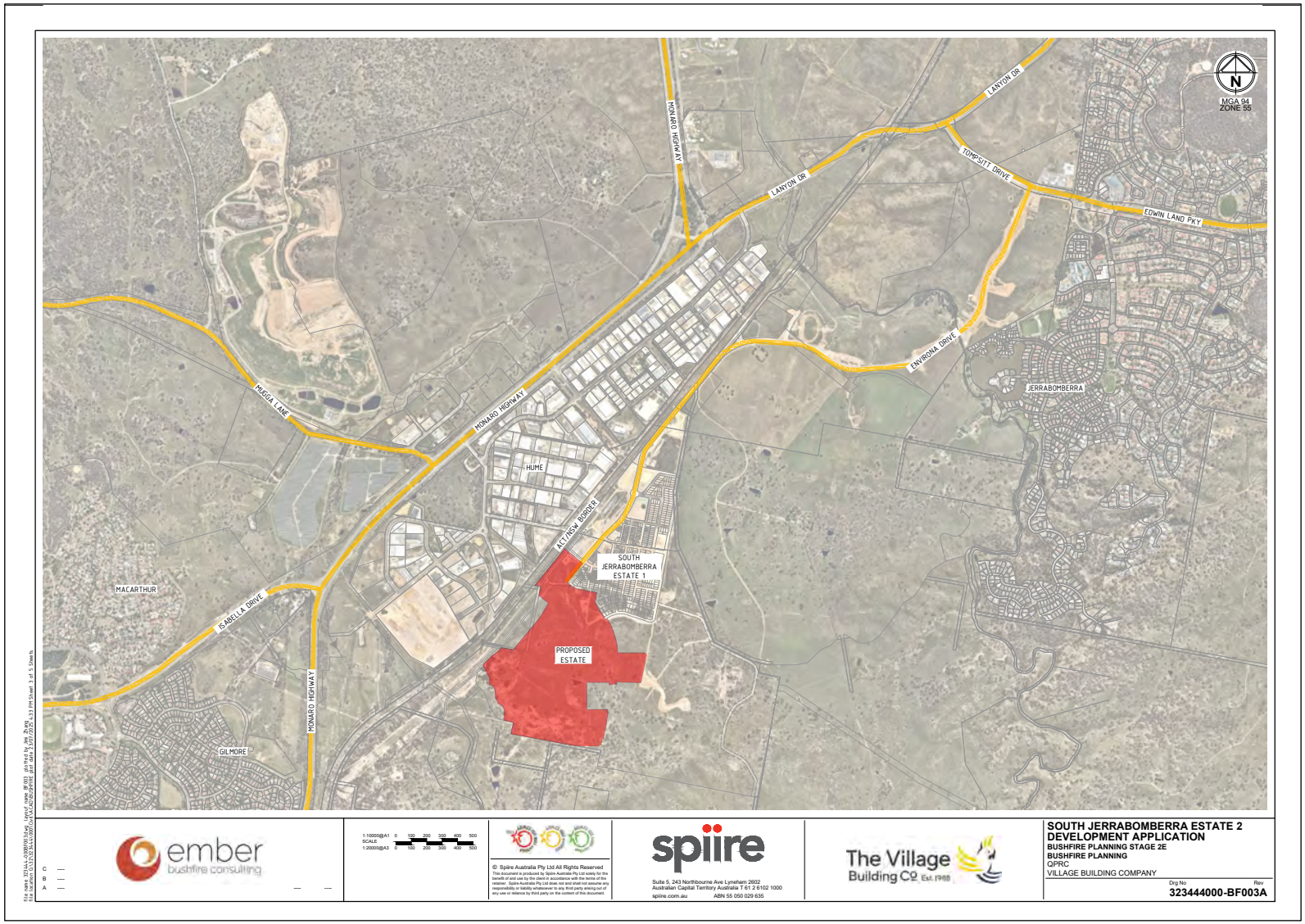


Figure 4 – South Jerrabomberra Estate 2 Access Arrangement (Spiire, 2025)

Developed areas outside the subject site have been subject to previous rezoning and DA approvals, including a Bushfire Fire Safety Authority from the NSW RFS and therefore are outside of the scope of this assessment.

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 context of site, determine bushfire threat, options for asset protection zones, access roads and infrastructure.	Ground truth online mapping data, validate vegetation class, obtain site measurements, assess existing structures and infrastructure.
Assessment of proposal against the NSWRFS 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 of PBP 2019.
Report	Preparation and publication of bushfire assessment report	Demonstrate the proposal is capable of meeting the aims and objectives of PBP 2019.

2.2 GENERAL BUSHFIRE ENVIRONMENT

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

Table 3 - Bushfire behaviour factors

Factor	Value
Fire Weather Area	Southern Ranges
FDI	100
Predominant Vegetation Classification	Grassland 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 were identified and classified in accordance with Appendix A1.2 of PBP 2019.*
- *Slopes within 100 m of the APZ have been calculated in accordance with A1.4 & A1.5 of PBP 2019.*
- *The fire danger index for the site has been determined in accordance with the NSW Rural Fire Service.*
- *A detailed bushfire threat analysis is provided in Section 3 of this report.*

2.3 SUBJECT SITE BUSHFIRE PRONE MAPPING

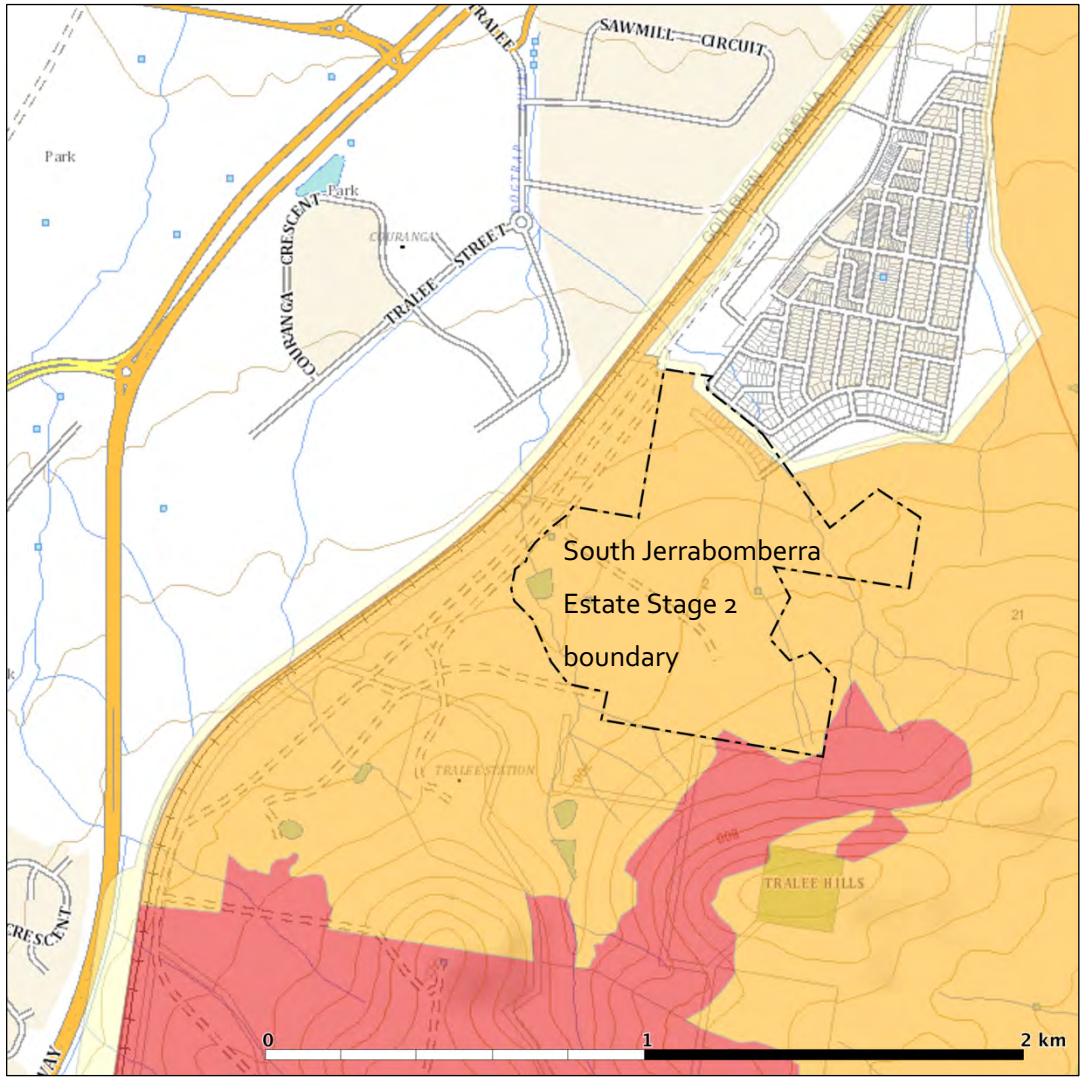


Figure 5 – Subject site Bushfire Prone Land Map. (FireMaps, 2025)

Subject site bushfire hazard analysis

Bushfire prone mapping relative to the Stage 2 boundaries (Figure 5) showing adjacent land and the subject site containing areas of Category 1 & Category 3 Vegetation identified as bush fire prone land by Council and NSW RFS.

During the site survey, the category and extent of vegetation was assessed. While Category 1 vegetation was present its mapping did not conform to actual vegetation boundaries while Category 3 vegetation is broadly accurate it has not kept pace with the rapid development of Stages 2a, 2b and 2c and therefore not accurate in these areas.

Hazard classification key:

2.4 PLANT COMMUNITY TYPE VEGETATION ZONES

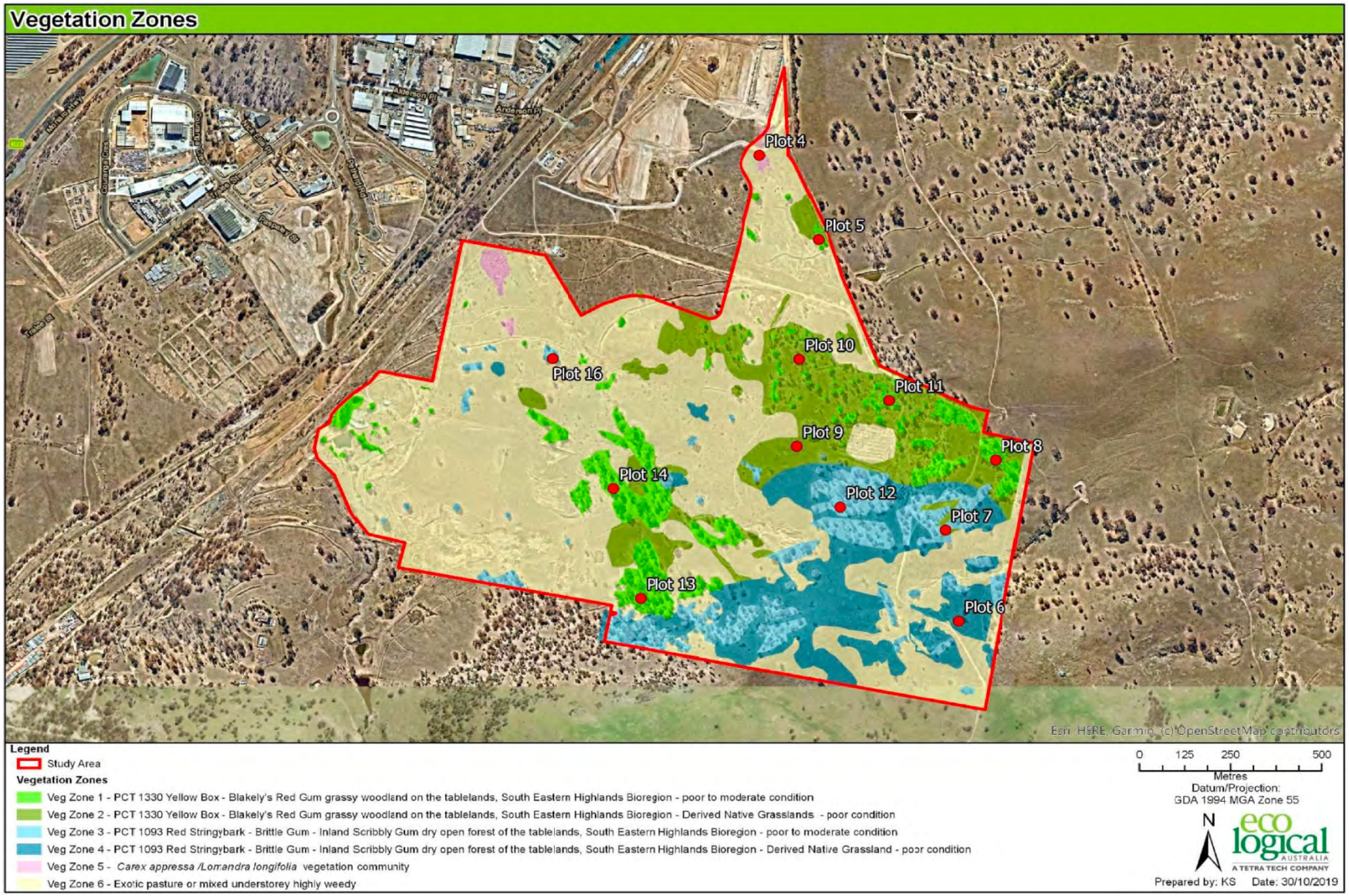


Figure 6 – Plant Community Type Vegetation Zones. (Ecological, 2019)

2.5 VEGETATION ANALYSIS

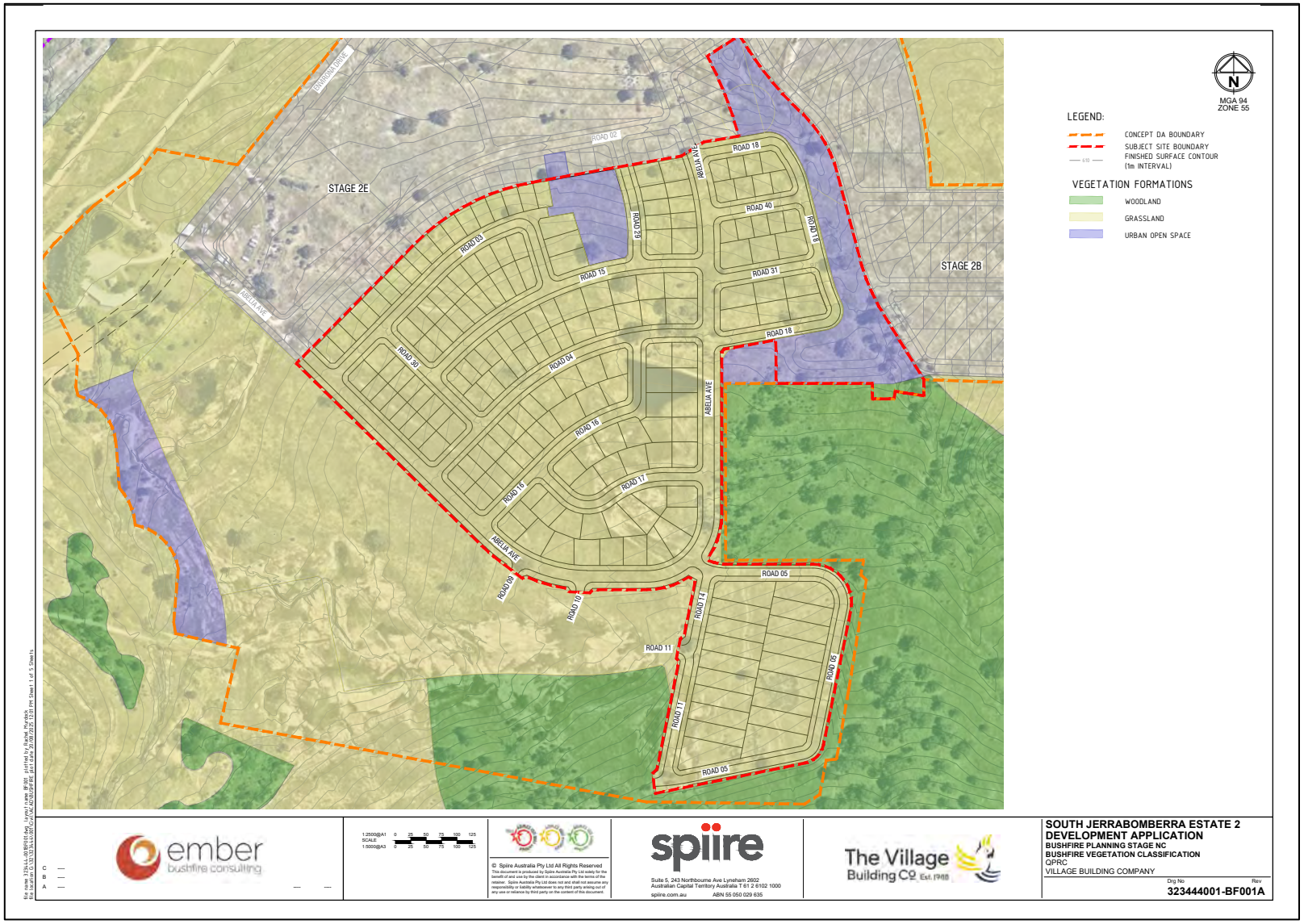


Figure 7 – Vegetation analysis. (Ember & Spiire, 2025)

2.6 SLOPE ANALYSIS

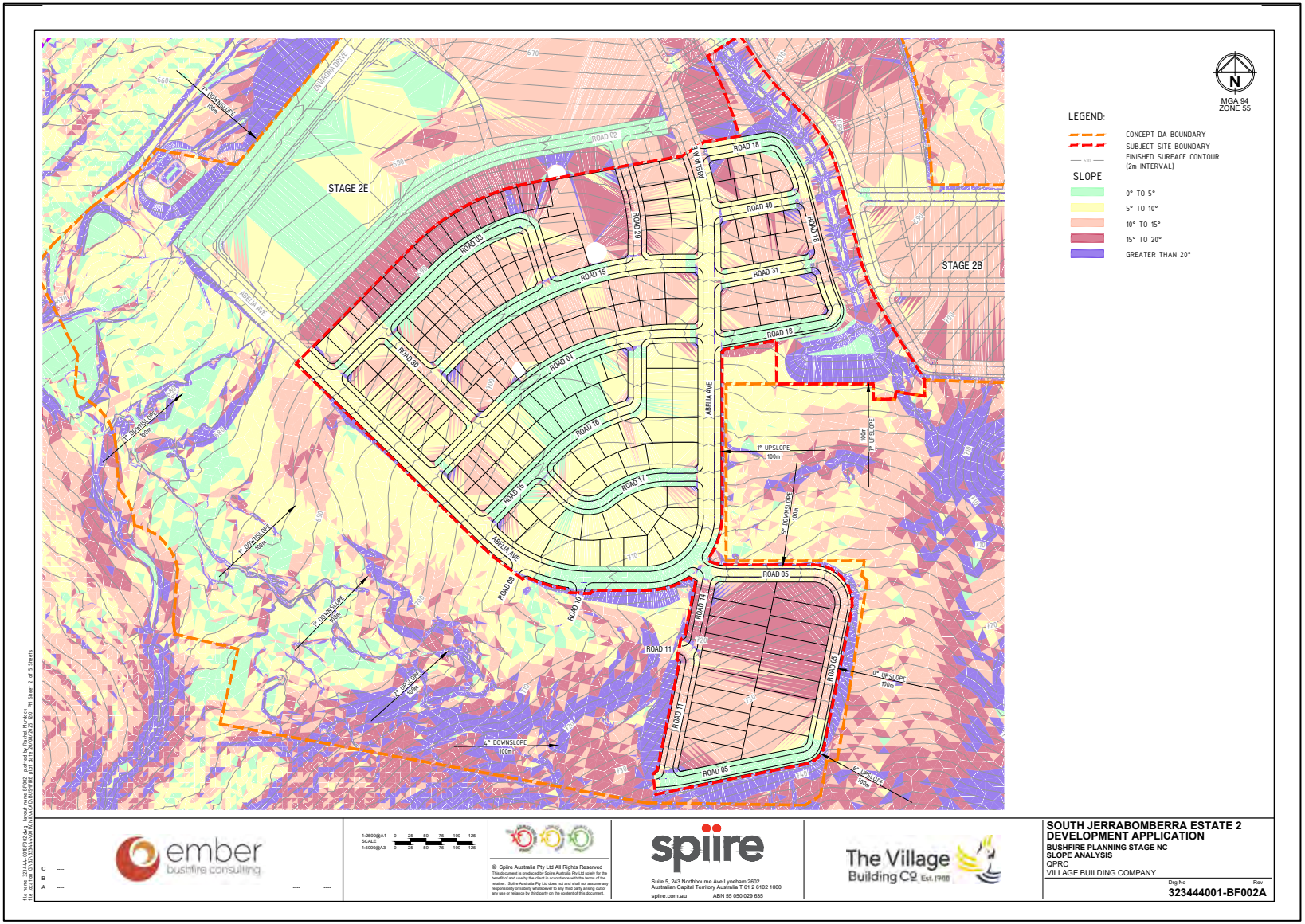


Figure 8 – Slope analysis. (Dau & Spiire, 2025)

2.7 APZ ANALYSIS

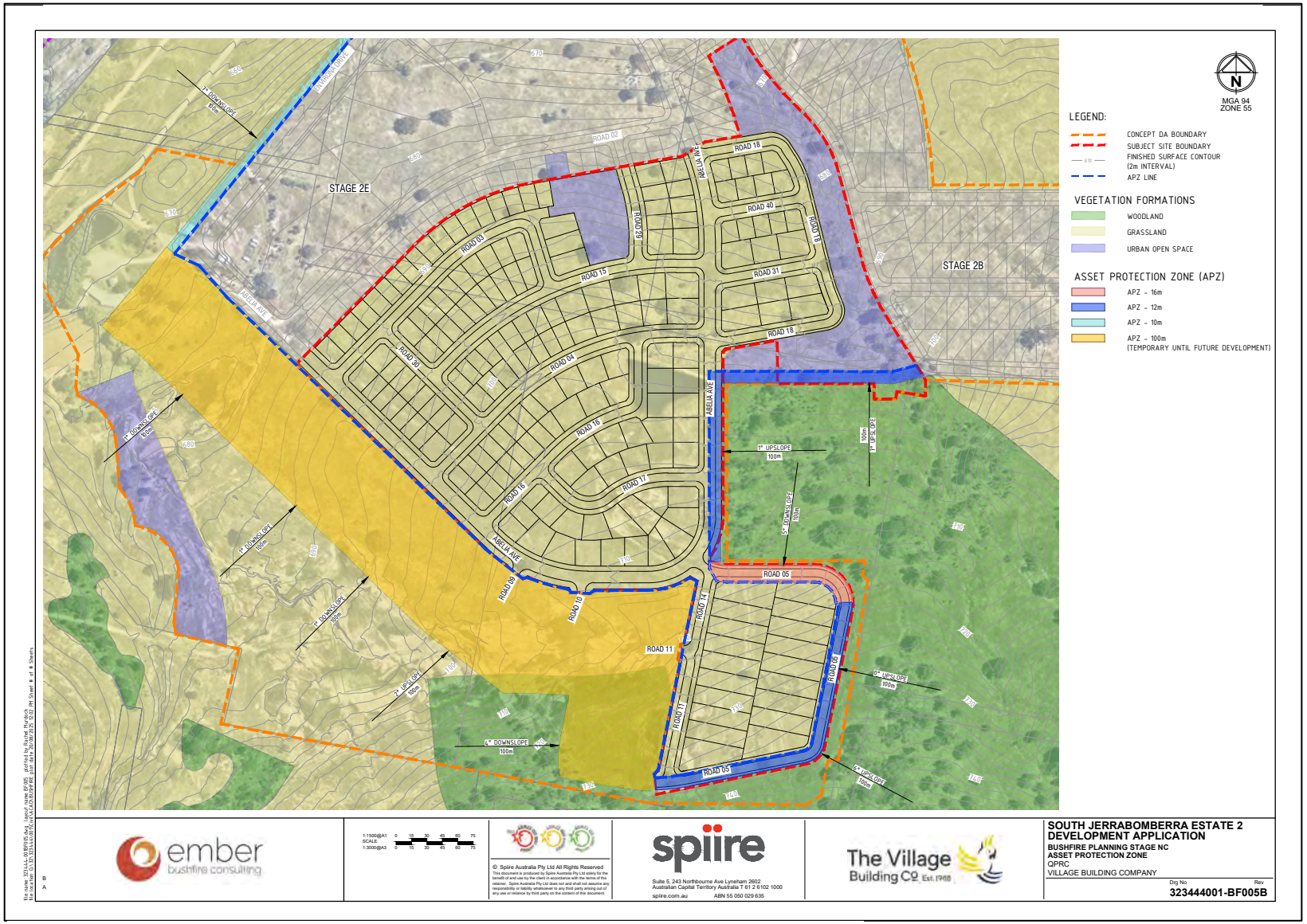


Figure 9 – APZ analysis. (Dau & Spiire, 2025)

2.8 BAL ANALYSIS

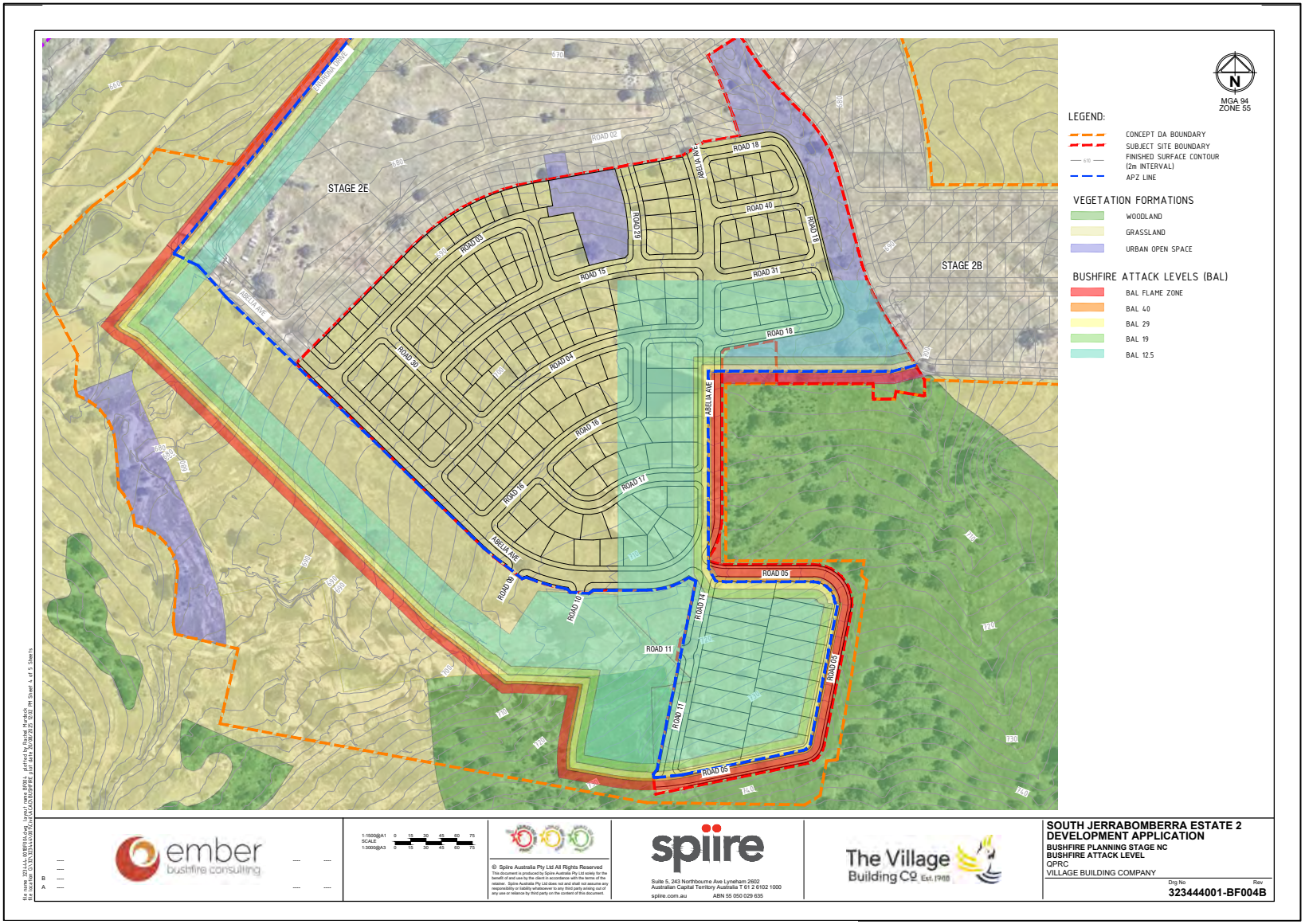
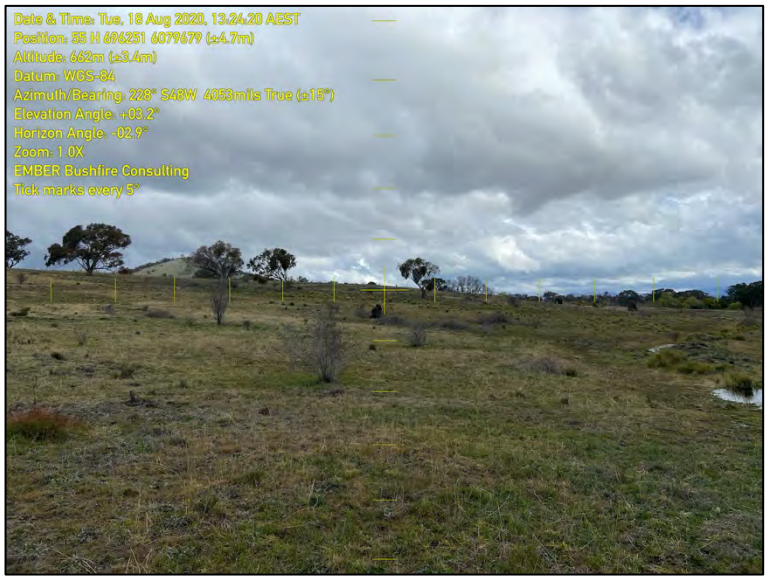
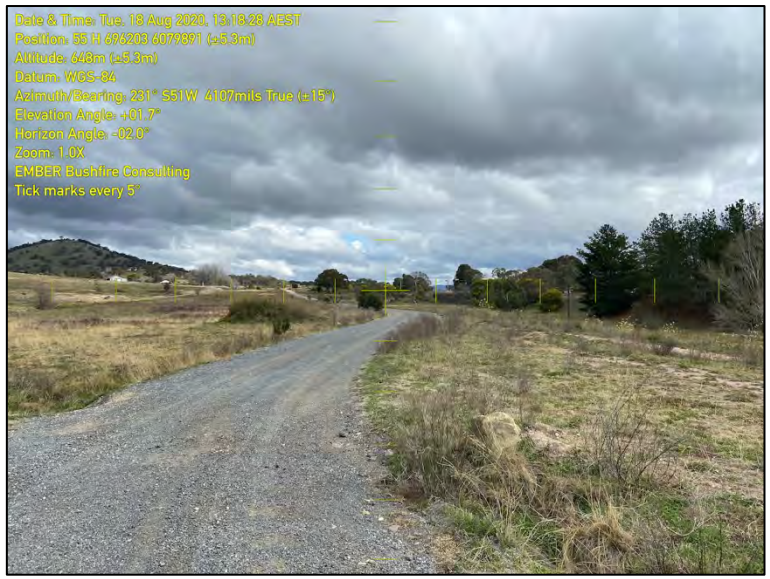
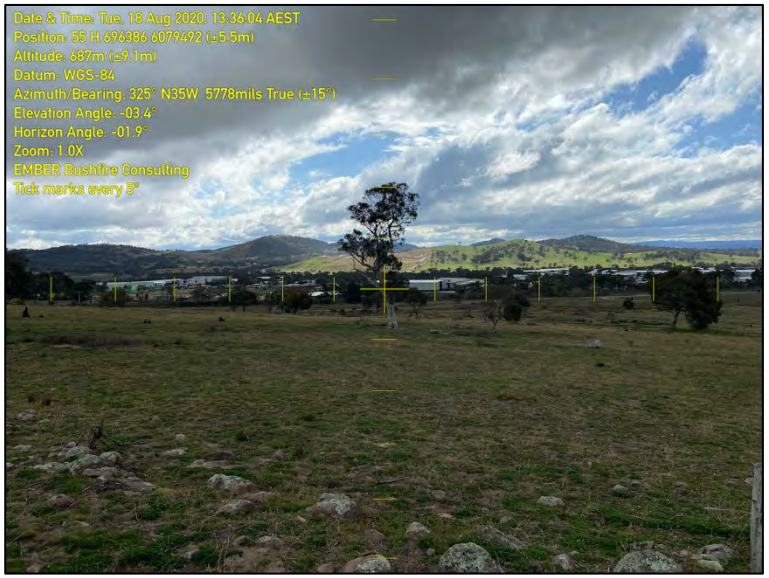


Figure 10 – BAL analysis. (Dau & Spiire, 2025)

2.9 SUBJECT SITE PHOTOGRAPHIC OVERVIEW



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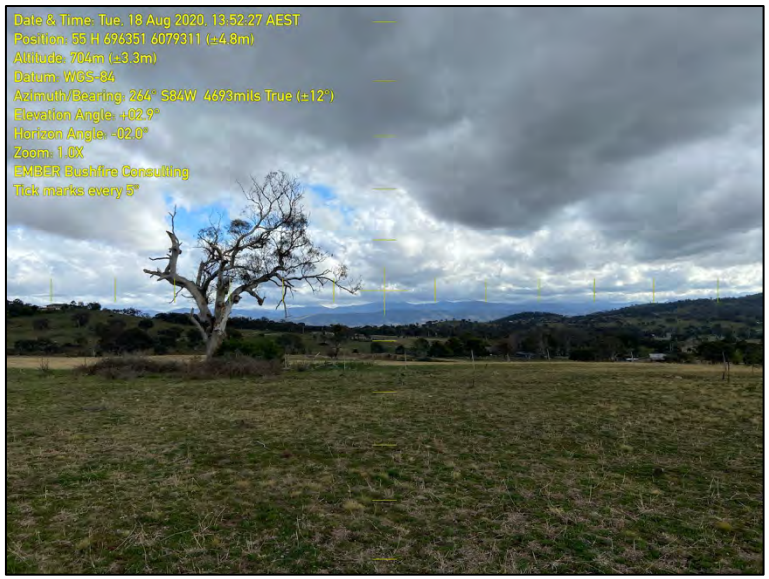
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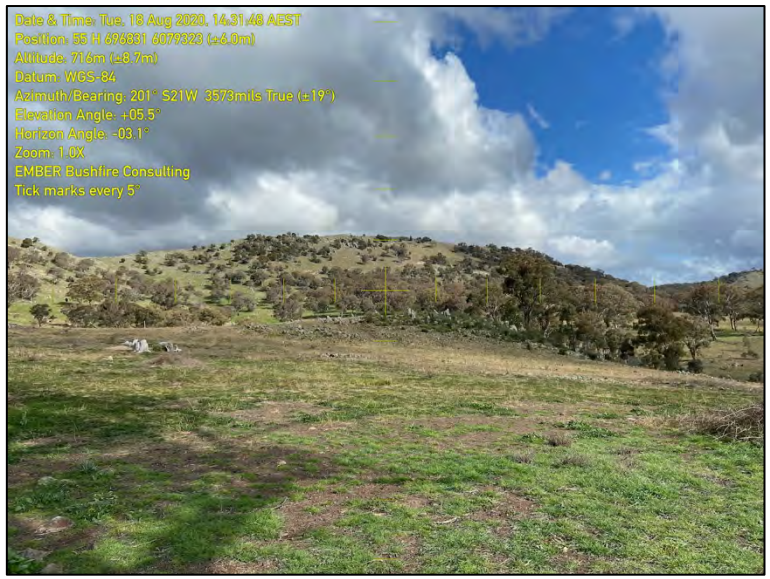
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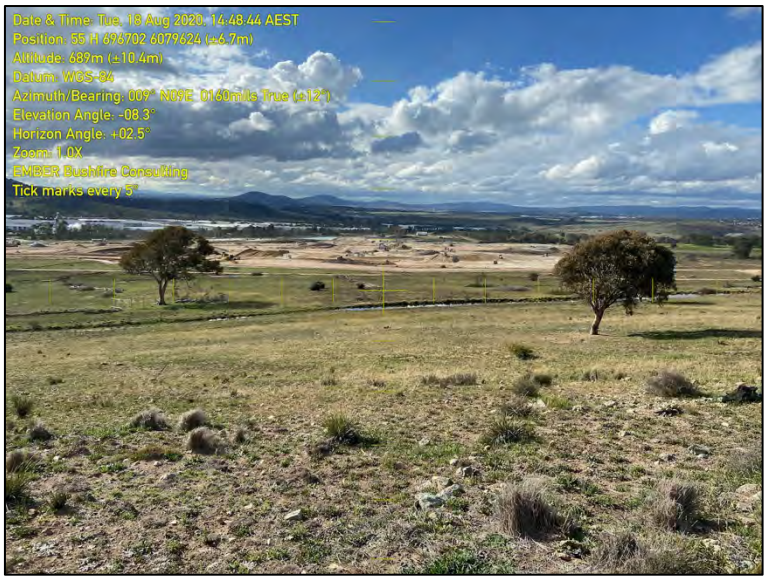
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Tick marks every 5°

3 BUSHFIRE PROTECTION MEASURES

In response to the bushfire threat analysis, a suite of Bushfire Protection Measures (BPMs) are required for the concept subdivision in accordance with Section 5 Residential and Rural Residential Subdivisions.

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

3.1 BPM DISCUSSION AND RECOMMENDATIONS:

3.1.1 ASSET PROTECTION ZONES:

Discussion:

APZs are determined through the analysis of slope and vegetation (Figure 7 & 8) and crossed referenced to dimensions provided for residential subdivisions in Table A1.12.2 PBP 2019.

The subject site abuts newly constructed residential lots of Stage's 2b and 2c, and proposed Stage 2e to the North. Undeveloped land to the South is earmarked for development and will eventually be built out, effectively removing any associated hazard in this direction. A temporary 100 m Asset Protection Zone (APZ) will wrap around the Subject Site to the southwest, south and southeast.

While grassland and woodland fuels have the potential to generate fires, these vegetation types pose a relatively low threat to the development when compared to other vegetation types.

Areas identified as open urban space are kept to less than 1 Ha in size so they can be classified as "Low Threat Vegetation" in line with Appendix A1.10 of PBP 2019.

Figure 9 details the APZ dimensions available within the subdivision, considering external hazard vegetation, perimeter roads, road easements and verges or any other landscaping opportunities such as a temporary APZ to provide for the management of vegetation for the ongoing reduction of fuels opposite future residential development. The resulting BAL analysis is provided in Figure 10.

The APZ dimensions proposed for will ensure that future dwellings are not exposed to radiant heat levels exceeding 29 kW/m^2 and therefore compliant with the minimum APZ requirements specified by Table A1.12.2 PBP 2019.

Recommendations:

- Min. APZ dimensions to comply with Figure 9 to ensure any future dwelling will not be subject to radiant heat exceeding 29 kW/m² and therefore comply with the requirements of Table A1.12.2 PBP 2019.

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

APZs provided across the concept subdivision are deemed capable of meeting the minimum dimensions necessary to establish APZs with the site and therefore will meet the acceptable solutions provided by PBP 2019.

3.1.2 LANDSCAPING:

Recommendations:

- All landscape within the areas identified as APZ (Figure 9) requires management in perpetuity and in accordance with the requirements of Asset Protection Zone Standards - Appendix 4 of PBP (2019) (Attachment B).
- A 100 m temporary APZ shall be maintained wrapping around the proposed subdivision to the southwest, south and southeast until future development is underway.

3.1.3 ACCESS:

Discussion:

Access to and from the subject site is through South Jerrabomberra Estate 1, primarily via Environa Road (an arterial road) which connects to the broader road network at Tompsitt Drive, Jerrabomberra (Figure 4).

The proposal is designed with an interconnected road network including perimeter roads and multiple connection points with South Jerrabomberra Estate Stage 1 and Stage 2 enabling through road access for the proposed subdivision (Figure 3).

Access to the subject site will not be provided from the ACT except for an Emergency Access through Hume at Arnott St.

With due consideration given the proposed design, access to the lots provides fire fighting vehicles with safe, all-weather access to structures, and a safe operational environment for emergency service personnel during firefighting and emergency management on the interface and therefore meet the performance requirements of PBP 2019.

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

Recommendations:

- As a minimum, all road and access specifications and dimensions to comply with those detailed in PBP 2019 as provided here in (Attachment A).

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

3.1.4 SERVICES – WATER, ELECTRICITY AND GAS:

Recommendations:

- Water Supplies - Future residences are to be provided with the water supplies which comply with the specifications set out in PBP (2019) which are provided in Appendix A of this report.
- Electricity Services – Electricity supply throughout subject site is to be provided in compliance with the specifications set out in PBP (2019) which are provided in Appendix A of this report.
- Gas Services – It is envisaged that gas supplies to any future residence will be by gas pipeline and therefore supplies and fittings are to comply with specifications set out in PBP (2019) which are provided in Appendix A of this report.

3.1.5 CONSTRUCTION REQUIREMENTS AND OTHER PROTECTION MEASURES

Discussion:

The minimum APZ dimensions for residences opposite areas identified as hazard are provided to ensure that any future dwelling is capable of achieving BAL-29 and therefore compliance with Table A1.12.2 of PBP 2019.

Recommendations:

- A subsequent BAL assessment should be carried out prior to the construction of any future dwelling to assess the BAL rating as it is dependent on the specific location of that dwelling.
- Future construction must comply with the relevant sections of Australian Standard AS3959-2018 Amd 2 Construction of buildings in bush fire-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.

3.2 BUSHFIRE PROTECTION MEASURES CONCLUSION

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

- APZs can provide sufficient space and reduced fuel loads to ensure radiant heat levels at the building will not exceed 29 kW/m^2.
- Landscaping can be managed to minimise flame contact, reduce radiant heat levels, minimise embers and reduce the effect of smoke on residents and firefighters.
- With the aid of performance-based design, 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 ENVIRONMENTAL CONSIDERATIONS

Information regarding the potential impact that the proposed development may have on environmental and cultural values of the site are 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 any environmental or culturally sensitive areas of the lot are impacted by the recommended protection measures, 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.

5 CONCLUSION

This report documents the findings from a bush fire assessment conducted on the proposed residential subdivision of South Jerrabomberra Estate Stage 2 North Catchment.

This report establishes the level of bushfire threat to the concept development and examines bushfire protection for measures such as asset protection, access and services.

Due to its mostly built out setting to the north and north east except for adjoining woodland and grassland to the east and south respectively the surrounding environment possesses a relatively low bushfire threat to the subject site. This remaining threat can be moderated given the standard suite of protection measures offered by PBP 2019 and for which the proposed development can largely comply.

The future development provides good space for the establishment and maintenance of the required APZs. A 100 m temporary APZ is to be established and maintained wrapping around the proposed subdivision to the southwest, south and southeast until future development is underway.

Planned access throughout the subdivision is well provided for and given that future roads will apply the standards and specifications set out with PBP (2019) will comply with the acceptable solutions provided.

Planned services throughout the subdivision are to meet the standards and specifications set out with PBP (2019) and will be capable of complying with the acceptable solutions.

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

Be advised that the NSWRFS 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 28 August 2025, https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address
- FireMaps (FPA Australia, 2025), accessed 28 August 2025, https://maps.fpaafiremaps.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 28 August 2025,
- 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 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 the how this is achieved for the proposed development.

Performance Criteria	Method of Compliance	Acceptable Solution	Comments / Details
ASSET PROTECTION ZONES			
• Potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m^2 on each proposed lot.	Will meet the acceptable solutions.	• APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI.	APZ dimensions will be compliant with Table A1.12.2.
• APZs are managed and maintained to prevent the spread of a fire towards the building.	Will meet the acceptable solutions.	• APZs are managed in accordance with the requirements of Appendix 4.	Landscaping within the APZ will be required to be in accordance with the principles provided in Appendix 4 – Asset Protection Zone Standards, PBP 2019 which is provided in Attachment B of this report.
• The APZs is provided in perpetuity.	Will meet the acceptable solutions.	• APZs are wholly within the boundaries of the development site	All APZs are within the boundaries of the development site.
• APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	Will meet the acceptable solutions.	• APZs are located on lands with a slope less than 18 degrees.	All APZs are located on land with slope less than 18 degrees.
LANDSCAPING			
• Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Will meet the acceptable solutions.	• landscaping is in accordance with Appendix 4; and • fencing is constructed in accordance with section 7.6.	Landscaping within the APZ will be required to be in accordance with the principles provided in Appendix 4 – Asset Protection Zone Standards, PBP 2019 which is provided in Attachment B of this report.
ACCESS (General Requirements)			

Performance Criteria	Method of Compliance	Acceptable Solution	Comments / Details
• firefighting vehicles are provided with safe, all-weather access to structures.	Will meet the acceptable solutions	• 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.	The access provisions can comply with the acceptable solutions.
• the capacity of access roads is adequate for firefighting vehicles.	Will meet the acceptable solutions.	• the capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges / causeways are to clearly indicate load rating.	The capacity of bridges/causeways will be sufficient to carry fully loaded firefighting vehicles; bridges / causeways will clearly indicate load rating.
• there is appropriate access to water supply.	Will meet the acceptable solutions.	• hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression; • hydrants are provided in accordance with 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.	It is assumed that a reticulated water supply system to the appropriate standard will be provided for the concept subdivision.
PERIMETER ROADS			

Performance Criteria	Method of Compliance	Acceptable Solution	Comments / Details
• 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..	• 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 will be provided in line with the acceptable solutions as detailed in the adjacent cell.
NON-PERIMETER ROADS			
• access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Non-Perimeter roads are not applicable.	• minimum 5.5m carriageway width kerb to kerb; • parking is provided outside of the carriageway width; • hydrants are located clear of parking areas; • roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m; • curves of roads have a minimum inner radius of 6m; • the road crossfall does not exceed 3 degrees; and • a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	Non-Perimeter roads will be provided in line with the acceptable solutions as detailed in the adjacent cell.
PROPERTY ACCESS			
• firefighting vehicles can access the dwelling and exit the property safely.	Will meet the acceptable solutions.	• There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles. In circumstances where this cannot occur, the following requirements apply: o minimum 4m carriageway width; o 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; o a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; o provide a suitable turning area in accordance with Appendix 3;	The property access provisions will comply with those required under PBP 2019 as detailed in the adjacent cell.

Performance Criteria	Method of Compliance	Acceptable Solution	Comments / Details
		○ 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. Note: Some short constrictions in the access may be accepted where they are not less than 3.5m wide, extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above.	
WATER SUPPLIES			
• adequate water supplies is provided for firefighting purposes.	Will meet the acceptable solutions.	• reticulated water is to be provided to the development where available; • a static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and • static water supplies shall comply with Table 5.3d.	It is assumed that a reticulated water supply system to the appropriate standard will be provided for the concept subdivision.
• water supplies are located at regular intervals; and • the water supply is accessible and reliable for firefighting operations.	Will meet the acceptable solutions.	• 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.	It is assumed that a reticulated water supply system to the appropriate standard will be provided for the concept subdivision.
• flows and pressure are appropriate.	Will meet the acceptable solutions.	• fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.	It is assumed that a reticulated water supply system to the appropriate standard will be provided for the concept subdivision.
• the integrity of the water supply is maintained.	Will meet the acceptable solutions.	• all above-ground water service pipes are metal, including and up to any taps; and • above-ground water storage tanks shall be of concrete or metal.	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			
• location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	Will meet the acceptable solutions.	• where practicable, electrical transmission lines are underground; • where overhead, electrical transmission lines are proposed as follows: ○ lines are installed with short pole spacing of 30m, unless crossing gullies, gorges or riparian areas; and	Future electricity supplies will be capable of meeting these requirements.

Performance Criteria	Method of Compliance	Acceptable Solution	Comments / Details
		○ 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.	
GAS SERVICES			
• location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	Will meet the acceptable solutions.	• reticulated or bottled gas is installed and maintained 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; • polymer-sheathed flexible gas supply lines are not used; and • above-ground gas service pipes are metal, including and up to any outlets.	Future gas supplies will be capable of meeting these requirements.

ATTACHMENT B – APZs, LANDSCAPING, FENCES AND GATES

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

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

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

A4.1 Asset protection zones

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

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

An APZ provides:

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

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

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

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

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

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

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

Inner protection areas (IPAs)

The IPA is the area closest to the asset and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and be a defendable space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the dwelling, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

Trees:

- canopy cover should be less than 15% (at maturity)
- trees (at maturity) should not touch or overhang the building
- lower limbs should be removed up to a height of 2m above ground
- canopies should be separated by 2 to 5m
- preference should be given to smooth barked and evergreen trees.

Shrubs:

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings
- shrubs should not be located under trees
- shrubs should not form more than 10% ground cover
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass:

- should be kept mown (as a guide grass should be kept to no more than 100mm in height)
- leaves and vegetation debris should be removed.

Outer protection areas (OPAs)

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

Because of the nature of an OPA, they are only applicable in forest vegetation.

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

When establishing and maintaining an OPA the following requirements apply:

Trees:

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

Shrubs:

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

Grass:

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

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

FENCES & GATES (SECTION 7.6 PBP 2019)

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

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