

APPENDIX K

BUSHFIRE ASSESSMENT REPORT





BUSHFIRE ASSESSMENT REPORT

14 EURALIE ROAD, GOOD
HOPE

Lot 4 DP 1248916

9 Lot Rural Residential Subdivision

Prepared for Nick Togias

Version 1.0

Ref: RM.145.24



June 2, 2024

DOCUMENT CONTROL

Information	Detail
Document Title:	Bushfire Assessment Report (BFAR) 14 Euralie Road, Good Hope
EMBER Reference:	RM.145.24
Other Reference:	Yass Valley Council
Version:	Version 1.0
Valid to date:	02.06.25
Prepared by:	Rob McGregor (BPAD- 33130) L2
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EXECUTIVE SUMMARY

Nick Toggias C/O DPS Yass has engaged EMBER Bushfire Consulting to prepare a Bushfire Assessment Report for a proposed nine-lot Rural Residential Subdivision at 14 Euralie Road, Good Hope (the *subject site*). The proposed subdivision is located on bushfire-prone land, as declared by the Yass Valley Council (YVC).

This assessment adopts a methodology provided under the requirements of Section 100B of the Rural Fires Act (1997) and the Rural Fire Regulations (2022) to assess the adequacy of bushfire protection for the subdivision as planned.

The development proposal divides a single approximately 78 Ha rural block into nine titles: Large Rural Blocks, Lot 1-10.65 Ha, Lot 2-8 Ha, Lot 3-8 Ha, Lot 4-8 Ha, Lot 5- 8.39 Ha, Lot 6-8.31 Ha, Lot 7- 8 Ha and Lot 9- 8 Ha. Lots 2-9 are greenfield sites, and Lot 1 has an existing dwelling; all nine lots are the subject of this report.

This report establishes the level of bushfire threat to the development. It examines the six NSWRFs *Planning for Bushfire Protection* PBP (2019) bushfire protection measures (BPM) for future dwellings. PBP (2019) is the basis for this assessment.

Lot 1 has ample static water supplies for firefighting purposes. Lots 2-9 will require their own firefighting water supply to serve the future dwelling at the development time.

Although the surrounding environment possesses a bushfire threat to all lots, this threat can be moderated to an acceptable level given the standard suite of bushfire protection measures offered by PBP (2019) and with which the proposed development can comply.

Asset protection zones (APZ) will be developed to an acceptable bushfire risk level that is compliant with PBP (2019).

Access to the new building envelopes of Lots 2-9 will be the subject of a performance-based design to satisfy the performance criteria and intent for access arrangements set out in PBP (2019).

Based on the bushfire assessment and the recommendations contained in this report, the proposed development is deemed to comply with the specific and broad objectives of PBP (2019), Section 100B of the Rural Fires Act and the requirements of the Rural Fire Regulations (2022) and therefore suitable for submission to the NSWRFs for the issuing of a bush fire safety authority.

KEY DETAILS OF DEVELOPMENT

Table 1 – Development Summary

Information	Detail
Lot & DP Number	Lot 4 DP 1248916
Street Address	14 Euralie Road, Good Hope
Property name	N/A
Local Government Area	YVC
Zoning of the subject land	C4– Environmental Living
Zoning of adjoining lands	C4 & RU1– Primary Production
Proposed lot sizes	Lot 1-10.65 Ha, Lot 2-8 Ha, Lot 3-8 Ha, Lot 4-8 Ha, Lot 5- 8.39 Ha, Lot 6-8.31 Ha, Lot 7- 8 Ha and Lot 9- 8 Ha.
Staging issues	Nil
Development	Large Lot Rural Residential Subdivision
Type of assessment	100B for Bushfire Safety Authority
Fire weather area	Southern Ranges
Fire Danger Index	100
Predominant vegetation	Grasslands (with paddock trees) and remnant vegetation.
Slope Range	Upslope to 10° downslope
Environmental constraints	Nil known
Cultural constraints	Nil known
Method of meeting performance requirements	Using acceptable solutions and a performance-based design (access)

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1 INTRODUCTION

1.1 BACKGROUND AND AIM

Nick Toggias C/O DPS Yass has engaged EMBER Bushfire Consulting to prepare a Bushfire Assessment Report for a proposed nine-lot Rural Residential Subdivision at 14 Euralie Road, Good Hope (the *subject site*).

The development proposal is located on declared bushfire-prone land and, as a result, is subject to Division 4.8 of the Environmental Planning and Assessment Act (1979) (EP&A Act), Section 100B of the Rural Fires Act (1997) and the Rural Fires Regulation (2022).

Under the Rural Fires Act and Regulation, 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*, PBP (2019). PBP (2019) is the essential reference document for this assessment.

This report aims to document the potential bushfire impact on the *subject site* and assess the development proposal's bushfire protection measures that address life safety, improve property protection, and facilitate fire service intervention.

1.2 OBJECTIVES AND SCOPE OF THIS BUSHFIRE ASSESSMENT

The purposes of this report are to:

- Determine the bushfire threat to the proposed development,
- demonstrate to the "Consent Authority" that the development proposal meets the specific objectives of PBP (2019) for subdivisions and
- support the development application by showing that the site is suitable for development given the bushfire threat.

The scope of this report is defined by the specific objectives and performance requirements for residential and rural residential subdivisions set out in Chapter 5 of PBP (2019).

The following six bushfire protection measures will be assessed to determine the suitability of the development proposal:

1. Asset Protection Zones (APZs),
2. Landscaping,
3. Building Construction and Design,
4. Access,
5. Water supplies and utilities (Services) and
6. Emergency Management Arrangements

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 satisfactory 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 and plans provided by the developer.

Table 2 - Stakeholders

Stakeholder	Role	Contact	Detail
Nick Toggias	Owner	c/o DPS Yass	
DPS Yass	Senior Town Planner	Rachel Doberer	0409880034
YVC	Consent Authority	Not Given	02 62261477
NSWRFS	Consent Authority	Not Given	44751300

1.4 SITE DESCRIPTION

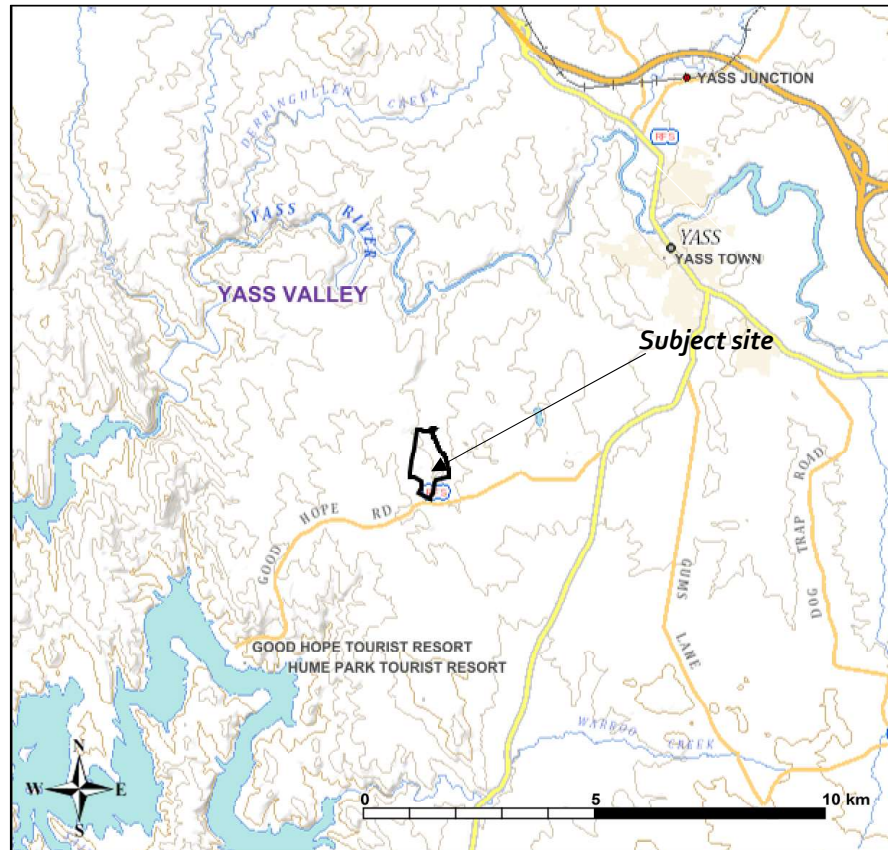


Figure 1 - *Subject site* regional context to Yass. FireMaps FPAA (2024)

The *subject site* is located in the Southern Tablelands of NSW ~12km southwest of central Yass, NSW. See Figure 1

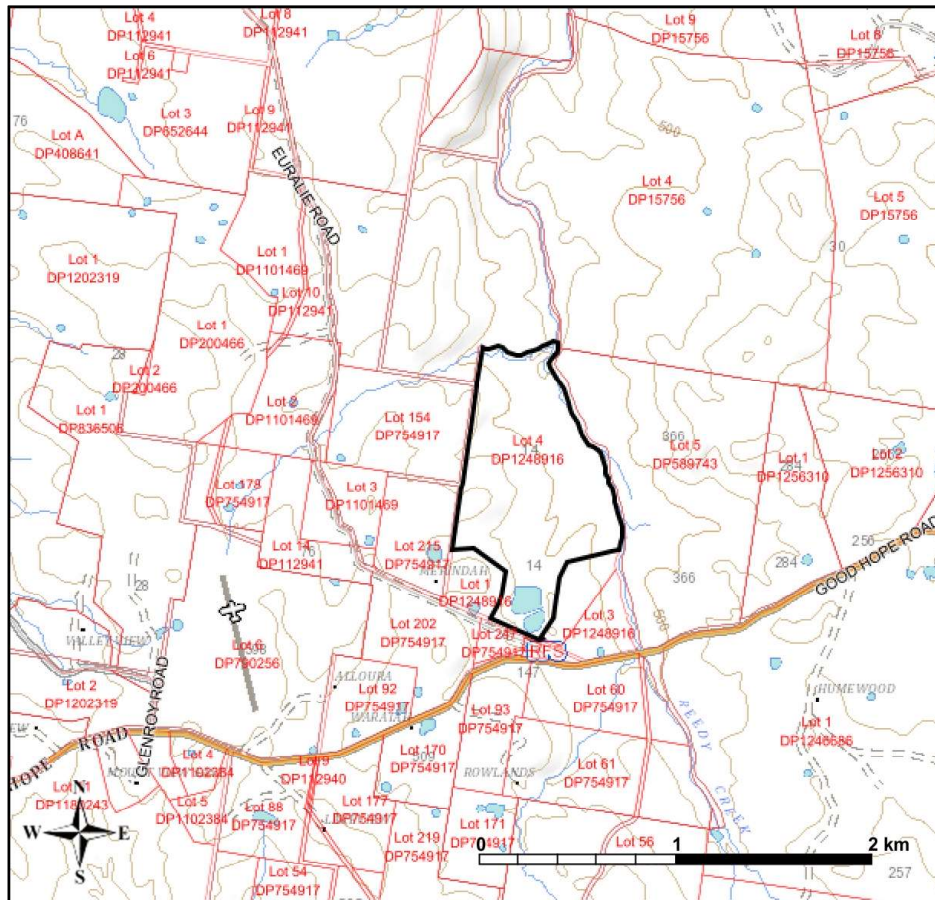
Located in the YVC locality of Good Hope, the *subject site* is currently zoned as C₄ – Environmental Living with RU1- Primary Production land in the vicinity.

The *subject site* has one small dwelling, used as a weekender, located on what will be Lot 1 of the subdivision. Cattle yards and a storage shipping container are located on the property access road near the existing entry

At the present time the *subject site* is known as the Razorback Ranch Wagyu Stud.

On the date of the site visit, 4 May 2024, the *subject site* was found to have a well cattle grazed grassland with paddock trees, and a patch remnant woodland.

1.5 SITE DESCRIPTION CONTINUED



The landform of the *subject site* is generally undulating with slopes in the upslope to 10 degrees downslope range.

At the entry of the *subject site* there are two very large dams which overflow into a central drainage line to Reedy Creek. Reedy Creek runs down the eastern boundary and eventually into the Yass River. There are several other drainage lines running from the west to Reedy Creek. Dog Trap Creek runs along the northern boundary.

Opposite the entry to the *subject site* is the NSWRF's Good Hope Boambolo Fire Shed.

Figure 2 - *Subject site* local context. FireMaps FPA (2024)

1.6 THE DEVELOPMENT PROPOSAL

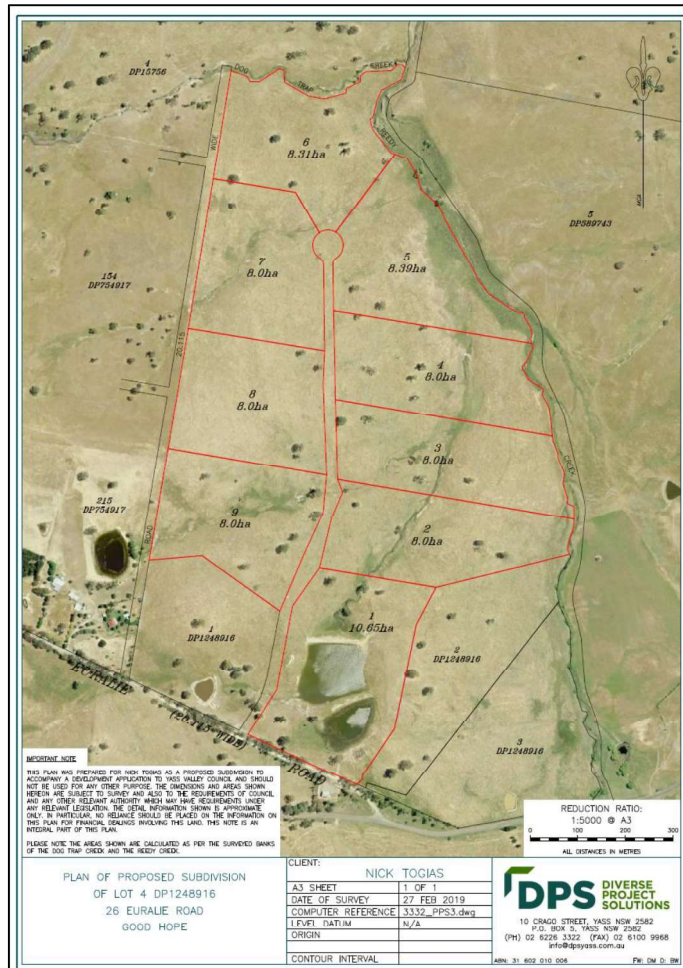


Figure 3- Proposed Subdivision (DPS Yass, 2024)

DEVELOPMENT PROPOSAL OVERVIEW

The development proposal divides a single approximately 78 Ha rural block into nine Large Rural Blocks. Lots 2-9 are greenfield sites and Lot 1 has an existing dwelling; all 9 lots are the subject of this report.

The proposed building envelopes with presumed 15m x15m dwelling sites on Lots 2-9 will be provided with Asset Protection Zones (APZ) to ensure that any future dwelling will not exceed 29 kW/m² radiant heat flux.

The proposed central road will be a sealed dedicated public road, to be named by the developer and numbered accordingly by YVC with even numbers on the right hand side and odd numbers on the left.

Future dwellings when occupied, will not unduly increase the volume of traffic on the public road system during a bushfire emergency.

The development proposal is limited to the formal subdivision of the *subject site*, the preparation of eight building envelopes with APZ that fit inside the building envelope, the central public road and new property access roads. It is not intended for the proposal to include any further subdivision or the erection of any new structures, water tanks, gas or electricity supplies.

2 ASSESSING THE BUSHFIRE THREAT

2.1 METHODOLOGY

The methodology adopted to prepare this report is as follows:

Table 3 - 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, 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) and Australian Standard 3959 – 2018.	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 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 4 - Bushfire behaviour factors

Factor	Value
Fire Weather Area	Southern Ranges
FDI	100
Predominant Vegetation Classification	Grasslands and remnant vegetation.
Effective Slope	Ranging from upslope to 0-10° downslope

2.3 HOW TO READ THIS REPORT

Section 5 will assess access (performance-based design), landscaping & fencing, services (water, electricity & gas) and emergency management for Lots 2-9.

Sections 6-13 will assess each lot individually for APZ and construction standards) requirements.

Section 14 will assess the existing dwelling on Lot 1.

2.4 SUBJECT SITE BUSHFIRE-PRONE LAND

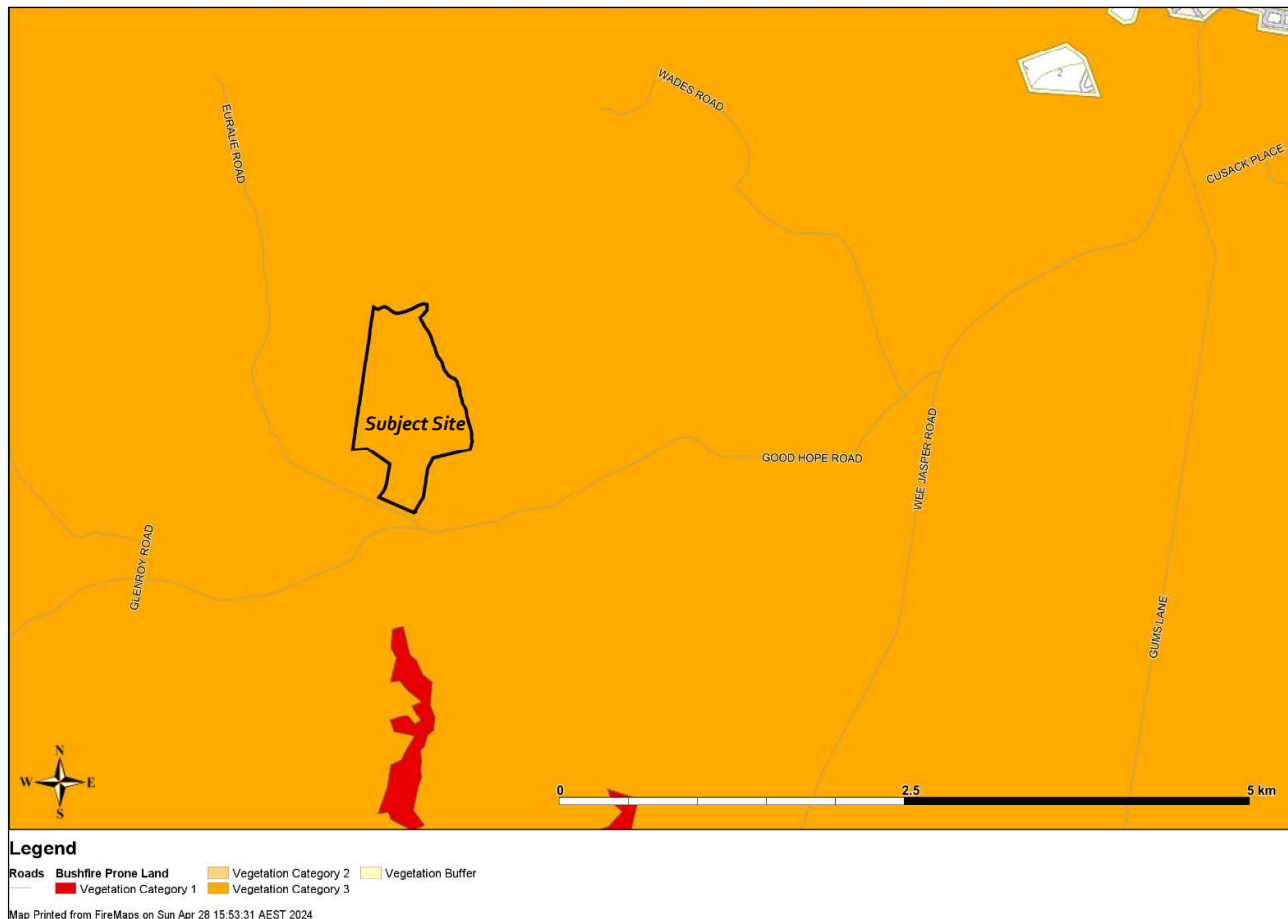
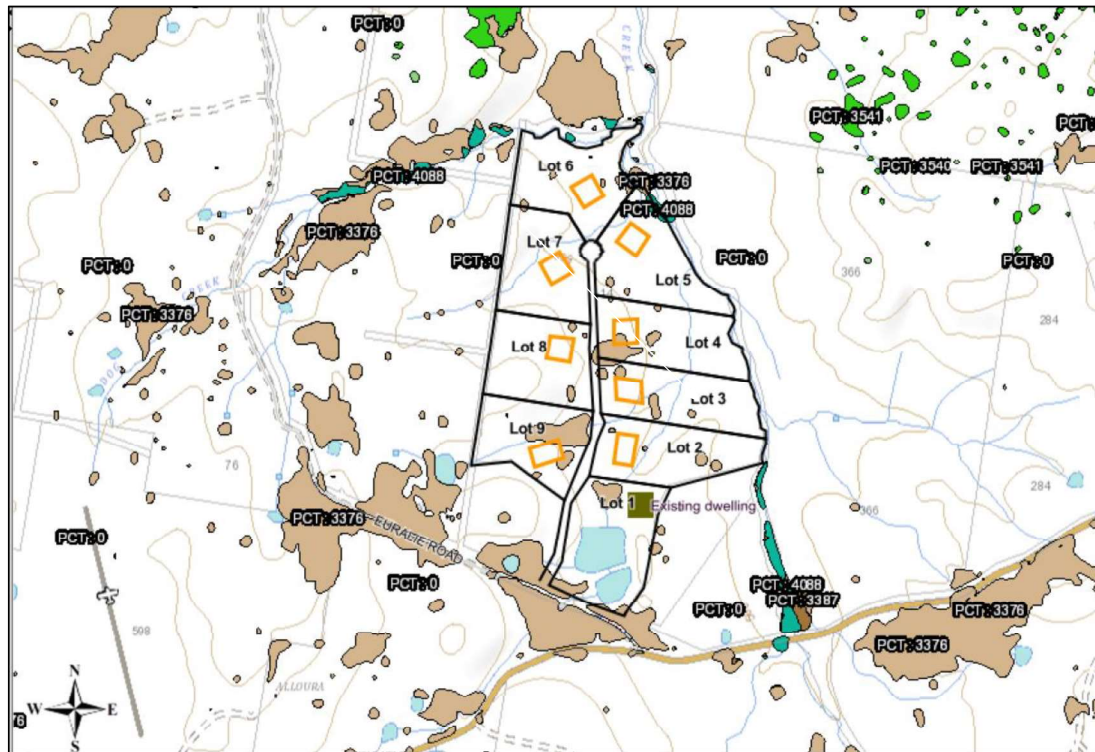


Figure 4 – Subject site Bushfire-Prone Land Map. FireMaps FPA (2024)

2.5 VEGETATION FORMATIONS INFLUENCING THE *SUBJECT SITE*



PCT Key

PCT 3376- Southern Tablelands Grassy Woodlands
Formation- Grassy Woodlands

PCT 4088-Southwest River Flat Gum Forest
Formation-Forested Wetland

Figure 5 – *Subject site* PCT vegetation classification. SEED (NSW Gov. 2024)

3 BUSHFIRE PROTECTION ASSESSMENT

The NSWRFSS requires the appraisal of the proposed development against specific objectives set out in PBP (2019). These objectives are:

- 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 sighting of future dwellings away from ridge tops and steep slopes, within saddles and narrow ridge crests,
- Ensure that separation distances (APZs) between a bush fire hazard and future dwellings enable a radiant heat level not to exceed 29kW/m^2 ,
- Ensure the ongoing maintenance of asset protection zones,
- Provide adequate access from all properties to the wider road network for residents and emergency services,
- Provide access to hazardous vegetation to facilitate bush fire mitigation works and property protection and
- Ensure the provision of an adequate supply of water and other services to facilitate effective firefighting.

PBP (2019) offers six bushfire protection measures (BPM) that work together to provide residential structures with acceptable protection against bushfire impact. To ensure that a satisfactory level of protection is provided, each measure will be assessed against the performance requirements detailed in PBP (2019).

3.1 SPRINKLER SYSTEMS AND OTHER PROTECTION MEASURES.

It is not proposed that bush fire sprinkler systems or other fire protection measures be introduced into the development.

3.2 BUSHFIRE EMERGENCY PLANNING

EMBER Bushfire Consulting recommends a "prepare and leave early" approach to bushfire emergencies. Even after any recommendations have been adopted, the nature of bushfires in extreme conditions can be very unpredictable and extremely dangerous. Any "stay and defend" decision should be thoroughly evaluated and well planned. It is highly recommended that all residents prepare an NSWRFSS Bushfire Survival Plan before the onset of the bushfire season.

4 AERIAL OVERVIEW OF THE SUBJECT SITE



Figure 6 – Looking northeast to grasslands with paddock trees (see photo points Figure 14)



Figure 8 - Looking north to grasslands with paddock trees (McGregor, 2024)



Figure 7 – Looking south showing the two large dams. (McGregor, 2024)



Figure 9 - Looking northeast to grasslands with paddock trees (McGregor, 2024)

4.1 AERIAL OVERVIEW OF THE SUBJECT SITE (2)



Figure 10 – Looking east to grasslands with paddock trees. (McGregor, 2024)



Figure 12 -Looking north to grasslands and paddock trees. (McGregor, 2024)



Figure 11 – Looking south to grasslands with paddock trees. (McGregor, 2024)



Figure 13 - Looking south to grasslands with paddock trees., (McGregor, 2024)

4.2 AERIAL OVERVIEW PHOTO POINTS

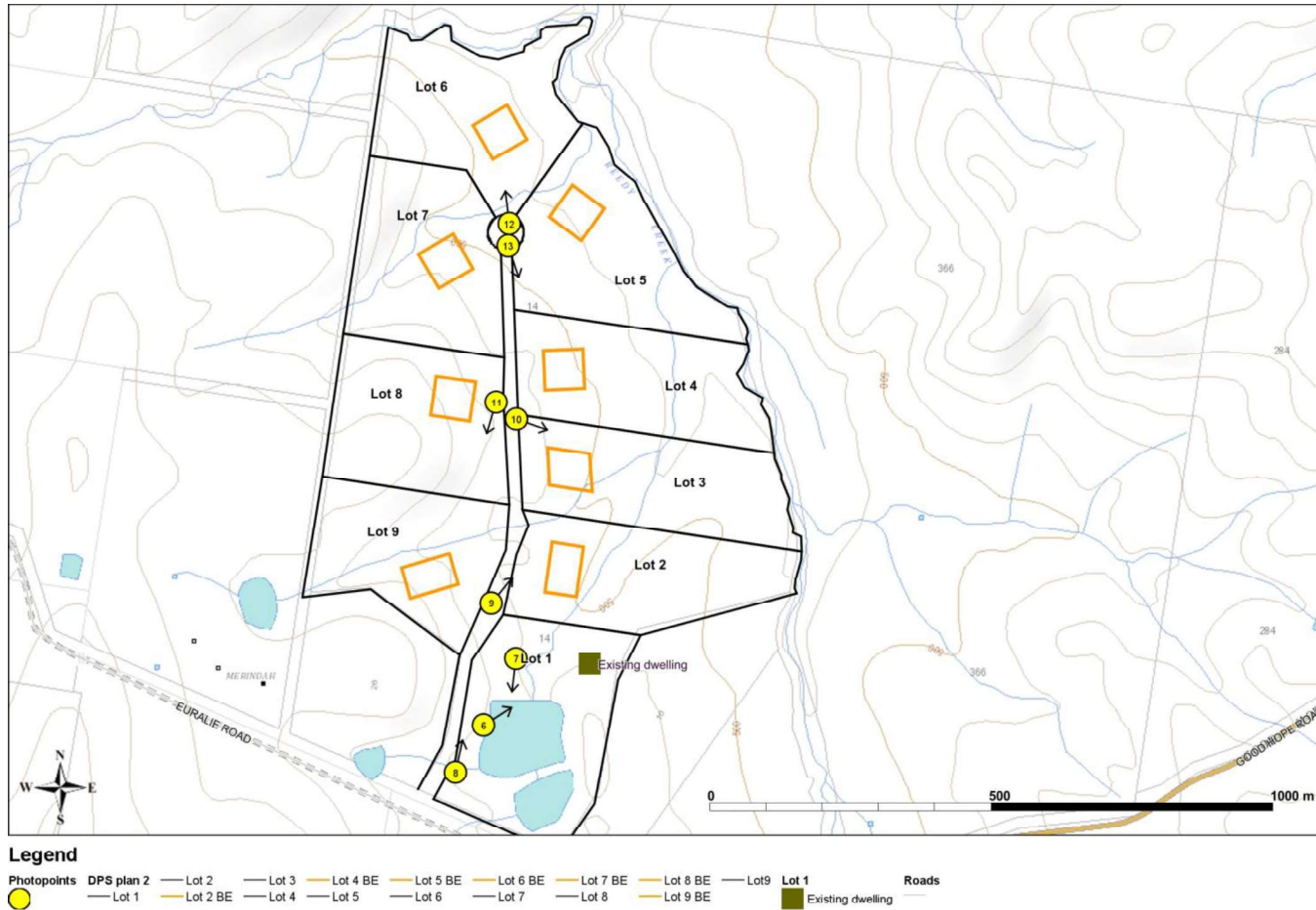
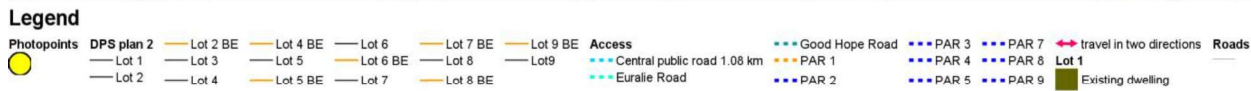
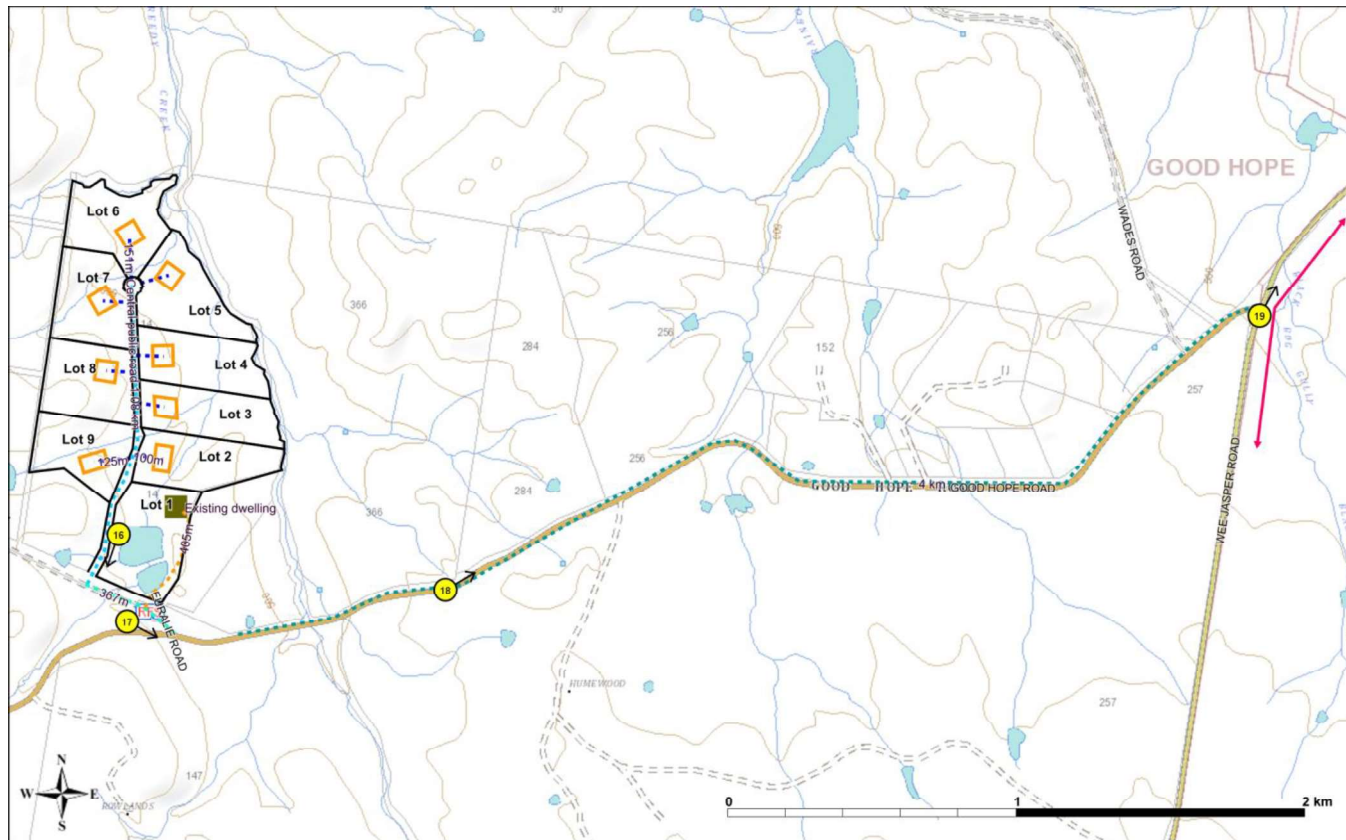


Figure 14 – Aerial overview photo points. FireMaps FPAA (2024) (McGregor, 2024) Photo points refer to Figures 6-13 above.

5 ACCESS LOTS 2 -9



Map Printed from FireMaps on Fri May 17 08:54:11 AEST 2024

Figure 15 – Public and proposed and existing property access roads. FireMaps FPAA (2024) (McGregor, 2024) Photo points refer to Figures 16-19 below.

5.1 ACCESS PHOTOS



Figure 16 – Looking south showing the ~proposed entry location . (McGregor, 2024)



Figure 18 – Looking east on Good Hope Road (McGregor, 2024)



Figure 17 – T intersection of Euralie and Good Hope Road (McGregor, 2024)



Figure 19 – Looking northeast on Wee Jasper Road towards Yass (McGregor,2024)

5.2 ACCESS ASSESSMENT

Discussion:

Table 5 below is a compliance report for Access to Lots 2-9, as shown in Figures 6 -10.

Table 5 - Access provisions compliance report from Table 5.3b PBP (2019)

Acceptable Solution	Compliance
General Access Requirements	
Property access roads are two-wheel drive, all-weather roads.	Yes
Perimeter roads provided for residential subdivisions of 3 or more allotments.	N/A to a rural residential subdivision
Subdivisions of 3 or more allotments have more than one access point.	Performance-based design
Traffic management devices do not prohibit access by emergency services.	Yes
Max. grades for sealed roads do not exceed 15 degrees.	Yes
Max. average grade does not exceed 10 degrees.	Yes
All roads are through roads	Performance-based design
Dead end roads are not more than 200 m in length and includes a 12m turning circle	Performance-based design
Kerb and guttering provided on perimeter roads with roll top on hazard side.	N/A
In forest, woodland and heath situations, secondary access is provided.	N/A
One-way public roads are no less than 3.5m Wide	N/A
Perimeter and non-perimeter road surfaces and bridges rated to 23 tonnes. Bridges indicate load rating.	Yes
Hydrants located outside of parking reserves and road carriageways. Hydrants in accordance with AS 2419.1:2005.	N/A
Access for Cat. 1 fire appliance within 4 m of static water supplies.	Yes
Property Access Requirements Lots 2-9	
Minimum carriageway width of 4 m.	Yes

In forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide.	N/A
A minimum vertical clearance of 4m to any overhanging obstruction.	Yes
Provide a suitable turning head. Appendix 3 PBP (2019).	Yes
Minimal number of curves. Curves to have min. inner radius of 6m.	Yes
Min. distance between inner and outer curves is 6m	Yes
Cross fall no greater than 10 deg.	Yes
Max. grades for sealed roads do not exceed 10 degrees.	Yes
Max. grades for unsealed roads do not exceed 10 degrees.	Yes
Development of more than 3 dwellings has formalised access and not by right of way.	Yes
Some short constrictions may apply	N/A

Discussion – Performance-Based Assessment:

Proposed access arrangements for the subdivision will meet most of the acceptable solutions provided in PBP (2019) except for the following element:

- Subdivisions of 3 or more allotments have more than one access point.
- All roads are through roads.
- Dead end roads are not more than 200 m in length.

The access performance criteria to be satisfied are;

- Firefighting vehicles are provided with safe, all-weather access to structures.
- The capacity of access roads is adequate for firefighting vehicles.
- There is appropriate access to the water supply.

The proposed central road will be a 1.08 km 6 m wide sealed public no-through road connecting to Euralie Road (an unsealed 6m wide two-way public no-through road). Travel a further 367m to Good Hope Road (a sealed 6m wide two-way public no-through road), then another ~4 km to Wee Jasper Road (a sealed 6m wide two-way public through road). Wee Jasper Road offers travel in two directions. The total travel distance from the turning head on the proposed central road to the point at which travel in two directions is available is ~5.7 km. The travel time for a resident evacuating in a car to a public through road at a conservative 60 km/h is ~6 minutes.

Lot 1 has an existing PAR with a separate entry point.

The proposed property access roads (PAR) from the centre of their building envelopes to the central public road are;

- Lot 2 100m
- Lot 3 95m
- Lot 4 96m
- Lot 5 103m
- Lot 6 151m
- Lot 7 102m
- Lot 8 96m
- Lot 9 125m

In place of adopting the acceptable solutions offered in PBP (2019), an assessment of the performance of the PAR is made to demonstrate compliance with PBP (2019).

The intent of the 200 m limitation on access should be understood to assess the acceptability of the performance-based assessment. In the context of a bushfire event, 200 m is deemed the accepted allowable egress distance to the relative safety of a public road. Over this distance, in a typical bushfire-prone environment, there is the potential risk to evacuating residents or responding fire crews from radiant heat exposure, flame contact, reduced visibility, and the prospect of a blocked road from falling trees or oncoming traffic, all of which could lead to entrapment.

Performance-Based Design

- Lots 2-9 PAR are less than 200m in length and traverse through grasslands with high visibility over the roads,
- The grasslands environment offers an opportunity for evacuating residents and arriving fire appliances to pass each other at multiple locations,
- The PAR are to comply with all acceptable solutions.
- The proposed sealed central public road with a turning head is to comply with PBP (2019) and YVC public road requirements.

- The 4km travel direction on Good Hope Road is opposite the most common local fire wind direction.

Additional recommendations:

Construction Standard & APZ:

Lots 2-5 & 7-9

- The fixed BAL-19 construction standard within the presumed 15m x 15m dwelling sites, with BAL 12.5 sized APZ will increase the future dwelling's bushfire resilience. This may allow occupants and firefighters (if they choose) to pretreat the APZ, then shelter in place, and then defend in place.

Lot 6

- The fixed BAL-29 construction standard within the presumed 15m x 15m dwelling sites, with BAL 19 sized APZ will increase the future dwelling's bushfire resilience. This may allow occupants and firefighters (if they choose) to pretreat the APZ, then shelter in place, and then defend in place.

Increased static water supplies:

Lots 2-9

- Increased from 20,000L to 30,000L.
- These increased static water supplies will enable fire crews and occupants, if they choose, to undertake active fire protection for a longer period.

The proposed access provisions and additional recommendations offer:

- Firefighter access to structures and water supplies,
- Evacuation routes for both residents and firefighters,
- Access to APZ for ongoing maintenance, and
- Access to areas of bushfire hazard for firefighting and hazard mitigation purposes.

Therefore, the proposed performance-based assessment demonstrates that the existing PAR satisfies the performance criteria of *Access 5.3.2* and the intent of *3.4 Access arrangements* PBP (2019). Attachment-C

5.3 LANDSCAPING AND FENCING LOTS 2-9:

Discussion:

Landscaping within the APZ must comply with Appendix 4 – *Asset Protection Zone Standards*, PBP (2019), provided in Attachment A of this report.

Fencing is to be compliant with section 7.6 PBP (2019). Attachment-E

Table 6 - Landscaping compliance report from Table 5.3a PBP (2019)

Acceptable solutions	Compliance
Landscaping is in accordance with Appendix 4	Yes
Fencing is constructed in accordance with Section 7.6	Yes

Landscaping and fencing for Lots 2-9 are capable of meeting the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

5.4 SERVICES – WATER, ELECTRICITY AND GAS LOTS 2-9:

Discussion:

The provision of water, electricity, and gas services to Lots 2-9 will occur while constructing the future dwellings. These services will be provided under the specifications and standards in PBP (2019) and Attachment B in this report.

Recommendations:

- Install a 30,000L (metal or concrete or underground) firefighting water tank with a 70mm Stortz coupling.
- Install a static water supply sign at the entry to the property (See local RFS Captain)

Table 7 – Services- Water Electricity & Gas Compliance Report (Table 5.3c PBP (2019))

Acceptable solution	Compliance
Water supplies	
Reticulated water is to be provided to the development where available	N/A
A static water and hydrant supply is provided for non-reticulated development or where reticulated water supply cannot be guaranteed	Yes Static
Static water supplies shall comply with Table 5.3d.	Yes
Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1.2005	N/A
Hydrants are not located within any road carriageway	N/A
Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads	N/A

Fire hydrant flows and pressures comply with the relevant clauses of Australian Standard AS 2419.1.2005	N/A
All above-ground water service pipes are metal, including and up to any taps	Yes
Above ground water storage tanks shall be of concrete or metal	Yes
Electricity Services	
Where practicable, electrical transmission lines are underground	Yes
Where overhead electrical transmission lines are proposed:	
Lines are installed with short pole spacing of 30m, unless crossing gullies, gorges or riparian areas	Yes
No part of a tree is closer to a power line than the distance set out in ISSC ₃ <i>Guideline for Managing Vegetation Near Power Lines</i>	Yes
Gas Services	
Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 – <i>The storage and handling of LP Gas</i> , the requirements of relevant authorities, and metal piping is used.	Bottled gas (if used)
All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazards side.	Yes
Connections to and from gas cylinders are metal.	Yes
Polymer-sheathed flexible gas supply lines are not used	Yes
Above-ground gas service pipes are metal, including and up to any outlets.	Yes

The Services for Lots 2-9 are capable of meeting the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

5.5 EMERGENCY MANAGEMENT PLANNING LOTS 2-9

Discussion:

Before occupation of any new dwelling, residents should develop an *NSWRFS Bushfire Survival Plan*.

6 LOT 2 ASSESSMENT

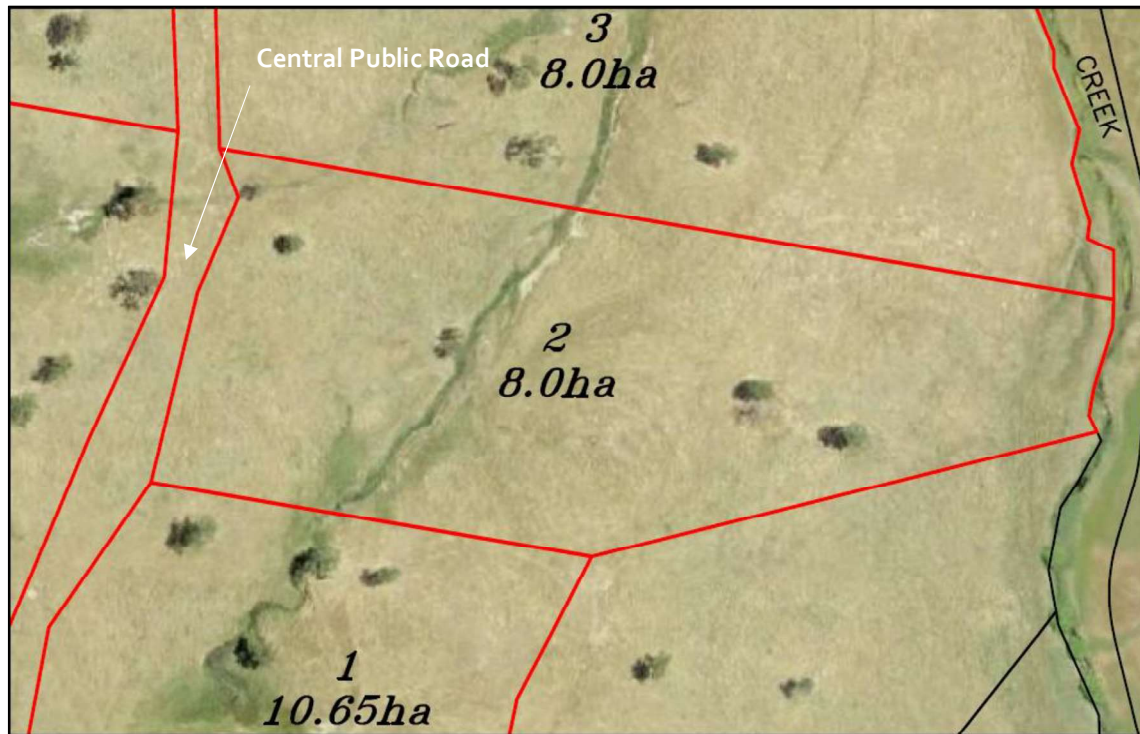


Figure 20 – The proposed Lot 2 of the subdivision. DPS Yass (2024)

6.1 LOT 2 – BE, APZ AND VEGETATION

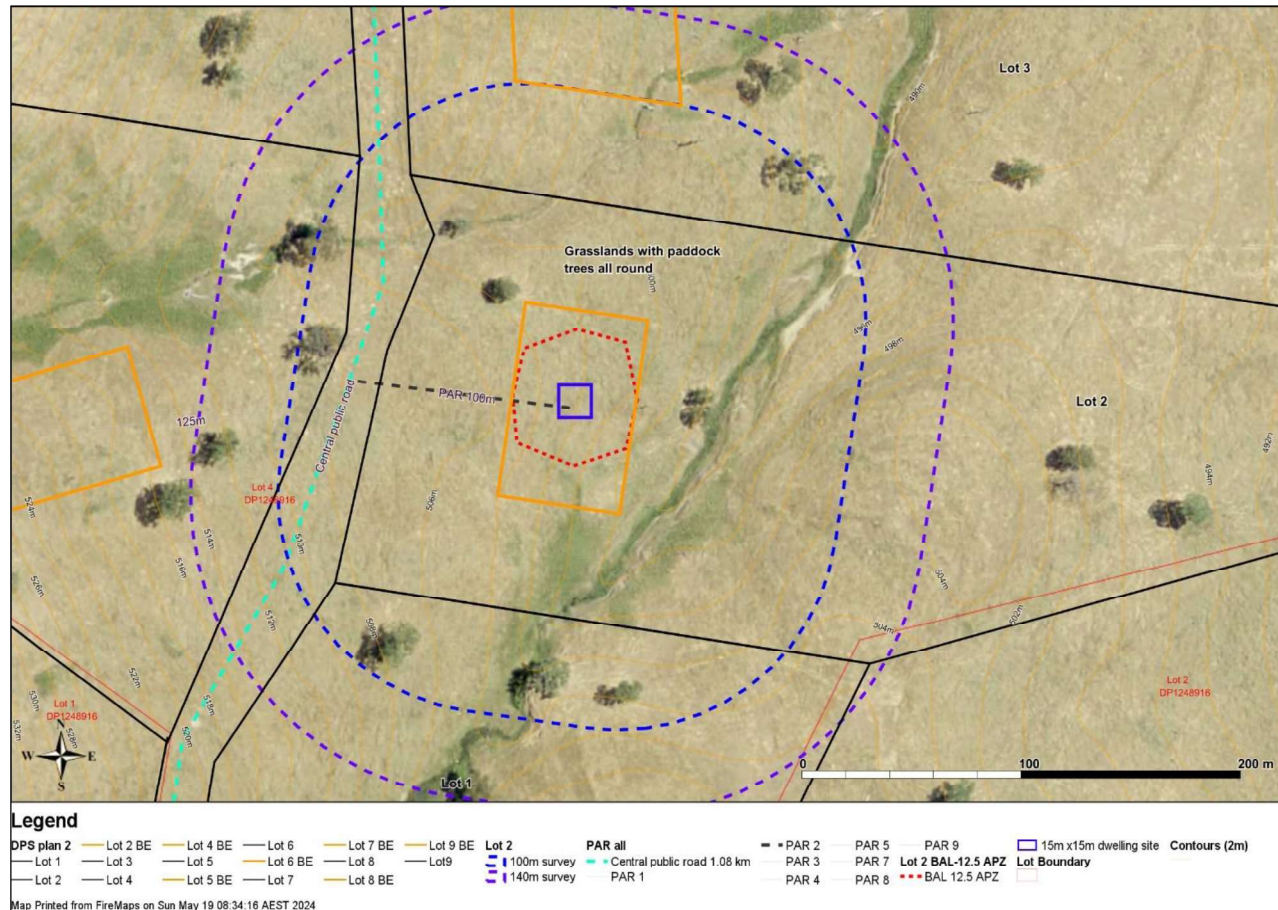


Figure 21 - Proposed BE, PAR, APZ and predominate vegetation. FireMaps FPAA (2024) (McGregor, 2024)

6.2 LOT 2- EFFECTIVE SLOPE AND PHOTO POINTS

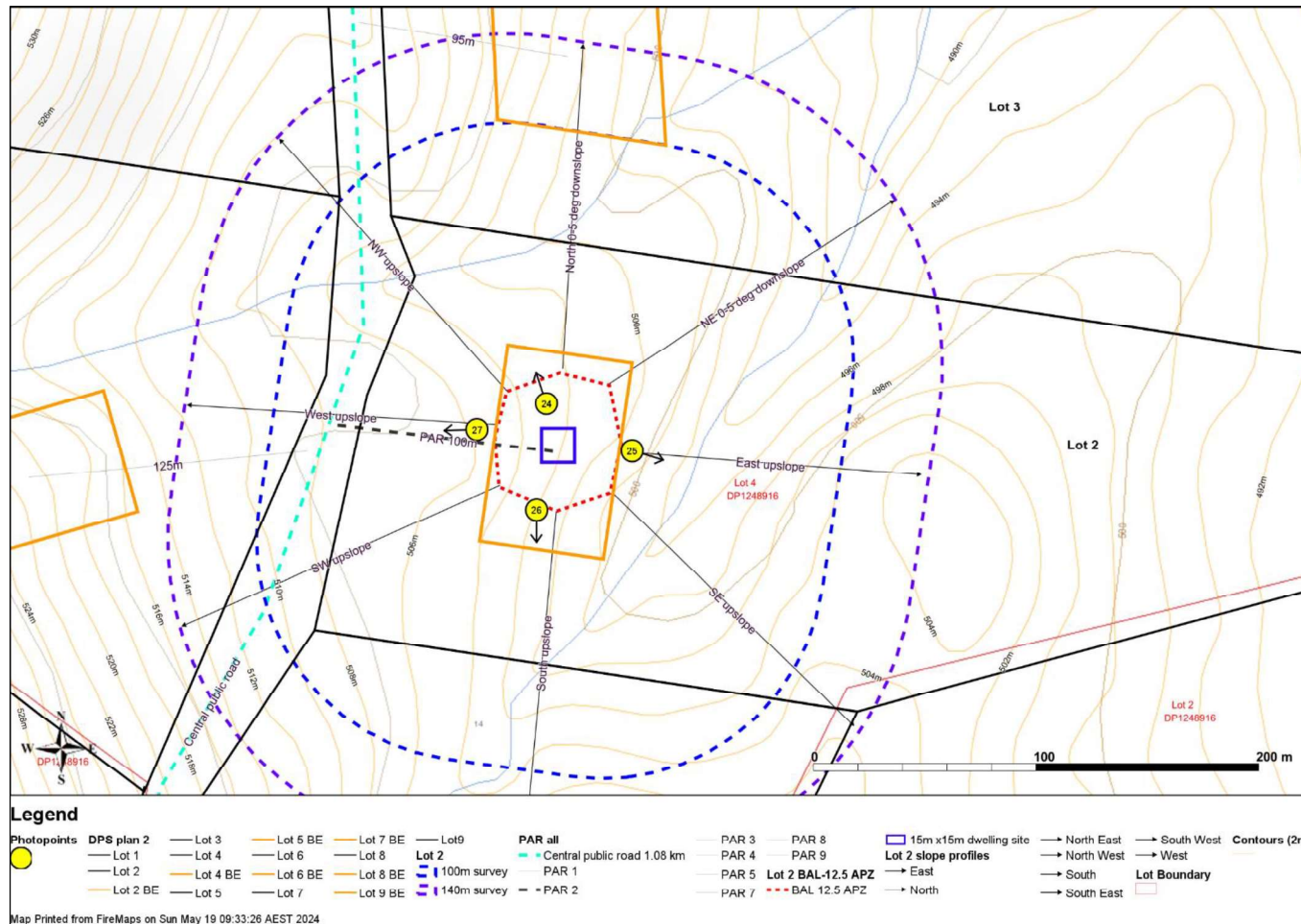


Figure 22 – Effective slope on FireMaps FPAA (2024). Photo points refer to Figures 24-27 below. (McGregor, 2024)

6.3 LOT 2- APZ DETAIL

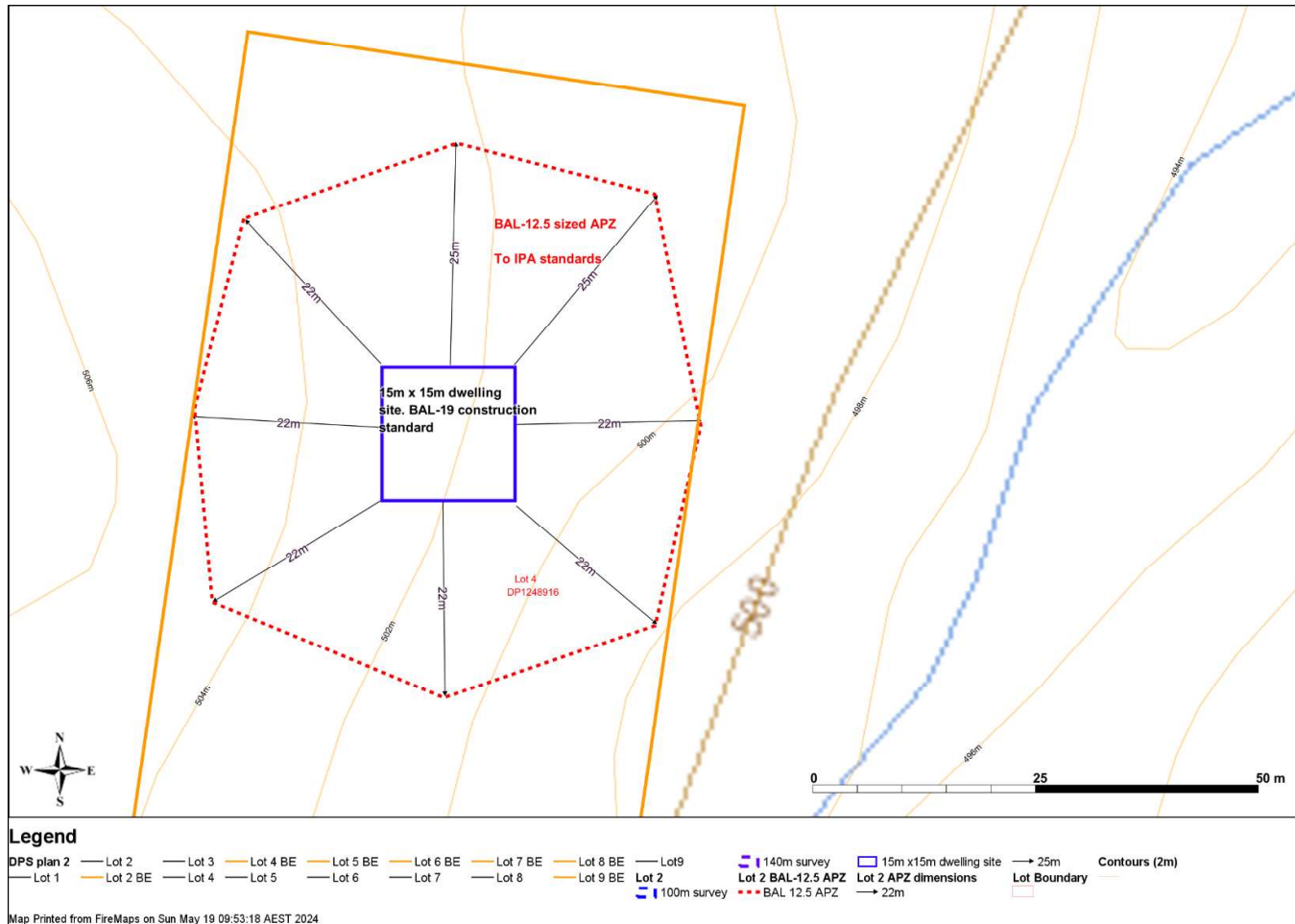


Figure 23 – APZ detail. FPAA (2024) (McGregor, 2024)

6.4 LOT 2-THODELITE PHOTOS



Figure 24 – Looking north 0-5 ° downslope (McGregor,2024)



Figure 26 – Looking south upslope (McGregor,2024)



Figure 25 – Looking east upslope (McGregor,2024)



Figure 27 – Looking west upslope (McGregor,2024)

6.5 LOT 2 -ASSESSMENT DISCUSSION AND RECOMMENDATIONS

6.5.1 EFFECTIVE SLOPE AND PREDOMINATE VEGETATION

Discussion:

Figure 4 shows Bushfire Prone Land Vegetation Category 3.

Figure 5 shows PCT of woodland formations in the vicinity, mostly paddock trees in a grassland.

Figure 21 shows the predominant vegetation of grasslands with paddock trees.

Figure 22 details the effective slope ranging from 0-5 ° downslope.

6.5.2 ASSET PROTECTION ZONES (APZ)

Discussion:

Table 8 and Figure 23 detail the BAL.12.5 APZ dimensions required for a future dwelling to achieve a BAL- 19 construction standard (as a component for the P-B D for access), per Table A1.12.5 PBP (2019). The APZ will be located within the building envelope to reduce the impact on flora and fauna.

Note: Outer Protection Areas, as a component of the APZ, are available in forest vegetation as per Table A1.12.4 PBP (2019)

Table 8 - Required BAL 12.5 sized APZ dimensions for the proposed Lot 2 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	0° - 5° downslope	25m	N/A
NE	Grasslands	0° - 5° downslope	25m	N/A
East	Grasslands	Upslope	22m	N/A
SE	Grasslands	Upslope	22m	N/A
South	Grasslands	Upslope	22m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	Upslope	22m	N/A

Table 9 - APZ compliance report from Table 5.3a PBP (2019)

Acceptable solutions	Compliance
APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI	Yes
APZs are managed in accordance with the requirements of Appendix 4	Yes
APZs are wholly within the boundaries of the development site	Yes
APZs are located on lands with a slope less than 18 degrees.	Yes

The APZ for Lot 2 meets the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

6.5.3 CONSTRUCTION STANDARDS

Discussion:

Set at **BAL-19** within the proposed dwelling site.

Recommendations:

- The construction standard to be adopted by the future dwelling is **BAL-19** as per AS3959-2018 Amd 2:2020 or
- NASH Standard (2014) Steel Framed Construction in Bushfire Areas, and
- The *Additional Construction Requirements* found in Clause 7.5, PBP (2019),
- Class 10a buildings < 6m from a dwelling must be constructed under Clause 8.3.2 PBP (2019).

The construction standards for Lot 2 are capable of meeting the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

7 LOT 3 ASSESSMENT

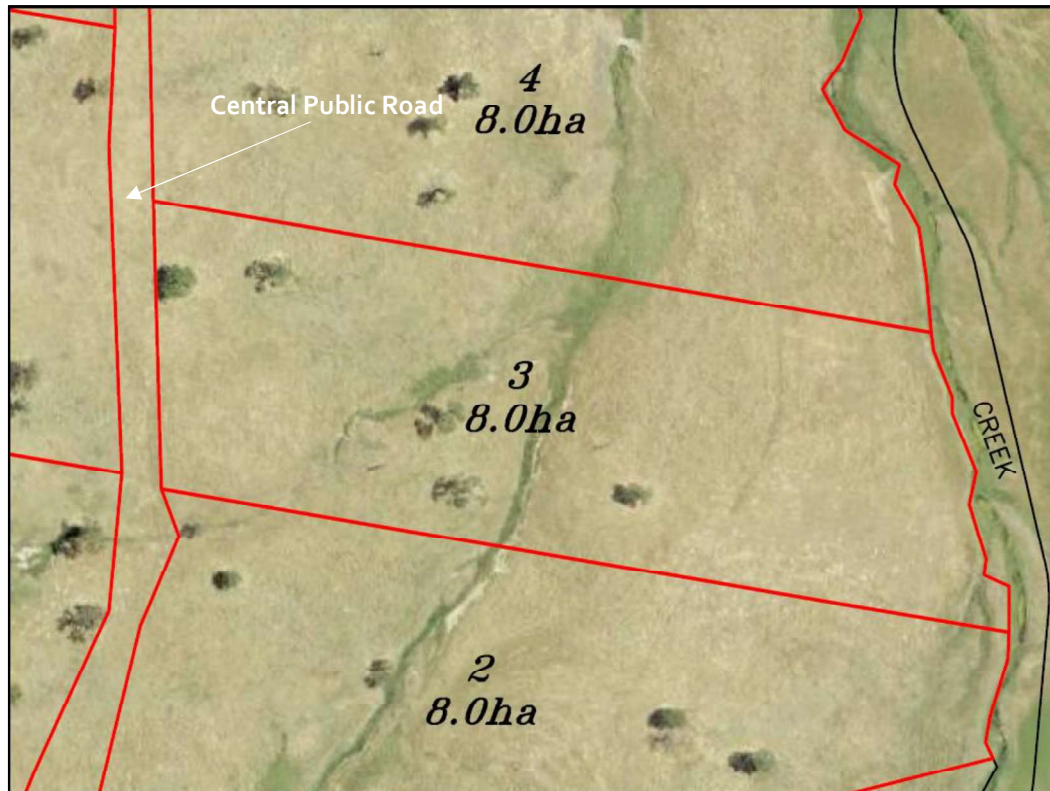


Figure 28 - Proposed Lot 3 of the subdivision. DPS (2024)

7.1 LOT 3 – BE, APZ AND VEGETATION

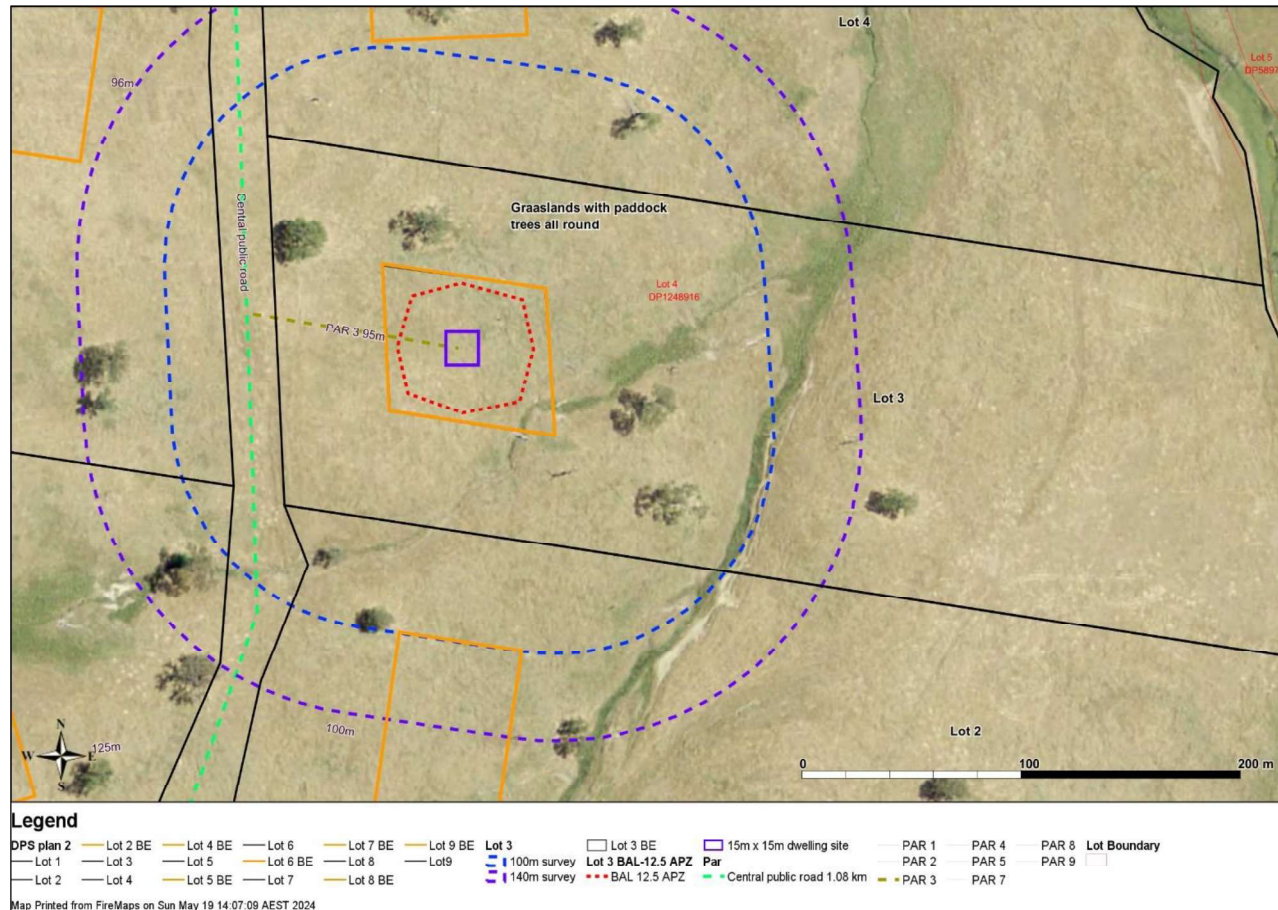


Figure 29 - Proposed BE, PAR, APZ and predominate vegetation. FireMaps FPAA (2024) (McGregor, 2024)

7.2 LOT 3- EFFECTIVE SLOPE AND PHOTO POINTS

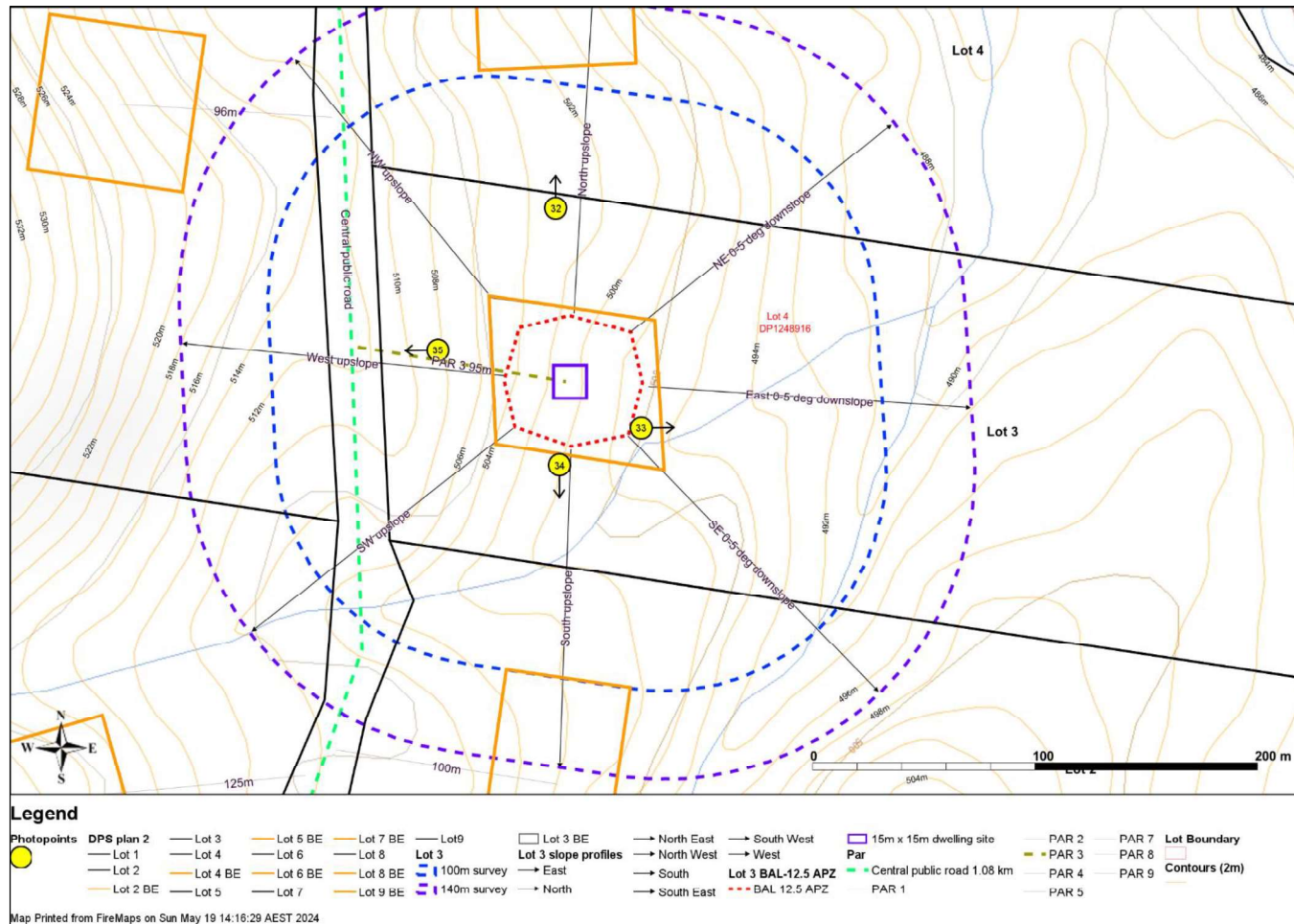


Figure 30 – Effective slope on FireMaps FPA (2024). Photo points refer to Figures 32-35 below. (McGregor, 2024)

7.3 LOT 3- APZ DETAIL

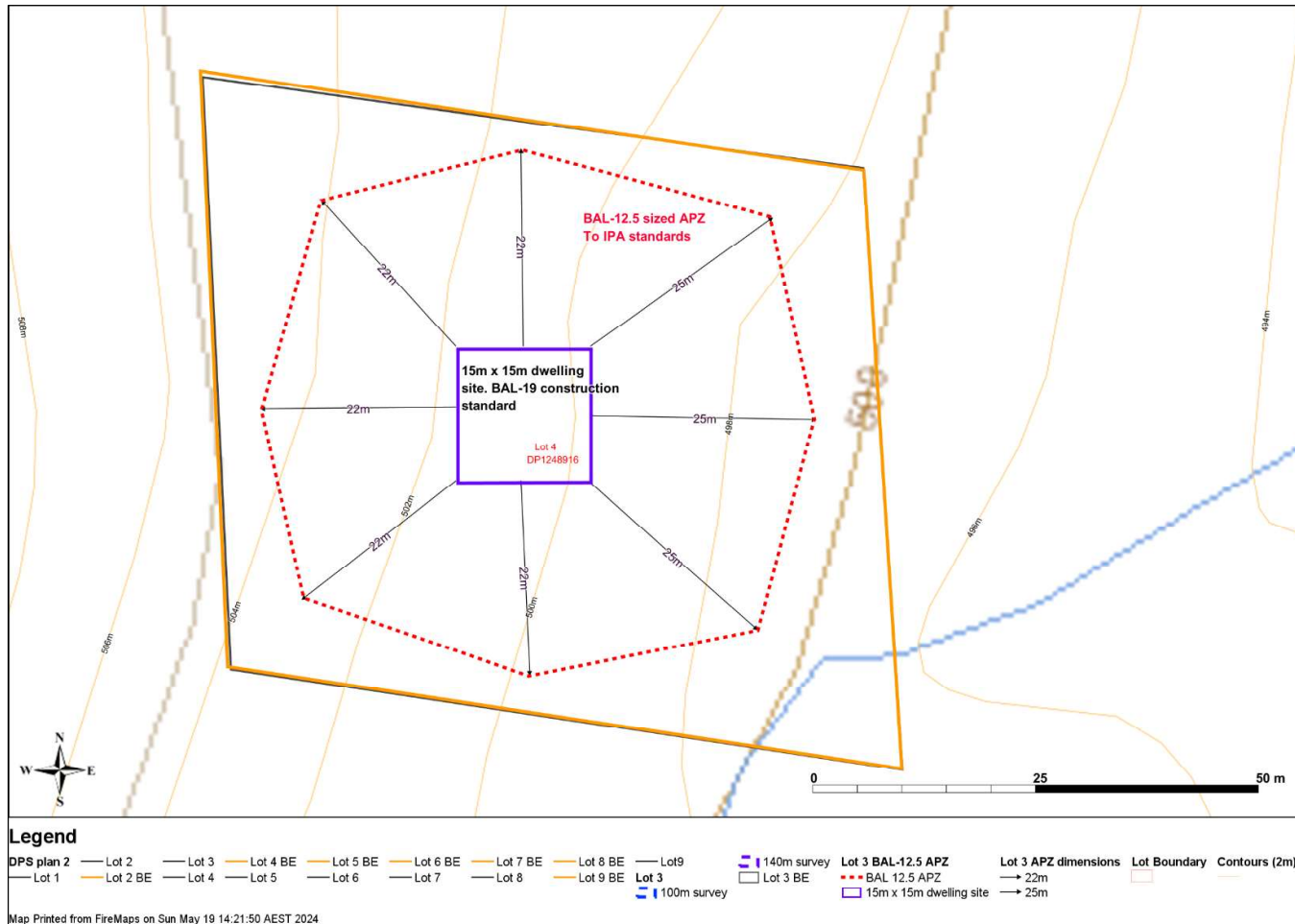


Figure 31 – APZ detail. FPA (2024) (McGregor, 2024)

7.4 LOT 3-THODELITE PHOTOS



Figure 32 – Looking north upslope (McGregor,2024)

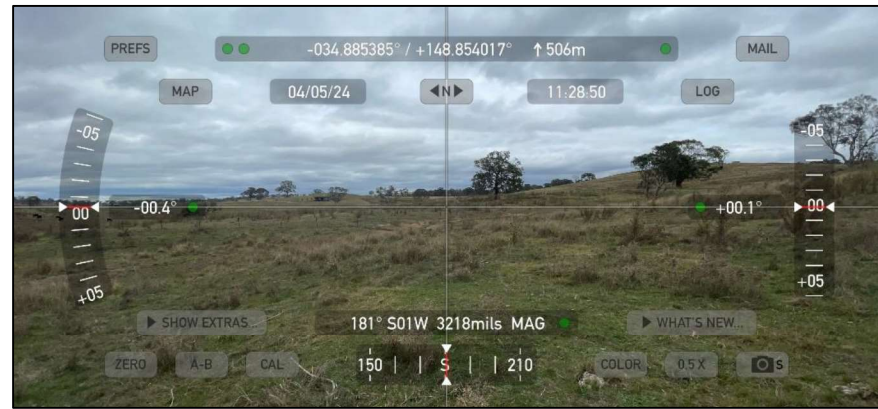


Figure 34 – Looking south upslope (McGregor,2024)



Figure 33 – Looking east 0-5 ° downslope (McGregor,2024)



Figure 35 – Looking west upslope (McGregor,2024)

7.5 LOT 3 -ASSESSMENT DISCUSSION AND RECOMMENDATIONS

7.5.1 EFFECTIVE SLOPE AND PREDOMINATE VEGETATION

Discussion:

Figure 4 shows Bushfire Prone Land Vegetation Category 3.

Figure 5 shows PCT of woodland formations in the vicinity, mostly paddock trees in a grassland.

Figure 29 shows the predominant vegetation of grasslands with paddock trees.

Figure 30 details the effective slope ranging from upslope to 0-5 ° downslope.

7.5.2 ASSET PROTECTION ZONES (APZ)

Discussion:

Table 10 and Figure 31 detail the BAL.12.5 APZ dimensions required for a future dwelling to achieve a BAL- 19 construction standard (as a component for the P-B D for access), per Table A1.12.5 PBP (2019). The APZ will be located within the building envelope to reduce the impact on flora and fauna.

Note: Outer Protection Areas, as a component of the APZ, are available in forest vegetation as per Table A1.12.4 PBP (2019)

Table 10 - Required BAL 12.5 sized APZ dimensions for the proposed Lot 3 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	upslope	22m	N/A
NE	Grasslands	0° - 5° downslope	25m	N/A
East	Grasslands	0° - 5° downslope	25m	N/A
SE	Grasslands	0° - 5° downslope	25m	N/A
South	Grasslands	Upslope	22m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	Upslope	22m	N/A

Table 11 - APZ compliance report from Table 5.3a PBP (2019)

Acceptable solutions	Compliance
APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI	Yes
APZs are managed in accordance with the requirements of Appendix 4	Yes
APZs are wholly within the boundaries of the development site	Yes
APZs are located on lands with a slope less than 18 degrees.	Yes

The APZ for Lot 3 meets the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

7.5.3 CONSTRUCTION STANDARDS

Discussion:

Set at **BAL-19** within the proposed dwelling site.

Recommendations:

- The construction standard to be adopted by the future dwelling is **BAL-19** as per AS3959-2018 Amd 2:2020 or
- NASH Standard (2014) Steel Framed Construction in Bushfire Areas, and
- The *Additional Construction Requirements* found in Clause 7.5, PBP (2019),
- Class 10a buildings < 6m from a dwelling must be constructed under Clause 8.3.2 PBP (2019).

The construction standards for Lot 3 are capable of meeting the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

8 LOT 4 ASSESSMENT

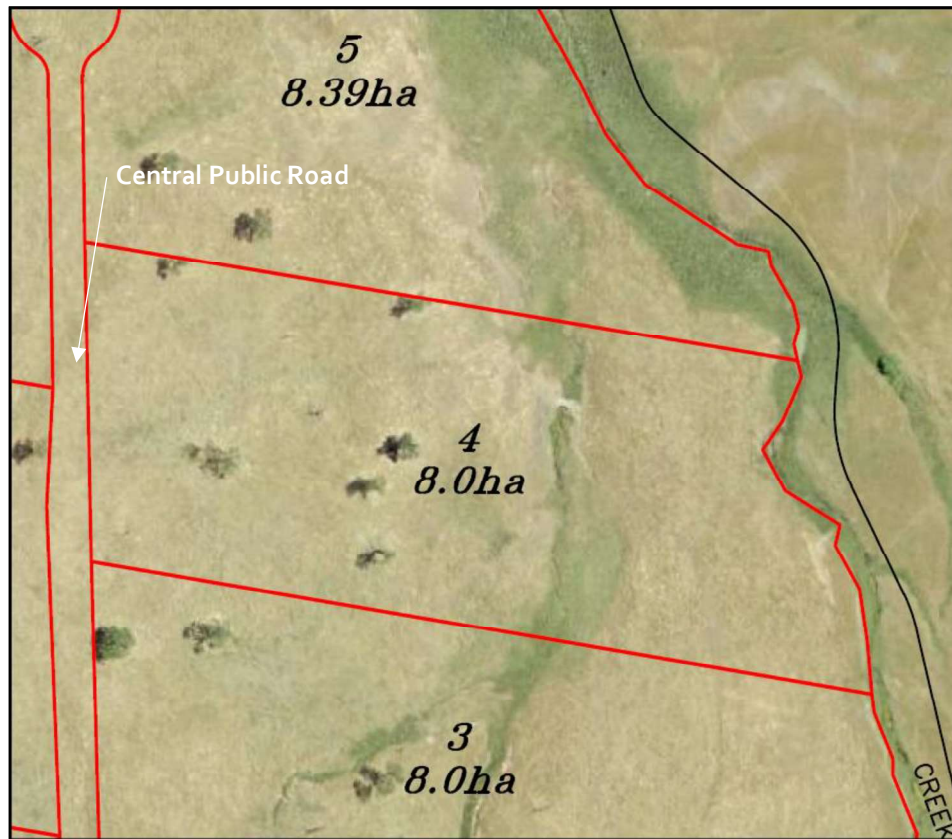


Figure 36 - Proposed Lot 4 of the subdivision. DPS Yass (2024)

8.1 LOT 4 – BE, APZ AND VEGETATION

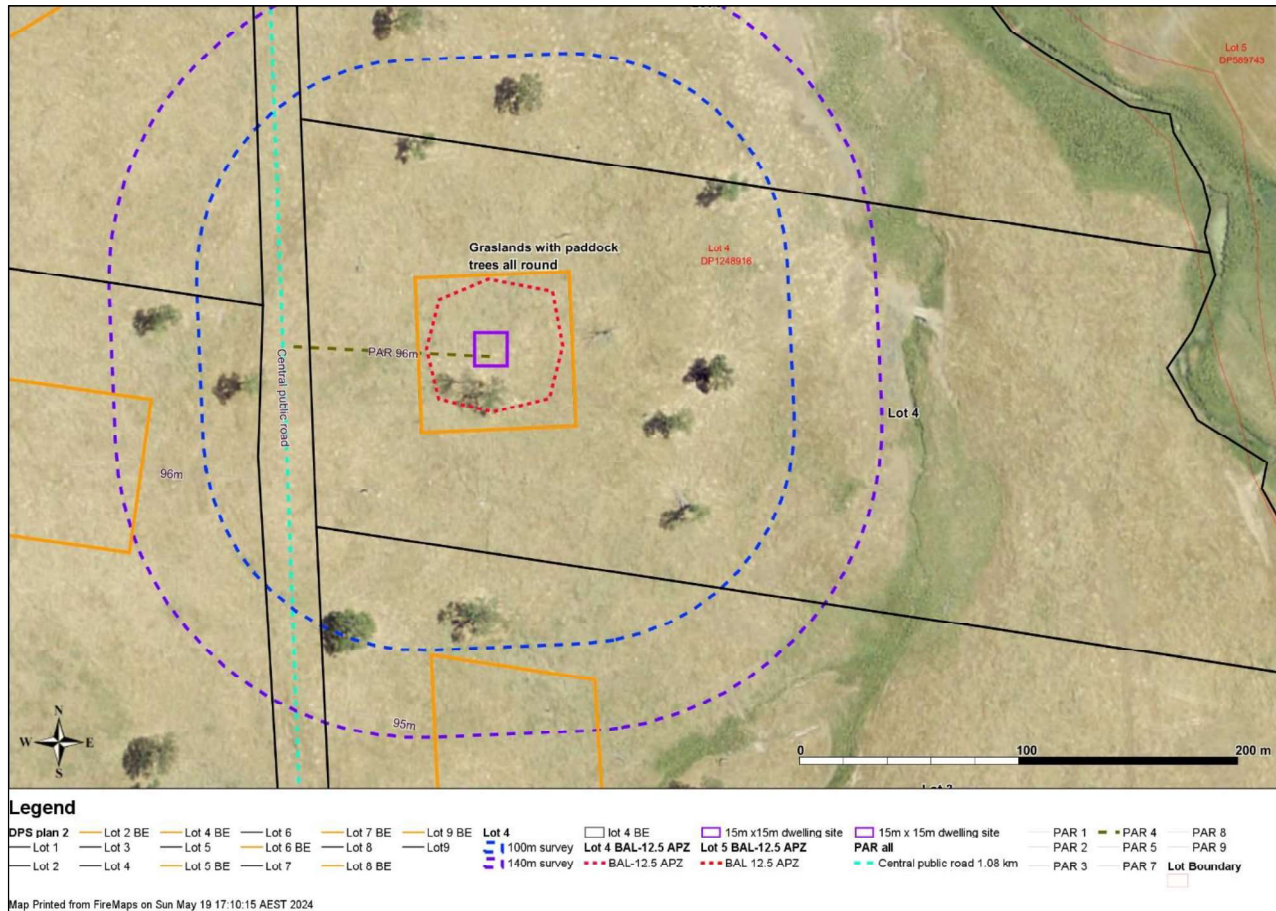


Figure 37 - Proposed BE, PAR, APZ and predominate vegetation. FireMaps FPAA (2024) (McGregor, 2024)

8.2 LOT 4- EFFECTIVE SLOPE AND PHOTO POINTS

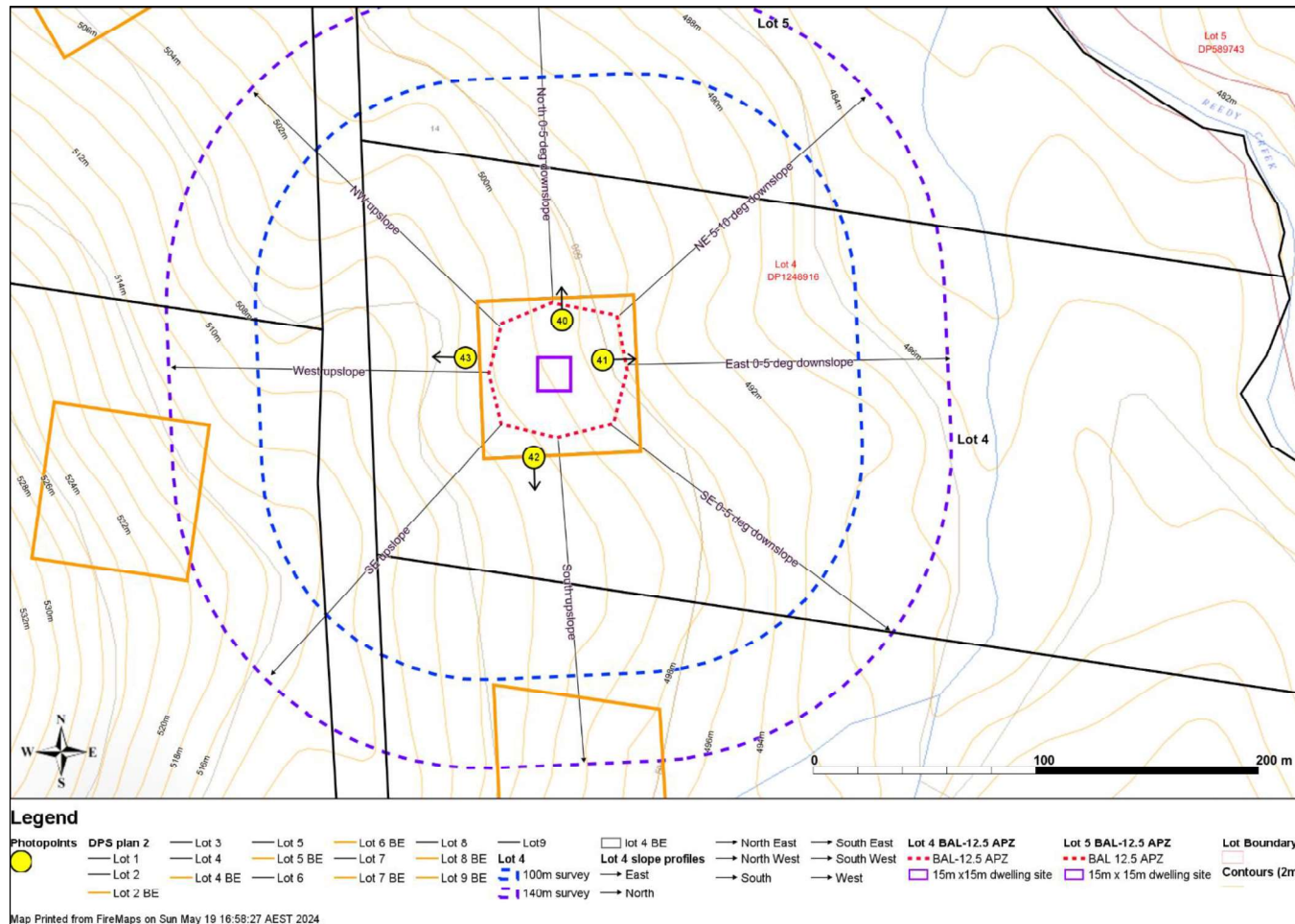


Figure 38 – Effective slope on FireMaps FPA (2024). Photo points refer to Figures 40-43 below. (McGregor, 2024)

8.3 LOT 4- APZ DETAIL

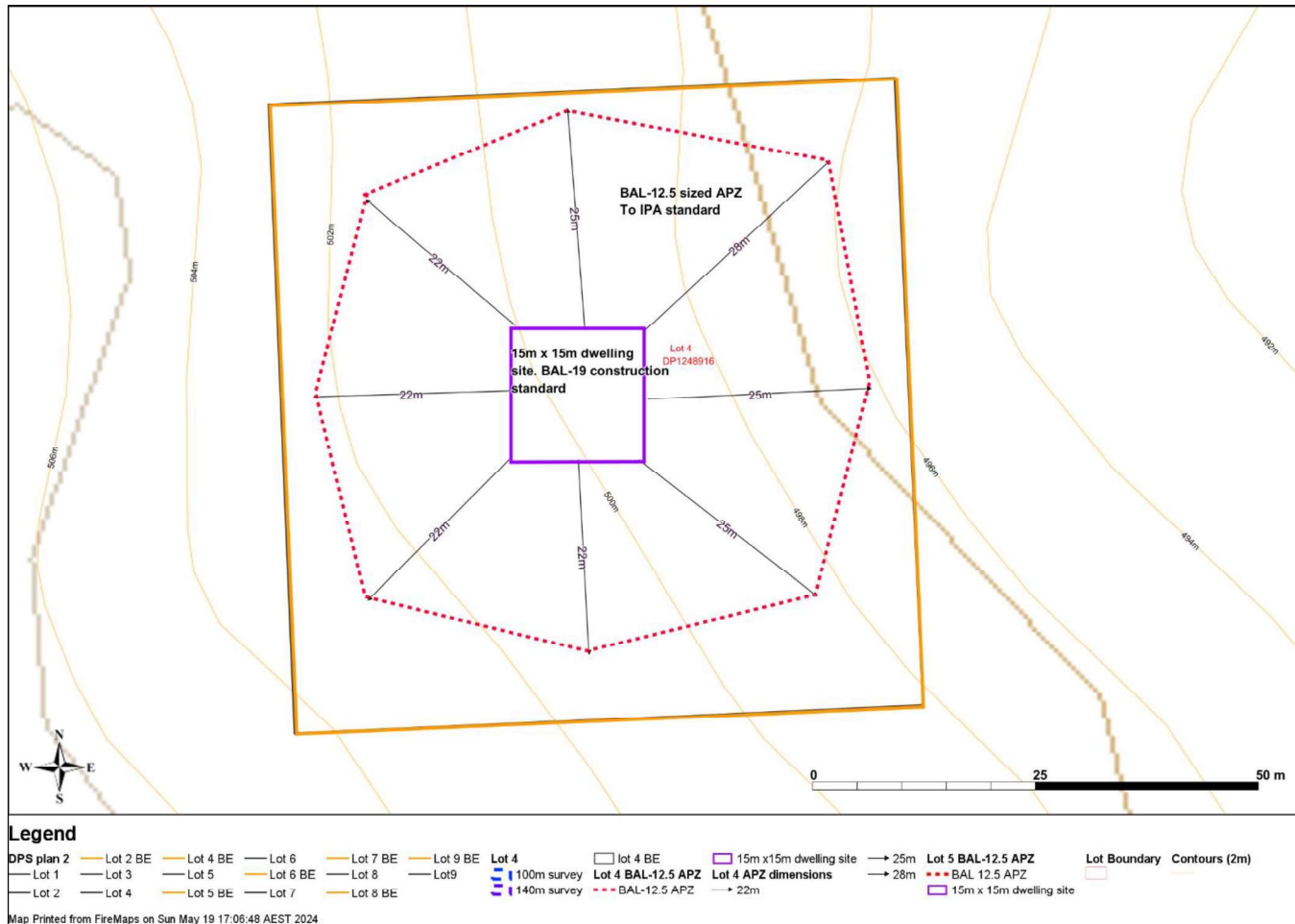


Figure 39 – APZ detail. FPAA (2024) (McGregor, 2024)

8.4 LOT 4- THODELITE PHOTOS



Figure 40 – Looking north 0-5 ° downslope (McGregor,2024)



Figure 42 – Looking south upslope (McGregor,2024)

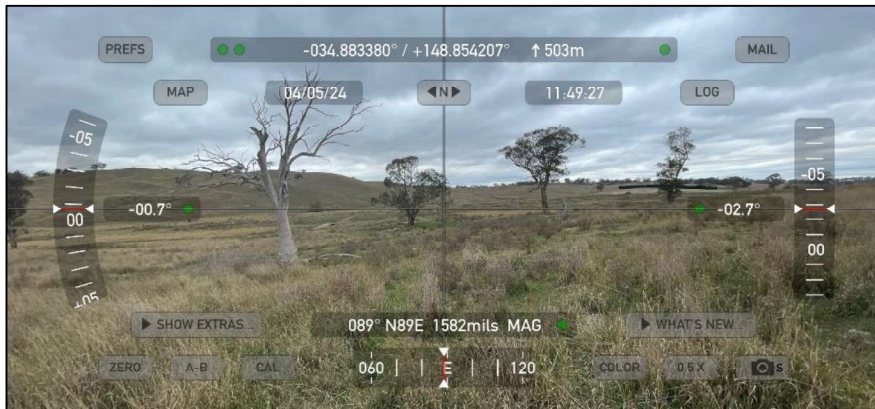


Figure 41 – Looking east 0-5 ° downslope (McGregor,2024)



Figure 43 – Looking west upslope (McGregor,2024)

8.5 LOT 4 -ASSESSMENT DISCUSSION AND RECOMMENDATIONS

8.5.1 EFFECTIVE SLOPE AND PREDOMINATE VEGETATION

Discussion:

Figure 4 shows Bushfire Prone Land Vegetation Category 3.

Figure 5 shows PCT of woodland formations in the vicinity, mostly paddock trees in a grassland.

Figure 37 shows the predominant vegetation of grasslands with paddock trees.

Figure 38 details the effective slope ranging from upslope to 0-10° downslope.

8.5.2 ASSET PROTECTION ZONES (APZ)

Discussion:

Table 12 and Figure 39 detail the BAL.12.5 APZ dimensions required for a future dwelling to achieve a BAL-19 construction standard (as a component for the P-B D for access), per Table A1.12.5 PBP (2019). The APZ will be located within the building envelope to reduce the impact on flora and fauna.

Note: Outer Protection Areas, as a component of the APZ, are available in forest vegetation as per Table A1.12.4 PBP (2019)

Table 12 - Required BAL 12.5 sized APZ dimensions for the proposed Lot 4 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	0° - 5° downslope	25m	N/A
NE	Grasslands	5° - 10° downslope	28m	N/A
East	Grasslands	0° - 5° downslope	25m	N/A
SE	Grasslands	0° - 5° downslope	25m	N/A
South	Grasslands	Upslope	22m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	Upslope	22m	N/A

Table 13 - APZ compliance report from Table 5.3a PBP (2019)

Acceptable solutions	Compliance
APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI	Yes
APZs are managed in accordance with the requirements of Appendix 4	Yes
APZs are wholly within the boundaries of the development site	Yes
APZs are located on lands with a slope less than 18 degrees.	Yes

The APZ for Lot 4 meets the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

8.5.3 CONSTRUCTION STANDARDS

Discussion:

Set at **BAL-19** within the proposed dwelling construction zone.

Recommendations:

- The construction standard to be adopted by the future dwelling is **BAL-19** as per AS3959-2018 Amd 2:2020 or
- NASH Standard (2014) Steel Framed Construction in Bushfire Areas, and
- The *Additional Construction Requirements* found in Clause 7.5, PBP (2019),
- Class 10a buildings < 6m from a dwelling must be constructed under Clause 8.3.2 PBP (2019).

The construction standards for Lot 4 are capable of meeting the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

9 LOT 5 ASSESSMENT

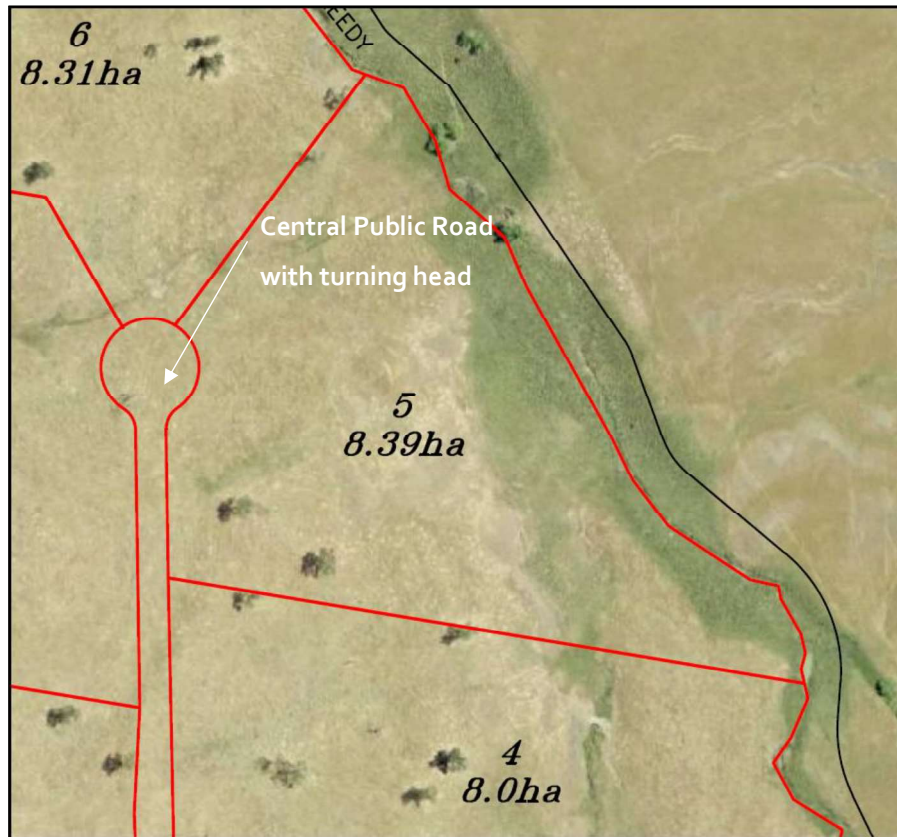


Figure 44 - Proposed Lot 5 of the subdivision. DPS Yass (2024)

9.2 LOT 5- EFFECTIVE SLOPE AND PHOTO POINTS

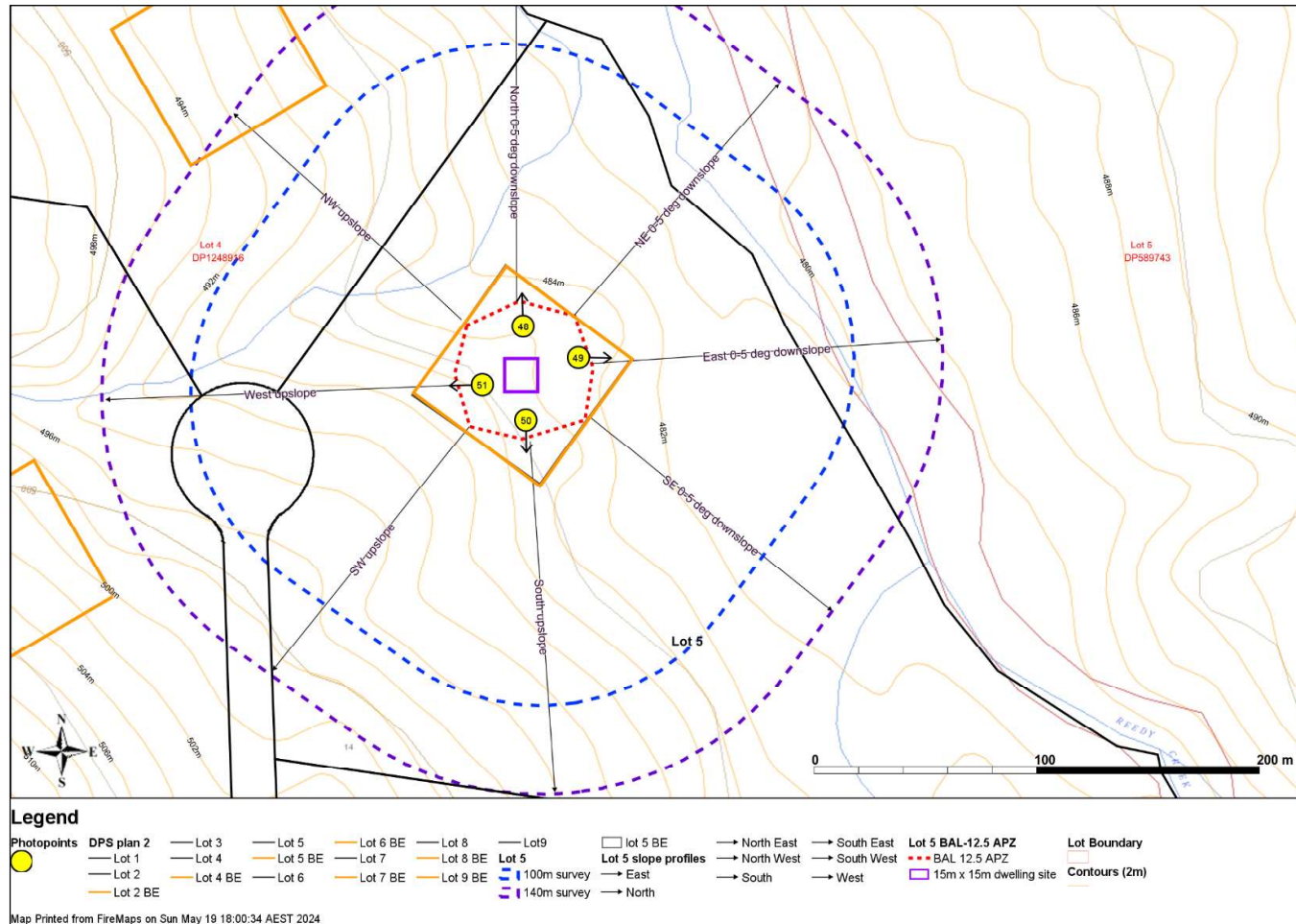


Figure 46 – Effective slope on FireMaps FPA (2024). Photo points refer to Figures 48-51. (McGregor, 2024)

9.3 LOT 5- APZ DETAIL

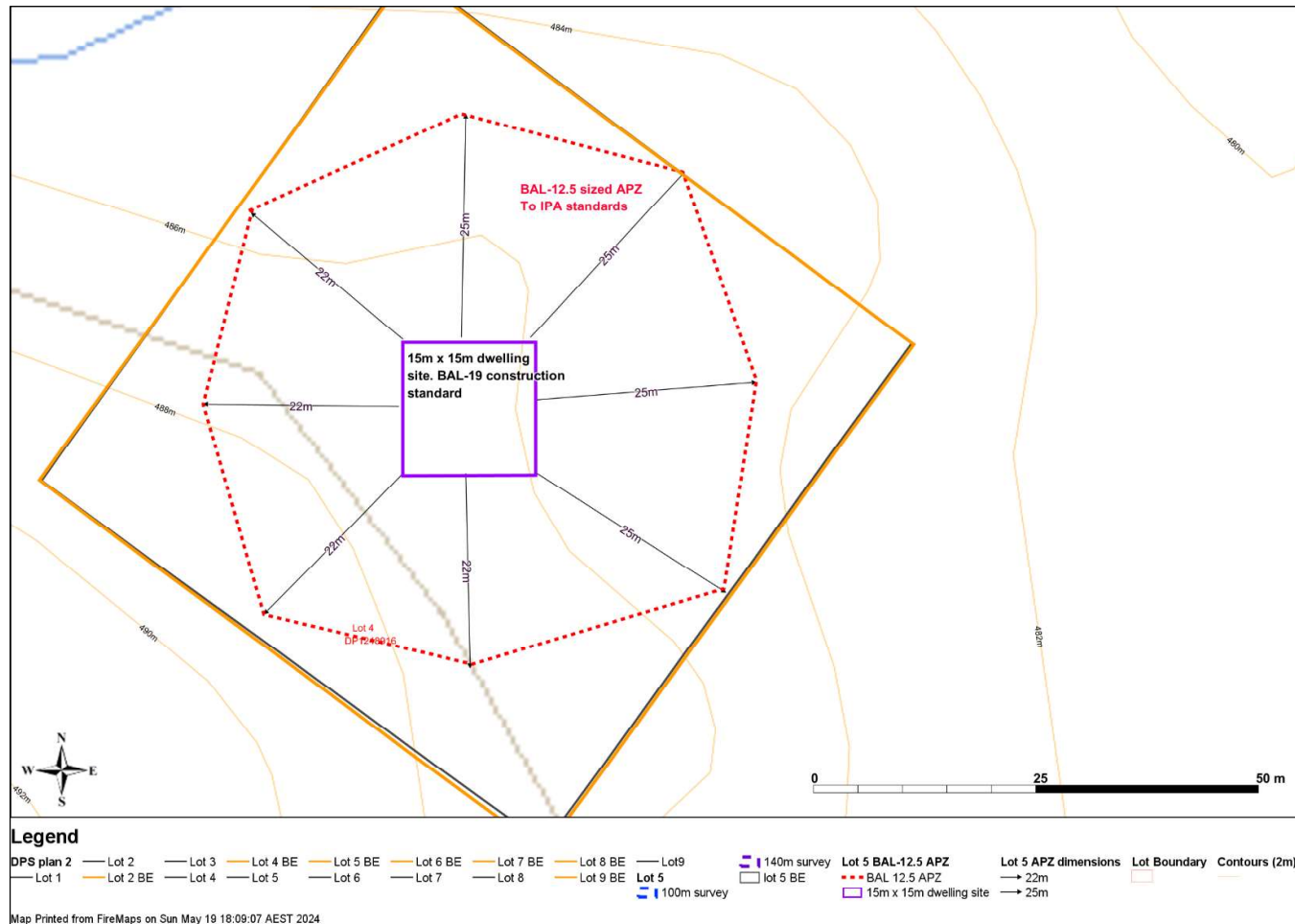


Figure 47 – APZ detail. FPAA (2024) (McGregor, 2024)

9.4 LOT 5-THODELITE PHOTOS



Figure 48 – Looking north 0-5 ° downslope (McGregor,2024)



Figure 50 – Looking south upslope (McGregor,2024)



Figure 49 – Looking east 0-5 ° downslope (McGregor,2024)



Figure 51 – Looking west upslope (McGregor,2024)

9.5 LOT 5 -ASSESSMENT DISCUSSION AND RECOMMENDATIONS

9.5.1 EFFECTIVE SLOPE AND PREDOMINATE VEGETATION

Discussion:

Figure 4 shows Bushfire Prone Land Vegetation Category 3.

Figure 5 shows PCT of woodland formations in the vicinity, mostly paddock trees in a grassland.

Figure 45 shows the predominant vegetation of grasslands with paddock trees.

Figure 46 details the effective slope ranging upslope to 0-5 ° downslope.

9.5.2 ASSET PROTECTION ZONES (APZ)

Discussion:

Table 14 and Figure 47 detail the BAL.12.5 APZ dimensions required for a future dwelling to achieve a BAL- 19 construction standard (as a component for the P-B D for access), per Table A1.12.5 PBP (2019). The APZ will be located within the building envelope to reduce the impact on flora and fauna.

Note: Outer Protection Areas, as a component of the APZ, are available in forest vegetation as per Table A1.12.4 PBP (2019)

Table 14 - Required BAL 12.5 sized APZ dimensions for proposed Lot 5 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	0° - 5° downslope	25m	N/A
NE	Grasslands	0° - 5° downslope	25m	N/A
East	Grasslands	0° - 5° downslope	25m	N/A
SE	Grasslands	0° - 5° downslope	25m	N/A
South	Grasslands	Upslope	22m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	Upslope	22m	N/A

Table 15 - APZ compliance report from Table 5.3a PBP (2019)

Acceptable solutions	Compliance
APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI	Yes
APZs are managed in accordance with the requirements of Appendix 4	Yes
APZs are wholly within the boundaries of the development site	Yes
APZs are located on lands with a slope less than 18 degrees.	Yes

The APZ for Lot 5 meets the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

9.5.3 CONSTRUCTION STANDARDS

Discussion:

Set at **BAL-19** within the proposed dwelling site.

Recommendations:

- The construction standard to be adopted by the future dwelling is **BAL-19** as per AS3959-2018 Amd 2:2020 or
- NASH Standard (2014) Steel Framed Construction in Bushfire Areas, and
- The *Additional Construction Requirements* found in Clause 7.5, PBP (2019),
- Class 10a buildings < 6m from a dwelling must be constructed under Clause 8.3.2 PBP (2019).

The construction standards for Lot 5 are capable of meeting the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

10 LOT 6 ASSESSMENT

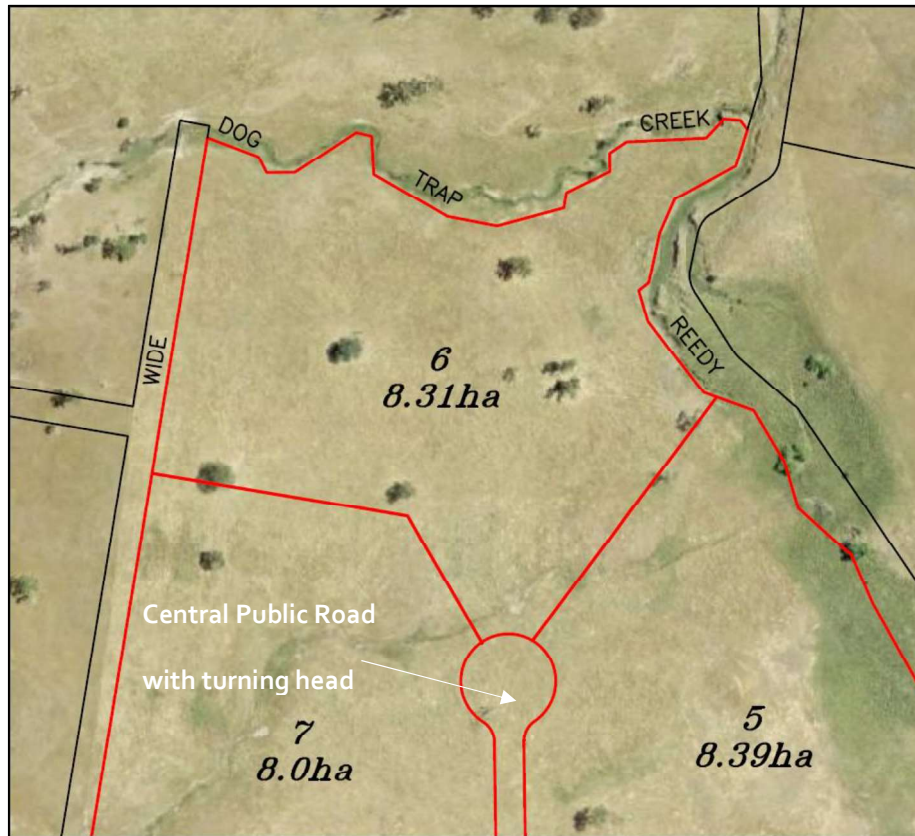


Figure 52 - Proposed Lot 6 of the subdivision. DPS Yass (2024)

10.1 LOT 6 – BE, APZ AND VEGETATION

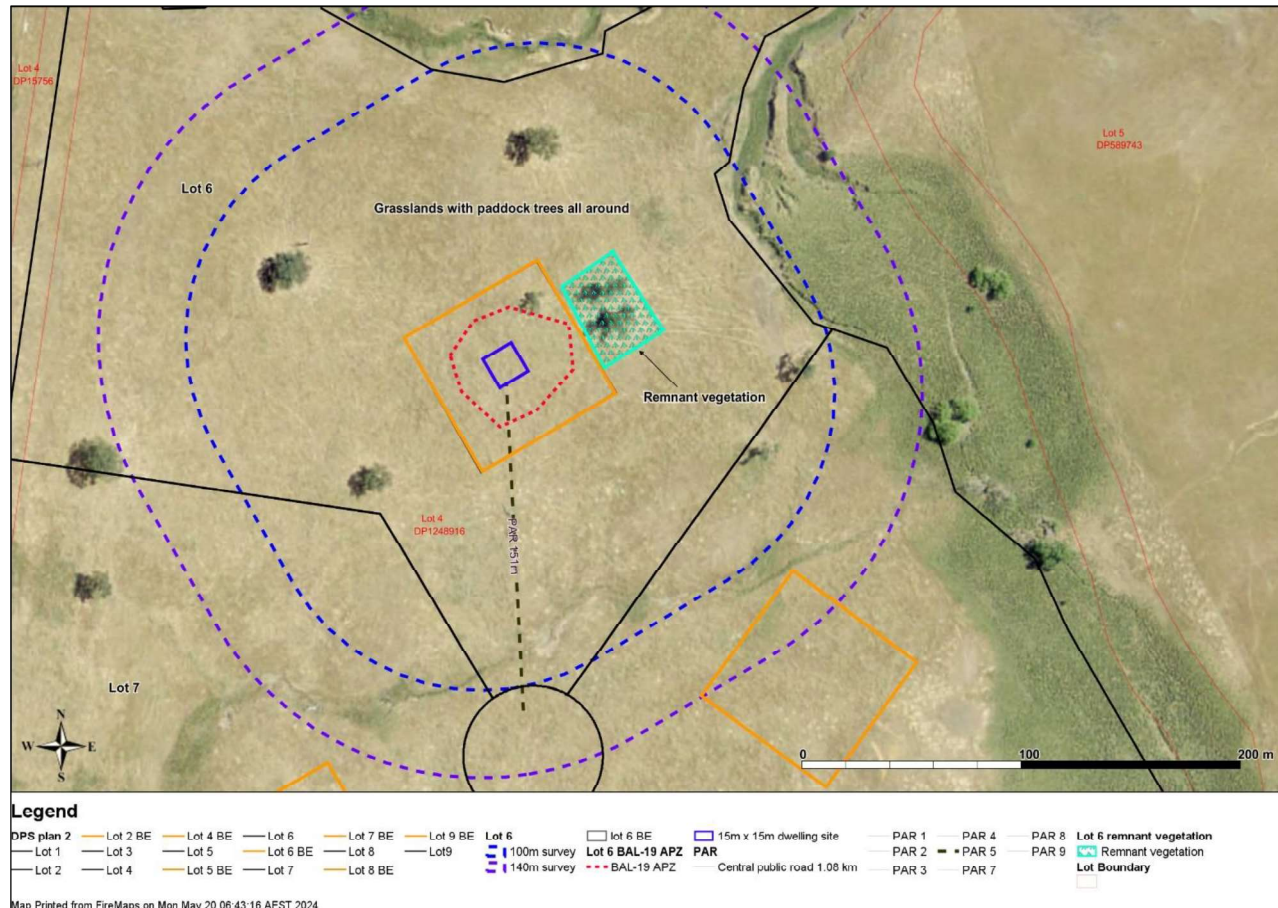


Figure 53 - Proposed BE, PAR, APZ and predominate vegetation. FireMaps FPAA (2024) (McGregor, 2024)

10.2 LOT 6- EFFECTIVE SLOPE AND PHOTO POINTS

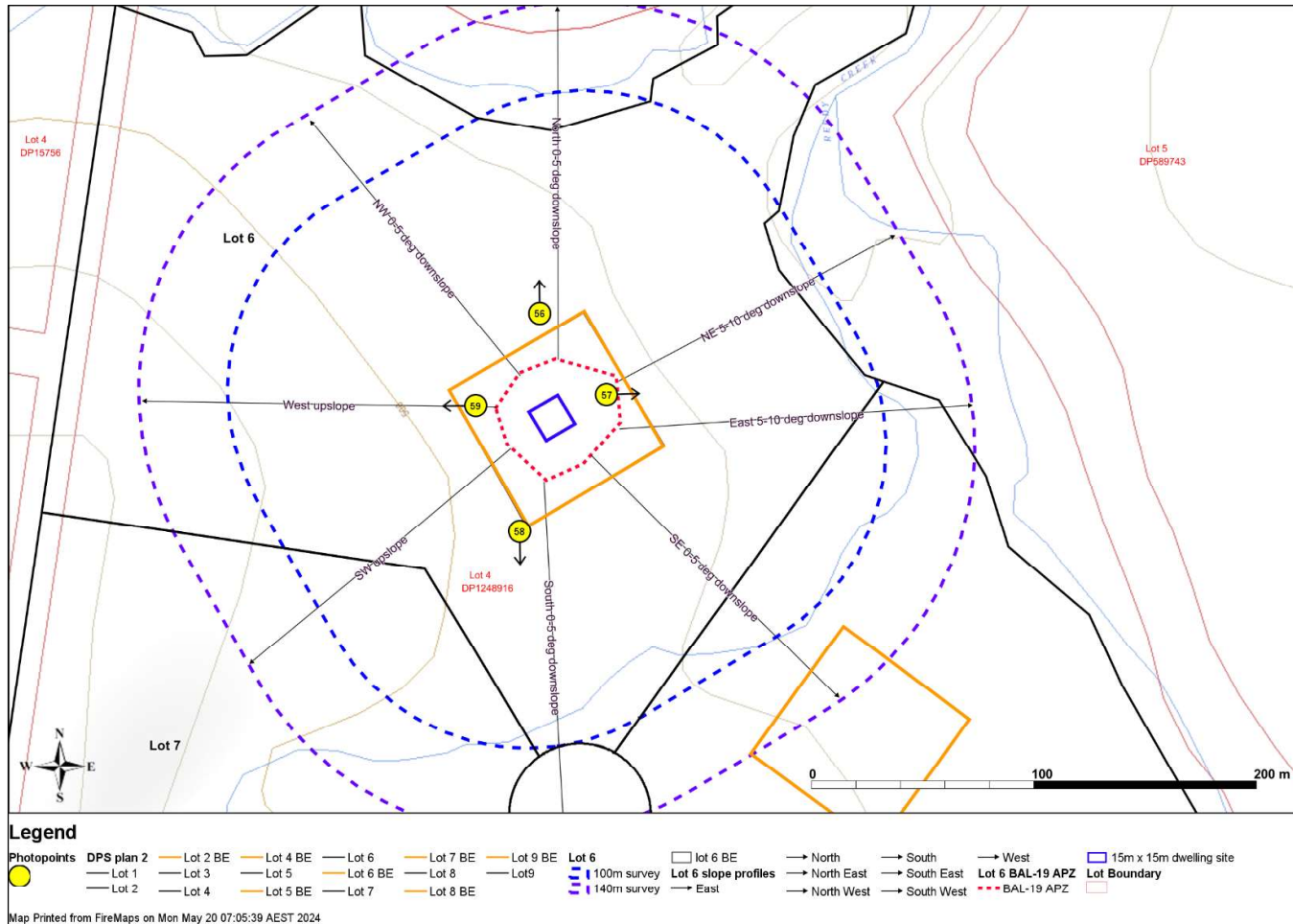


Figure 54 – Effective slope on FireMaps FPA (2024). Photo points refer to Figures 56-59 below. (McGregor, 2024)

10.3 LOT 6- APZ DETAIL

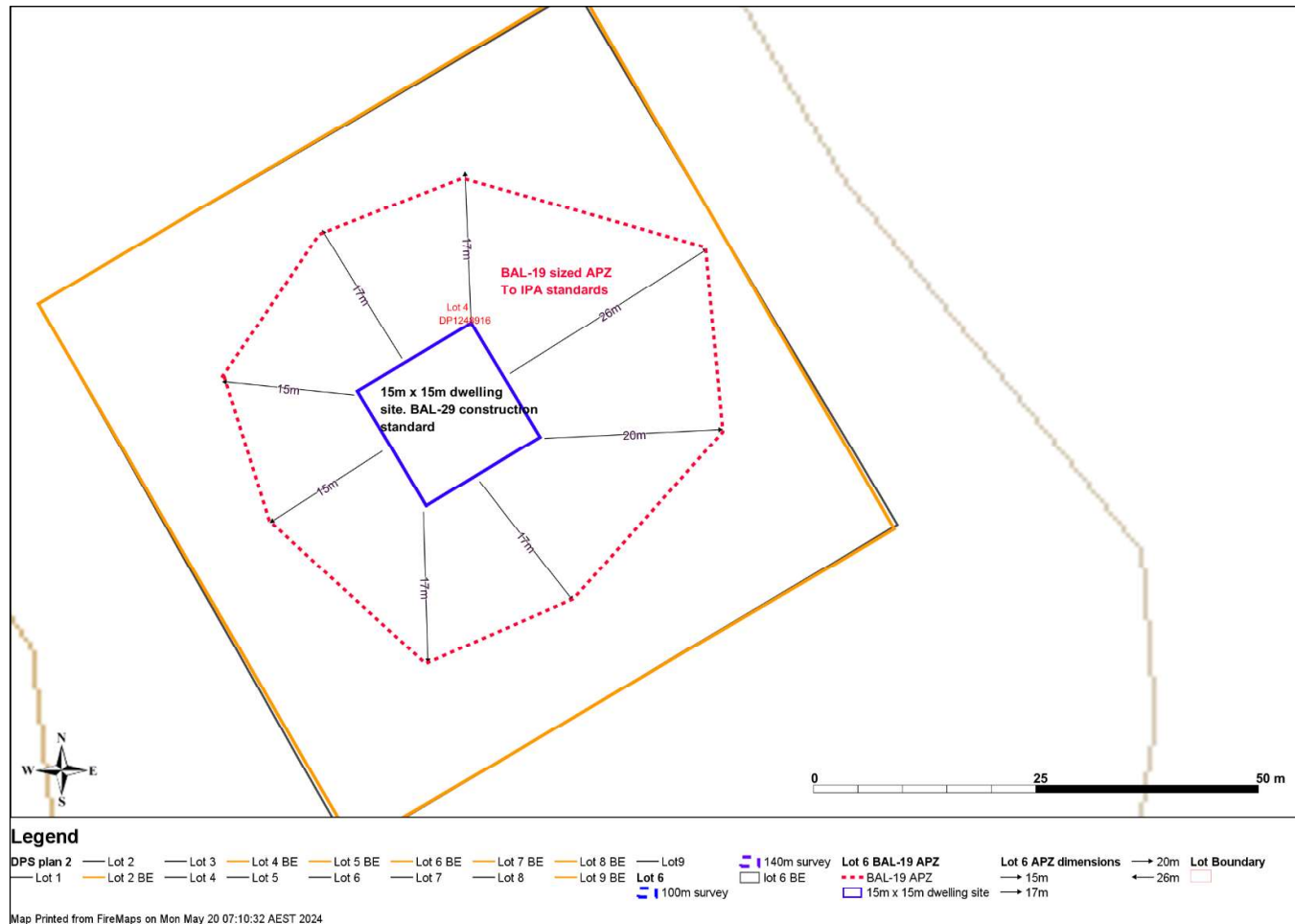


Figure 55 – APZ detail. FPAA (2024) (McGregor, 2024)

10.4 LOT 6- THODELITE PHOTOS



Figure 56 – Looking north 0-5 ° downslope (McGregor,2024)



Figure 58 – Looking south 0-5 ° downslope (McGregor,2024)



Figure 57 – Looking east 5-10 ° downslope (McGregor,2024)



Figure 59 – Looking west upslope (McGregor,2024)

10.5 LOT 6 -ASSESSMENT DISCUSSION AND RECOMMENDATIONS

10.5.1 EFFECTIVE SLOPE AND PREDOMINATE VEGETATION

Discussion:

Figure 4 shows Bushfire Prone Land Vegetation Category 3.

Figure 5 shows PCT of woodland formations in the vicinity, mostly paddock trees in a grassland.

Figure 53 shows the predominant vegetation of grasslands with paddock trees and a patch of remnant vegetation.

Figure 54 details the effective slope ranging from upslope to 0-10° downslope.

10.5.2 ASSET PROTECTION ZONES (APZ)

Discussion:

Table 8 and Figure 55 detail the BAL.19 APZ dimensions are required for a future dwelling to achieve a BAL- 29 construction standard (as a component for the P-B D for access), per Table A1.12.5 PBP (2019). The APZ will be located within the building envelope to reduce the impact on flora and fauna.

Note: Outer Protection Areas, as a component of the APZ, are available in forest vegetation as per Table A1.12.4 PBP (2019)

Table 16 - Required BAL-19-sized APZ dimensions for the proposed Lot 6 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	0° - 5° downslope	17m	N/A
NE	Remnant vegetation	5° - 10° downslope	26m	N/A
East	Grasslands	5° - 10° downslope	20m	N/A
SE	Grasslands	0° - 5° downslope	17m	N/A
South	Grasslands	0° - 5° downslope	17m	N/A
SW	Grasslands	Upslope	15m	N/A
West	Grasslands	Upslope	15m	N/A
NW	Grasslands	0° - 5° downslope	17m	N/A

Table 17 - APZ compliance report from Table 5.3a PBP (2019)

Acceptable solutions	Compliance
APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI	Yes
APZs are managed in accordance with the requirements of Appendix 4	Yes
APZs are wholly within the boundaries of the development site	Yes
APZs are located on lands with a slope less than 18 degrees.	Yes

The APZ for Lot 6 meets the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

10.5.3 CONSTRUCTION STANDARDS

Discussion:

Set at **BAL-29** within the proposed dwelling site.

Recommendations:

- The construction standard to be adopted by the future dwelling is **BAL-29** as per AS3959-2018 Amd 2:2020 or
- NASH Standard (2014) Steel Framed Construction in Bushfire Areas, and
- The *Additional Construction Requirements* found in Clause 7.5, PBP (2019),
- Class 10a buildings < 6m from a dwelling must be constructed under Clause 8.3.2 PBP (2019).

The construction standards for Lot 6 are capable of meeting the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

11 LOT 7 ASSESSMENT

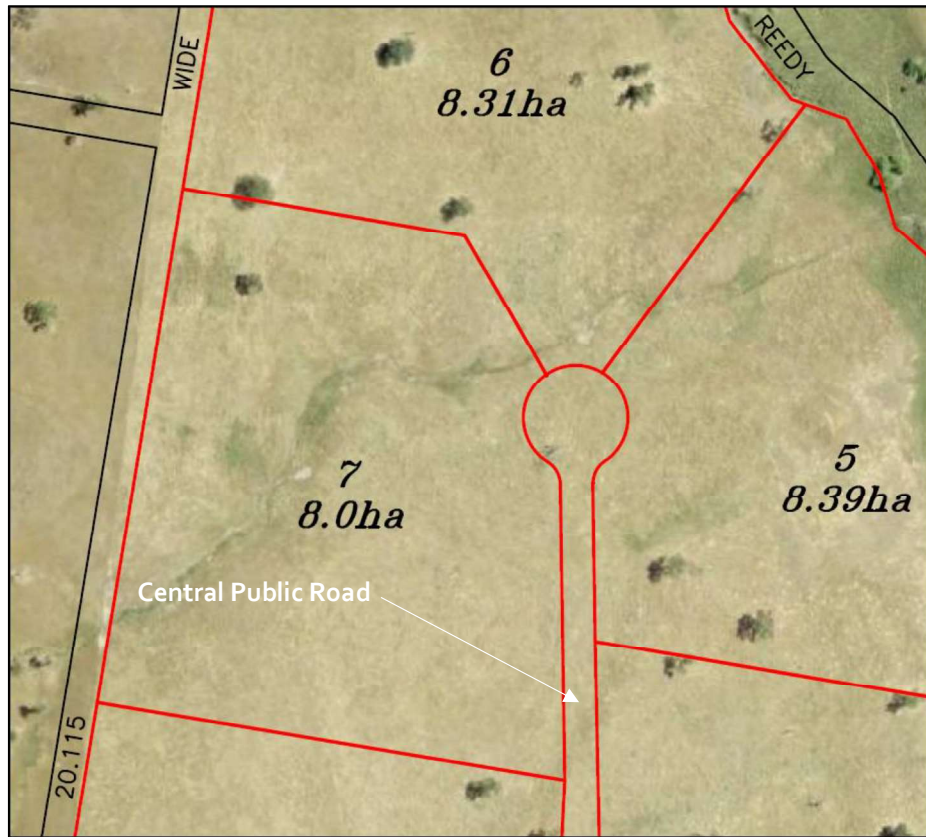


Figure 6o - Proposed Lot 7 of the subdivision. DPS Yass (2024)

11.1 LOT 7 – BE, APZ AND VEGETATION

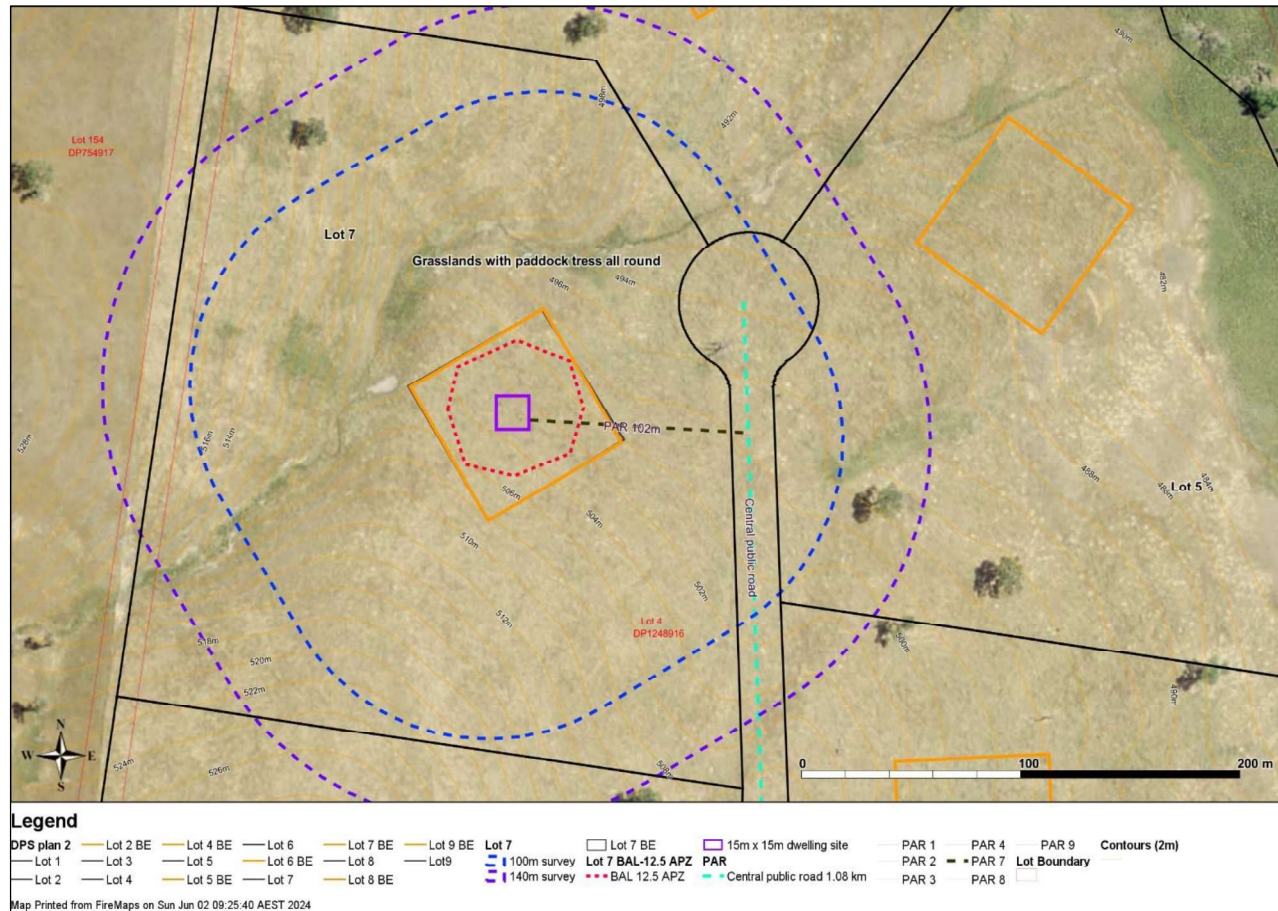


Figure 61 - Proposed BE, PAR, APZ and predominate vegetation. FireMaps FPA (2024) (McGregor, 2024)

11.2 LOT 7- EFFECTIVE SLOPE AND PHOTO POINTS

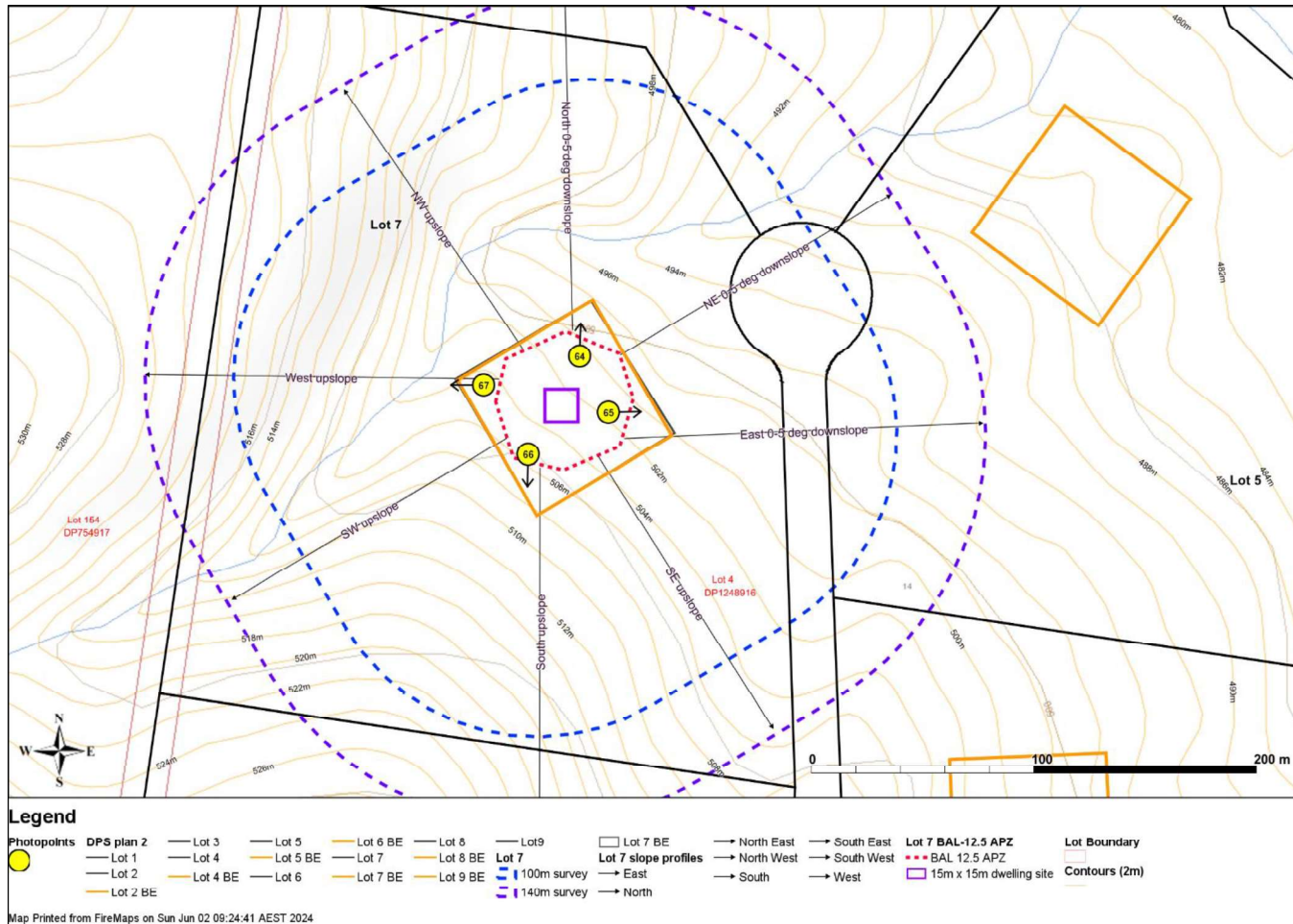


Figure 62 – Effective slope on FireMaps FPA (2024). Photo points refer to Figures 64-67. (McGregor, 2024)

11.4 LOT 7- THODELITE PHOTOS



Figure 64 – Looking north 0-5 ° downslope (McGregor,2024)

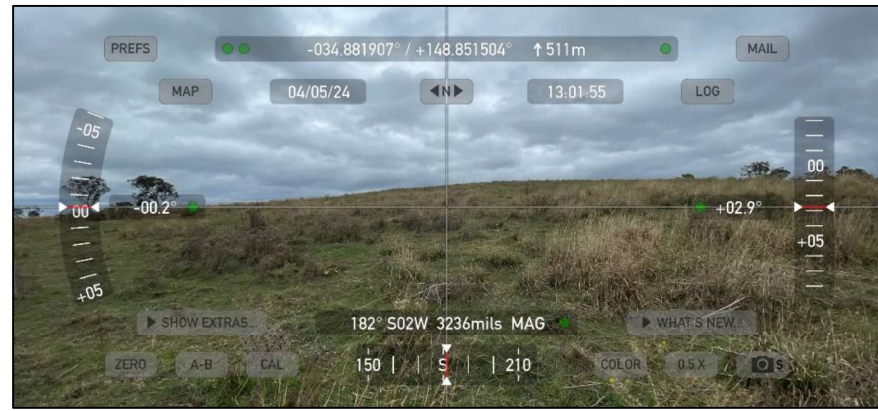


Figure 66 – Looking south upslope (McGregor,2024)



Figure 65 – Looking east 0-5 ° downslope (McGregor,2024)



Figure 67 – Looking west 0-5 ° upslope (McGregor,2024)

11.5 LOT 7 -ASSESSMENT DISCUSSION AND RECOMMENDATIONS

11.5.1 EFFECTIVE SLOPE AND PREDOMINATE VEGETATION

Discussion:

Figure 4 shows Bushfire Prone Land Vegetation Category 3.

Figure 5 shows PCT of woodland formations in the vicinity, mostly paddock trees in a grassland.

Figure 61 shows the predominant vegetation of grasslands with paddock trees.

Figure 62 details the effective slope ranging from upslope to 0-5 ° downslope.

11.5.2 ASSET PROTECTION ZONES (APZ)

Discussion:

Table 18 and Figure 63 detail the BAL.12.5 APZ dimensions required for a future dwelling to achieve a BAL- 19 construction standard (as a component for the P-B D for access), per Table A1.12.5 PBP (2019). The APZ will be located within the building envelope to reduce the impact on flora and fauna.

Note: Outer Protection Areas, as a component of the APZ, are available in forest vegetation as per Table A1.12.4 PBP (2019)

Table 18 - Required BAL 12.5 sized APZ dimensions for the proposed Lot 7 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	0° - 5° downslope	25m	N/A
NE	Grasslands	0° - 5° downslope	25m	N/A
East	Grasslands	0° - 5° downslope	25m	N/A
SE	Grasslands	Upslope	22m	N/A
South	Grasslands	Upslope	22m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	Upslope	22m	N/A

Table 19 - APZ compliance report from Table 5.3a PBP (2019)

Acceptable solutions	Compliance
APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI	Yes
APZs are managed in accordance with the requirements of Appendix 4	Yes
APZs are wholly within the boundaries of the development site	Yes
APZs are located on lands with a slope less than 18 degrees.	Yes

The APZ for Lot 7 meets the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

11.5.3 CONSTRUCTION STANDARDS

Discussion:

Set at **BAL-19** within the proposed dwelling construction zone.

Recommendations:

- The construction standard to be adopted by the future dwelling is **BAL-19** as per AS3959-2018 Amd 2:2020 or
- NASH Standard (2014) Steel Framed Construction in Bushfire Areas, and
- The *Additional Construction Requirements* found in Clause 7.5, PBP (2019),
- Class 10a buildings < 6m from a dwelling must be constructed under Clause 8.3.2 PBP (2019).

The construction standards for Lot 7 are capable of meeting the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

12 LOT 8 ASSESSMENT

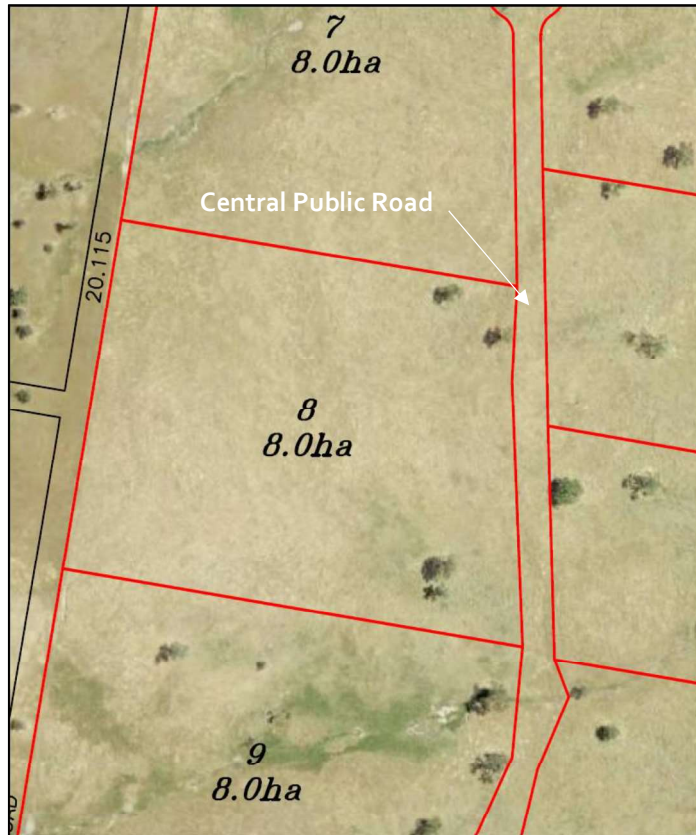


Figure 68 - Proposed Lot 8 of the subdivision DPS Yass (2024)

12.1 LOT 8 – BE, APZ AND VEGETATION

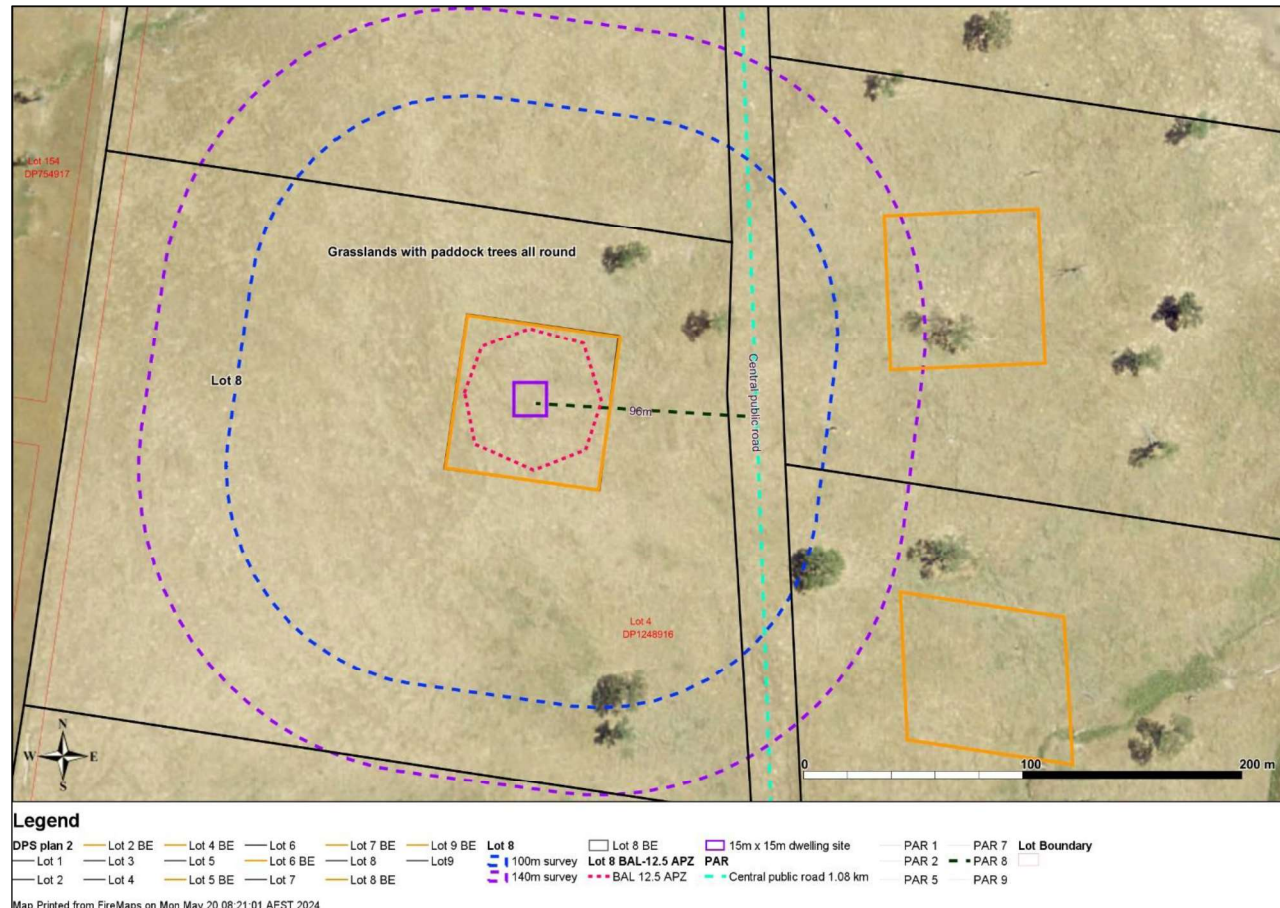


Figure 6g - Proposed BE, PAR, APZ and predominate vegetation. FireMaps FPAA (2024) (McGregor, 2024)

12.2 LOT 8- EFFECTIVE SLOPE AND PHOTO POINTS

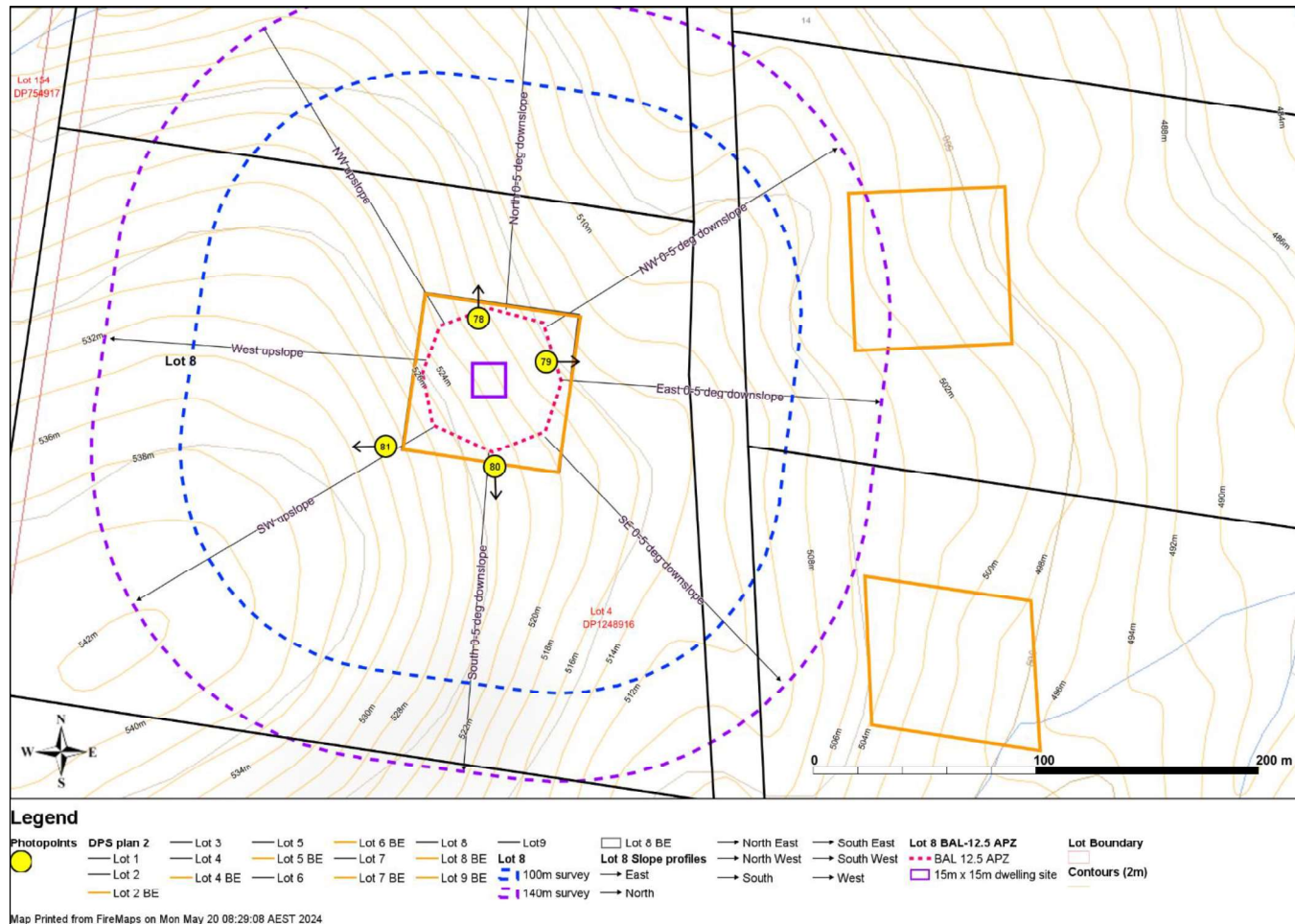


Figure 70 – Effective slope on FireMaps FPA (2024). Photo points refer to Figures 78-81 below. (McGregor, 2024)

12.3 LOT 8- APZ DETAIL

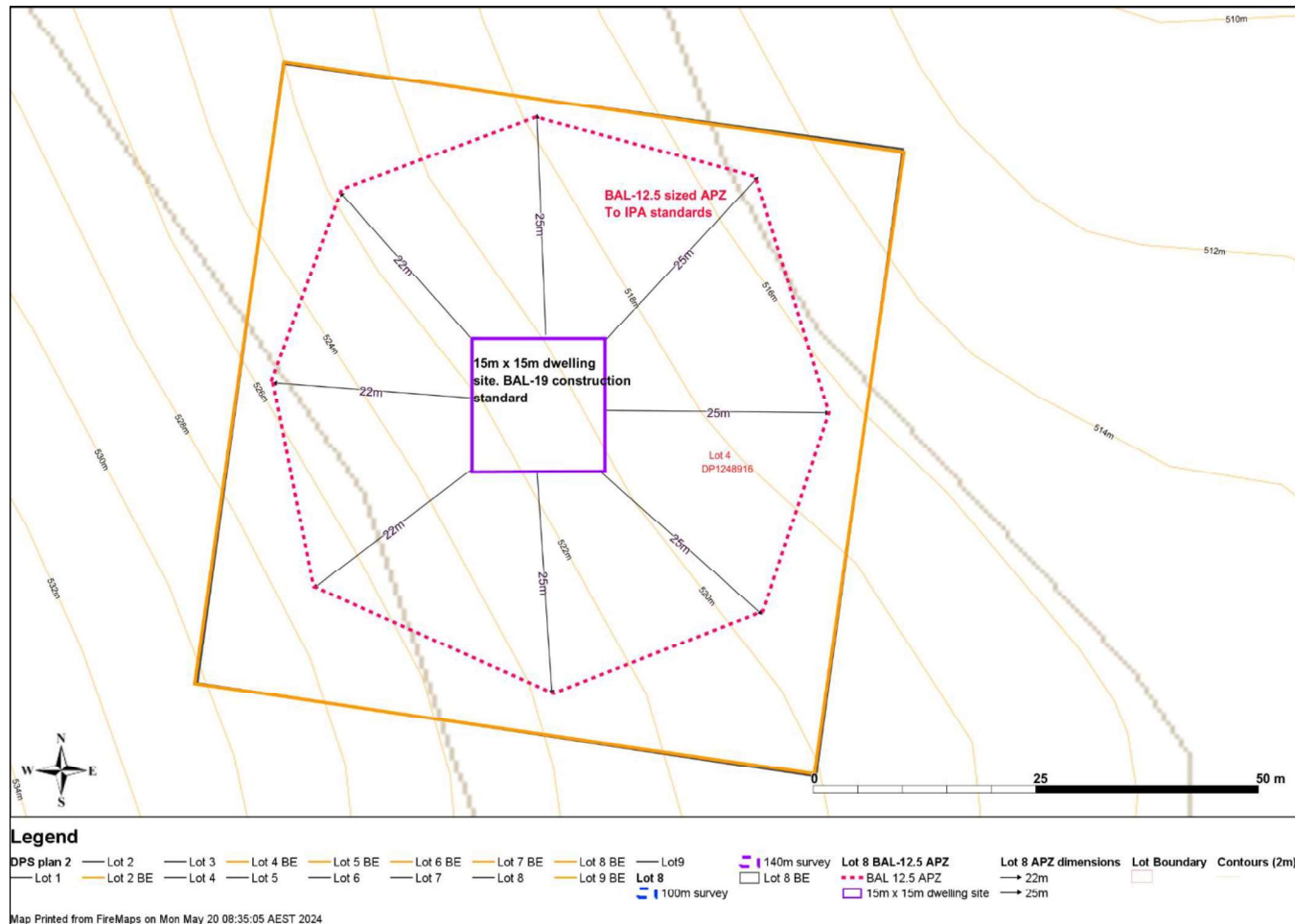


Figure 71 – APZ detail. FPAA (2024) (McGregor, 2024)

12.4 LOT 8- THODELITE PHOTOS



Figure 78 – Looking north 0-5 ° downslope (McGregor,2024)



Figure 80 – Looking south 0-5 ° downslope (McGregor,2024)



Figure 79 – Looking east 0-5 ° downslope (McGregor,2024)



Figure 81 – Looking west upslope (McGregor,2024)

12.5 LOT 8 -ASSESSMENT DISCUSSION AND RECOMMENDATIONS

12.5.1 EFFECTIVE SLOPE AND PREDOMINATE VEGETATION

Discussion:

Figure 4 shows Bushfire Prone Land Vegetation Category 3.

Figure 5 shows PCT of woodland formations in the vicinity, mostly paddock trees in a grassland.

Figure 69 shows the predominant vegetation of grasslands with paddock trees.

Figure 70 details the effective slope ranging from upslope to 0-5 ° downslope.

12.5.2 ASSET PROTECTION ZONES (APZ)

Discussion:

Table 20 and Figure 71 detail the BAL.12.5 APZ dimensions required for a future dwelling to achieve a BAL- 19 construction standard (as a component for the P-B D for access), per Table A1.12.5 PBP (2019). The APZ will be located within the building envelope to reduce the impact on flora and fauna.

Note: Outer Protection Areas, as a component of the APZ, are available in forest vegetation as per Table A1.12.4 PBP (2019)

Table 20 - Required BAL 12.5 sized APZ dimensions for proposed Lot 8 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	0° - 5° downslope	25m	N/A
NE	Grasslands	0° - 5° downslope	25m	N/A
East	Grasslands	0° - 5° downslope	25m	N/A
SE	Grasslands	0° - 5° downslope	25m	N/A
South	Grasslands	0° - 5° downslope	25m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	Upslope	22m	N/A

Table 21 - APZ compliance report from Table 5.3a PBP (2019)

Acceptable solutions	Compliance
APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI	Yes
APZs are managed in accordance with the requirements of Appendix 4	Yes
APZs are wholly within the boundaries of the development site	Yes
APZs are located on lands with a slope less than 18 degrees.	Yes

The APZ for Lot 8 meets the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

12.5.3 CONSTRUCTION STANDARDS

Discussion:

Set at **BAL-19** within the proposed dwelling site.

Recommendations:

- The construction standard to be adopted by the future dwelling is **BAL-19** as per AS3959-2018 Amd 2:2020 or
- NASH Standard (2014) Steel Framed Construction in Bushfire Areas, and
- The *Additional Construction Requirements* found in Clause 7.5, PBP (2019),
- Class 10a buildings < 6m from a dwelling must be constructed under Clause 8.3.2 PBP (2019).

The construction standards for Lot 8 are capable of meeting the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

13 LOT 9 ASSESSMENT

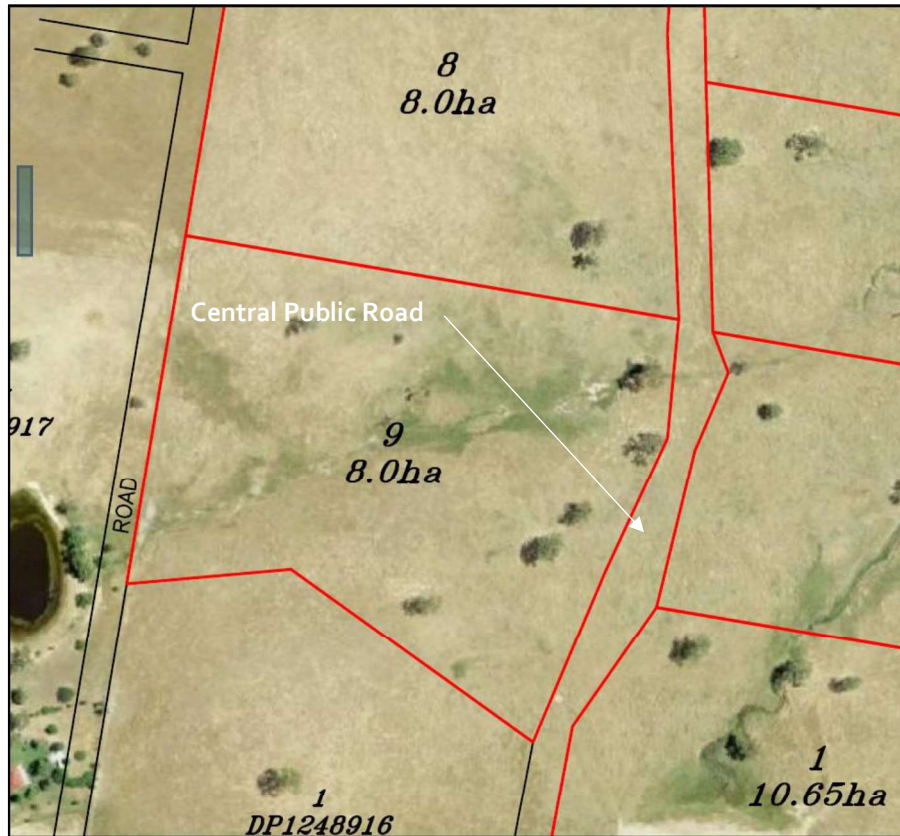


Figure 82 - Proposed Lot 9 of the subdivision. DPS Yass (2024)

13.1 LOT 9 – BE, APZ AND VEGETATION

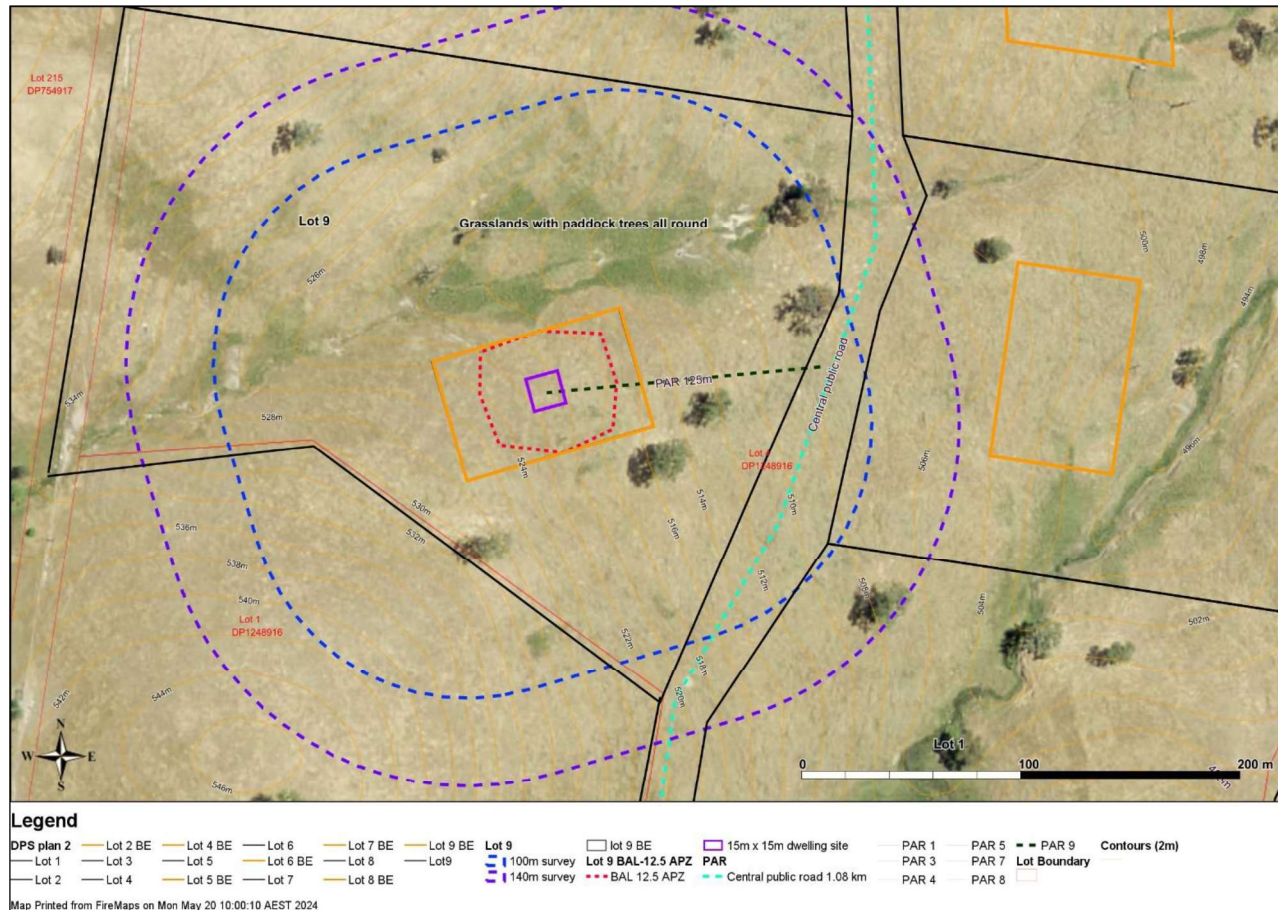


Figure 83 - Proposed BE, PAR, APZ and predominate vegetation. FireMaps FPA (2024) (McGregor, 2024)

13.2 LOT 9- EFFECTIVE SLOPE AND PHOTO POINTS

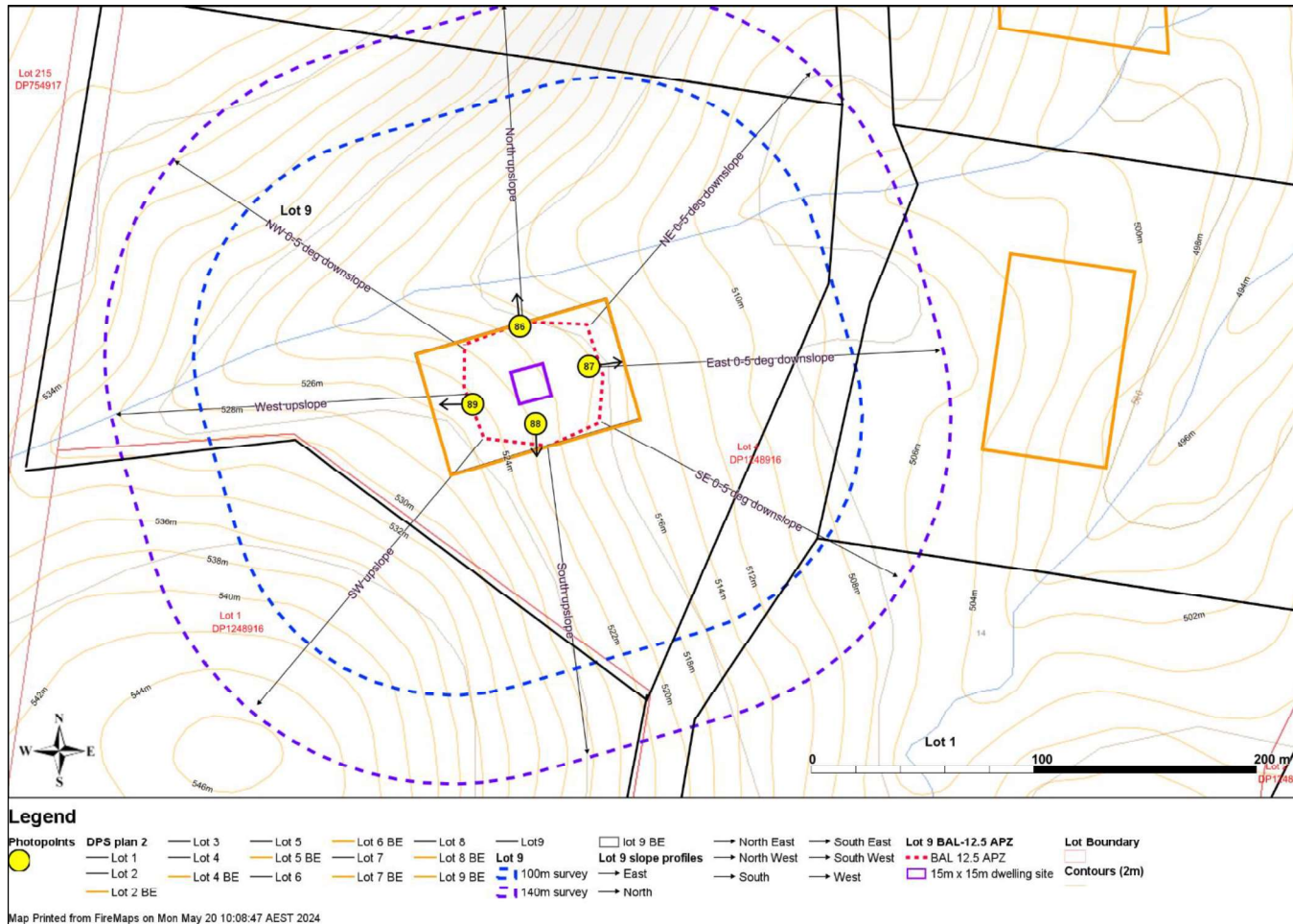


Figure 84 – Effective slope on FireMaps FPA (2024). Photo points refer to Figures 86-89 below. (McGregor, 2024)

13.3 LOT 9- APZ DETAIL

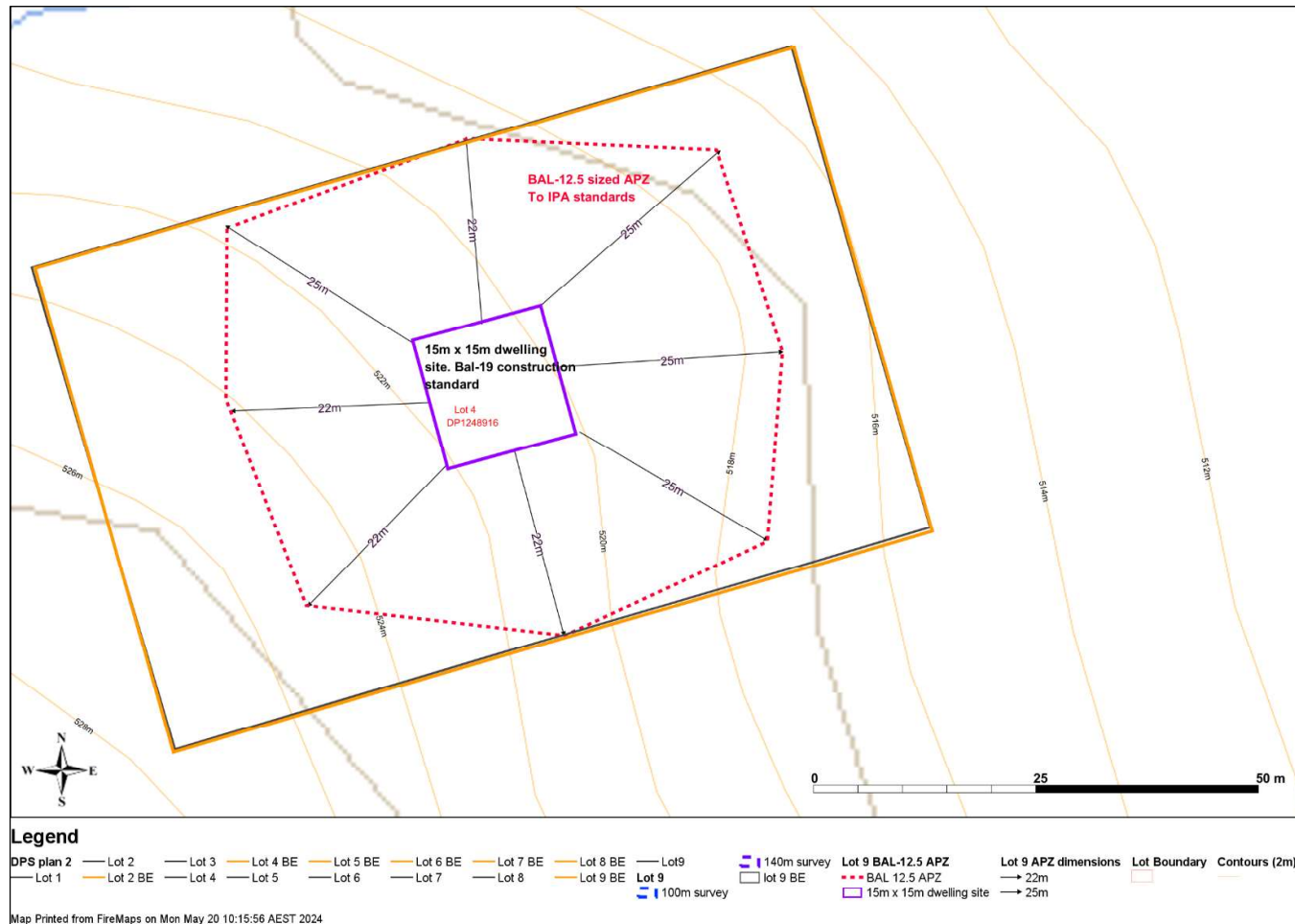


Figure 85 – APZ detail. FPAA (2024) (McGregor, 2024)

13.4 LOT 9- THODELITE PHOTOS



Figure 86 – Looking north upslope (McGregor,2024)



Figure 88 – Looking south upslope (McGregor,2024)



Figure 87 – Looking east 0-5° downslope (McGregor,2024)



Figure 89 – Looking west upslope (McGregor,2024)

13.5 LOT 9 -ASSESSMENT DISCUSSION AND RECOMMENDATIONS

13.5.1 EFFECTIVE SLOPE AND PREDOMINATE VEGETATION

Discussion:

Figure 4 shows Bushfire Prone Land Vegetation Category 3.

Figure 5 shows PCT of woodland formations in the vicinity, mostly paddock trees in a grassland.

Figure 83 shows the predominant vegetation of grasslands with paddock trees.

Figure 84 details the effective slope ranging from 0-5 ° downslope.

13.5.2 ASSET PROTECTION ZONES (APZ)

Discussion:

Table 22 and Figure 85 detail the BAL.12.5 APZ dimensions required for a future dwelling to achieve a BAL- 19 construction standard (as a component for the P-B D for access), per Table A1.12.5 PBP (2019). The APZ will be located within the building envelope to reduce the impact on flora and fauna.

Note: Outer Protection Areas, as a component of the APZ, are available in forest vegetation as per Table A1.12.4 PBP (2019)

Table 22 - Required BAL 12.5 sized APZ dimensions for the proposed Lot 9 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	Upslope	22m	N/A
NE	Grasslands	0° - 5° downslope	25m	N/A
East	Grasslands	0° - 5° downslope	25m	N/A
SE	Grasslands	0° - 5° downslope	25m	N/A
South	Grasslands	Upslope	22m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	0° - 5° downslope	25m	N/A

Table 23 - APZ compliance report from Table 5.3a PBP (2019)

Acceptable solutions	Compliance
APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI	Yes
APZs are managed in accordance with the requirements of Appendix 4	Yes
APZs are wholly within the boundaries of the development site	Yes
APZs are located on lands with a slope less than 18 degrees.	Yes

The APZ for Lot 9 meets the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

13.5.3 CONSTRUCTION STANDARDS

Discussion:

Set at **BAL-19** within the proposed dwelling site.

Recommendations:

- The construction standard to be adopted by the future dwelling is **BAL-19** as per AS3959-2018 Amd 2:2020 or
- NASH Standard (2014) Steel Framed Construction in Bushfire Areas, and
- The *Additional Construction Requirements* found in Clause 7.5, PBP (2019),
- Class 10a buildings < 6m from a dwelling must be constructed under Clause 8.3.2 PBP (2019).

The construction standards for Lot 1 are capable of meeting the acceptable solutions and, therefore, the performance criteria provided by PBP (2019).

14 EXISTING DWELLING



FEATURES

- Existing infrastructure includes the dwelling used as a weekender, constructed of metal walls and roof set on piers.
- Lot 1 has its own separate property access road to Euralie Road.
- The existing 4m wide unsealed property access road is well formed and is 405m from Euralie Road.
- An informal turning head is located at the eastern side of the dwelling.
- Near the entry there is a Class 10a buildings (sheds / workshops / ancillary buildings) and cattle yards.
- Multiple static water supplies.
- The existing dwelling is surrounded by well grazed grasslands.

Figure 90 – The existing dwelling and PAR (red dashes). (McGregor, 2024)

14.1 EXISTING DWELLING



Figure 91 – East facia of the existing dwelling. (McGregor, 2024)



Figure 93 – If possible fit a Stortz coupling to the outlet of the existing water tank



Figure 92 –South facia of the existing dwelling. (McGregor, 2024)



Figure 94 – North facia of the existing dwelling. (McGregor, 2024)

14.2 ADDITIONAL PHOTOS LOT 1



Figure 95 – The separate entry to Lot 1. (McGregor, 2024)



Figure 97 – PAR looking towards Euralie Road. (McGregor, 2024)



Figure 96 – One of the large dams beside the PAR as a static water supply. (McGregor, 2024)



Figure 98 – RFS fire shed opposite Lot 1 entry (McGregor, 2024)

14.3 LOT 1- PHOTO POINTS

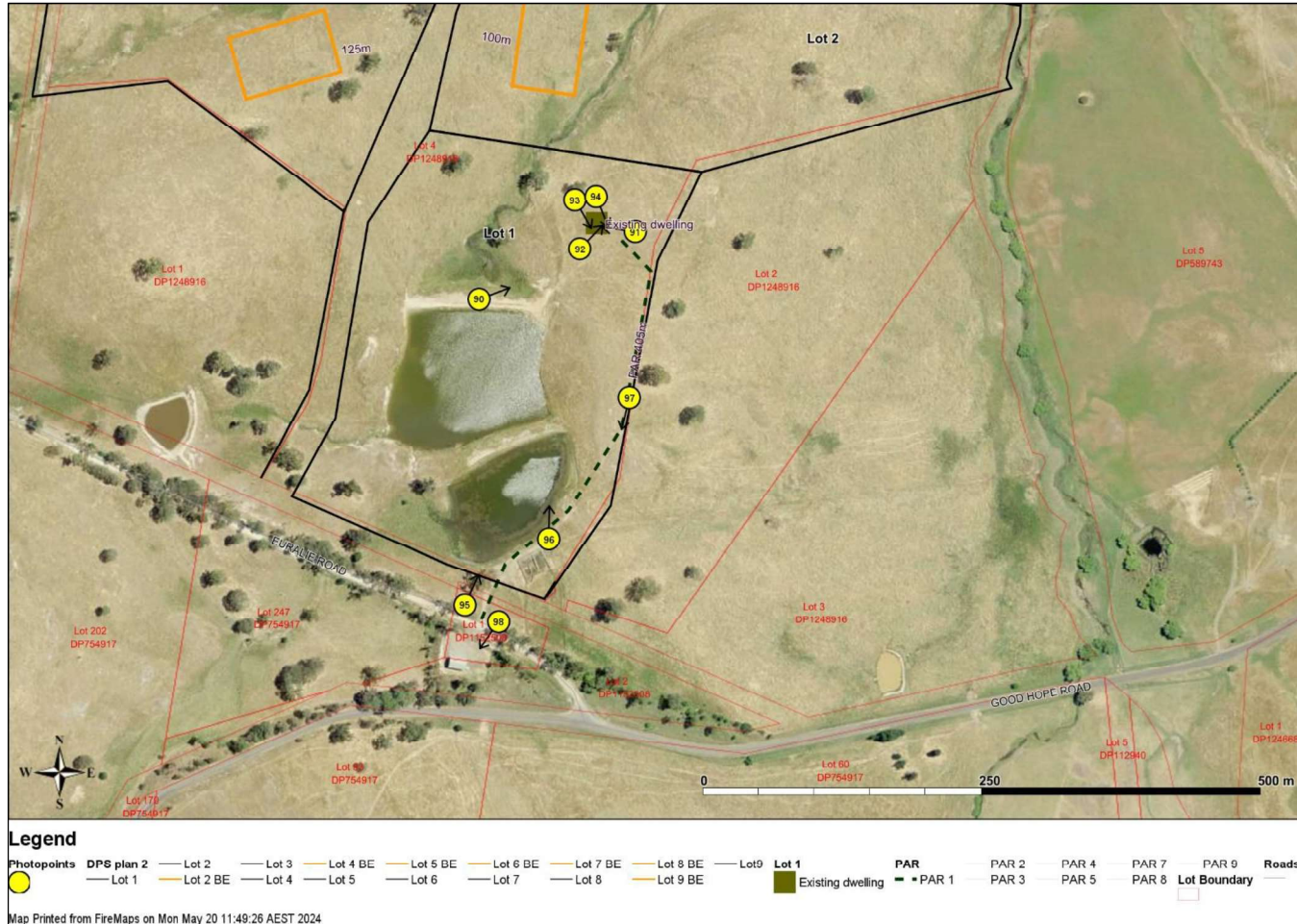


Figure 99 – Photo points Lot 1 FireMaps FPAA (2024). Photo points refer to Figures 90-98 above. (McGregor, 2024)

14.4 ASSESSMENT DISCUSSION AND CONCLUSION

Under section 8.2.1 of PBP (2019), *increased residential densities* require existing dwellings to consider (if needed) upgrade of ember protection, improve water availability, and ensure suitable access and APZ.

14.4.1 EMBER PROTECTION:

To improve ember protection to the existing dwelling, specific applicable enhancements are recommended. These recommendations can be found in:

- NSWRFs (0914) Upgrading of existing buildings, *Minimal Protection Measures*. See Attachment E

Note:

- The fitting of metal gutter and valley guards is at the owner's discretion. Gutter guard can reduce leaf and debris build-up and improve rainwater harvesting.

Conclusion:

The existing dwelling has been assessed and found capable of providing any of the applicable ember protection measures.

14.4.2 STATIC WATER AVAILABILITY

The existing dwelling is provided with the following static water supplies:

- A plastic water tank at the existing dwelling.

- Access to two large dams.

Recommendation:

- If possible, a 65mm Stortz coupling and shut-off valve should be installed at the outlet of the existing water tank.
- Install a static water supply sign at the entrance to the property. (Contact the local RFS Captain)

14.4.3 ACCESS

- The PAR is existing, and no additional **recommendations** are made.

14.4.4 APZ

- Continue to maintain the grassland surrounding the existing dwelling.

Recommendation:

- It is recommended that future maintenance and design of the gardens consider Appendix 4- *Asset Protection Zone Requirements, Inner Protection Areas* recommendations.

15 ASSESSMENT CONCLUSION

The proposed 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 located so as not to contribute to the risk of fire to a building.

16 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 NSWRFSS.

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 *subject site*, 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*.

17 CONCLUSION

Nick Togias C/O DPS Yass has engaged EMBER Bushfire Consulting to prepare a Bushfire Assessment Report for a proposed nine-lot Rural Residential Subdivision at 14 Euralie Road, Good Hope (the *subject site*).

This report establishes the level of bushfire threat to the proposed development and examines the PBP (2019) six bushfire protection measures for the future dwellings on Lots 2-9.

A performance-based design for access will satisfy the performance criteria and intent for access arrangements set out in PBP (2019).

Asset protection zones (APZ) have been designed to fit within the building envelopes to reduce the impact on flora and fauna.

Lots 2-9 will require their own firefighting water supply to serve the future dwelling at the development time.

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 NSWRFSS for the issuing of a bush fire safety authority.

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

18 RECOMMENDATIONS

18.1 ASSET PROTECTION ZONES

Table 8 - Required BAL 12.5 sized APZ dimensions for the proposed Lot 2 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	0° - 5° downslope	25m	N/A
NE	Grasslands	0° - 5° downslope	25m	N/A
East	Grasslands	Upslope	22m	N/A
SE	Grasslands	Upslope	22m	N/A
South	Grasslands	Upslope	22m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	Upslope	22m	N/A

Table 10 - Required BAL 12.5 sized APZ dimensions for the proposed Lot 3 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	upslope	22m	N/A
NE	Grasslands	0° - 5° downslope	25m	N/A
East	Grasslands	0° - 5° downslope	25m	N/A
SE	Grasslands	0° - 5° downslope	25m	N/A
South	Grasslands	Upslope	22m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	Upslope	22m	N/A

Table 12 - Required BAL 12.5 sized APZ dimensions for the proposed Lot 4 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	0° - 5° downslope	25m	N/A
NE	Grasslands	5° - 10° downslope	28m	N/A
East	Grasslands	0° - 5° downslope	25m	N/A
SE	Grasslands	0° - 5° downslope	25m	N/A
South	Grasslands	Upslope	22m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	Upslope	22m	N/A

Table 14 - Required BAL 12.5 sized APZ dimensions for the proposed Lot 5 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	0° - 5° downslope	25m	N/A
NE	Grasslands	0° - 5° downslope	25m	N/A
East	Grasslands	0° - 5° downslope	25m	N/A
SE	Grasslands	0° - 5° downslope	25m	N/A
South	Grasslands	Upslope	22m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	Upslope	22m	N/A

Table 16 - Required BAL-19 sized APZ dimensions for the proposed Lot 6 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	0° - 5° downslope	17m	N/A
NE	Remnant vegetation	5° - 10° downslope	26m	N/A
East	Grasslands	5° - 10° downslope	20m	N/A
SE	Grasslands	0° - 5° downslope	17m	N/A
South	Grasslands	0° - 5° downslope	17m	N/A
SW	Grasslands	Upslope	15m	N/A
West	Grasslands	Upslope	15m	N/A
NW	Grasslands	0° - 5° downslope	17m	N/A

Table 18 - Required BAL 12.5 sized APZ dimensions for the proposed Lot 7 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	0° - 5° downslope	25m	N/A
NE	Woodlands	0° - 5° downslope	25m	N/A
East	Grasslands	0° - 5° downslope	25m	N/A
SE	Grasslands	Upslope	22m	N/A
South	Grasslands	Upslope	22m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	Upslope	22m	N/A

Table 20 - Required BAL 12.5 sized APZ dimensions for the proposed Lot 8 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	0° - 5° downslope	25m	N/A
NE	Woodlands	0° - 5° downslope	25m	N/A
East	Grasslands	0° - 5° downslope	25m	N/A
SE	Grasslands	0° - 5° downslope	25m	N/A
South	Grasslands	0° - 5° downslope	25m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	Upslope	22m	N/A

Table 22 - Required BAL 12.5 sized APZ dimensions for the proposed Lot 9 dwelling site.

Aspect	Predominate Vegetation Formation	Effective Slope	APZ to be developed (IPA)	OPA Available
North	Grasslands	Upslope	22m	N/A
NE	Grasslands	0° - 5° downslope	25m	N/A
East	Grasslands	0° - 5° downslope	25m	N/A
SE	Grasslands	0° - 5° downslope	25m	N/A
South	Grasslands	Upslope	22m	N/A
SW	Grasslands	Upslope	22m	N/A
West	Grasslands	Upslope	22m	N/A
NW	Grasslands	0° - 5° downslope	25m	N/A

18.2 LANDSCAPING & FENCING

- Lots 2-9 - Landscaping and fencing within the APZ of any future dwelling must be under Table 5.3A PBP (2019). Attachment E

18.3 BUSHFIRE CONSTRUCTION STANDARDS

Lots 2 -5 & 7-9 Future Dwellings

Set at **BAL-19** within the dwelling site.

- The construction standard to be adopted by the proposed dwelling is set at BAL-19 per AS3959-2018 or
- NASH Standard (2014) Steel Framed Construction in Bushfire Areas, and,
- The *Additional Construction Requirements* are found in Clause 7.5 *PBP (2019)*.
- Any Class 10a structures <6m from a dwelling are to be constructed under Clause 8.3.2 PBP (2019).

Lot 6

- Set at **BAL-29**

18.4 ACCESS

Lot 2-9

- See Access recommendations on Pages 19-23.

18.5 SERVICES (WATER, ELECTRICITY AND GAS)

Lots 2 -9

- To be provided with services under the specifications as per Attachment B.
- Install a 30,000L (metal or concrete or underground) firefighting water tank with a 65mm Stortz coupling near the dwelling when constructed.
- Install a static water supply sign at the entry to the property (contact the local RFS Captain).

18.6 EMERGENCY MANAGEMENT PLANNING

Lots 1-9

- Develop or update an *NSWRFS Bushfire Survival Plan* before the occupation of the new/existing dwellings.

18.7 EXISTING DWELLING

- Improve ember protection to the existing dwelling to the applicable, *Minimal Protection Measures* found in NSWRFS (0914) Upgrading of existing buildings. See Attachment E

- If possible, install a 65mm Storz coupling and shut-off valve at the outlet of the existing water tank.
- Install a static water supply sign at the entrance to the property. (Contact the local RFS Captain)
- Continue to maintain the grassland surrounding the existing dwelling.
- It is recommended that future maintenance and design of the gardens consider Appendix 4- *Asset Protection Zone Requirements, Inner Protection Areas* recommendations.

19 REFERENCES

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au&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

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20 ATTACHMENT A – APZ

APPENDIX 4

ASSET PROTECTION ZONE STANDARDS

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.

21 ATTACHMENT B – SERVICES

Table 5.3c

Performance criteria and acceptable solutions for water, electricity and gas services for residential and rural residential subdivisions

	PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
	The intent may be achieved where:	
FOR WATER SUPPLIES	<ul style="list-style-type: none"> › a water supply is provided for firefighting purposes 	<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.
	<ul style="list-style-type: none"> › water supplies are located at regular intervals › the water supply is accessible and reliable for firefighting operations 	<ul style="list-style-type: none"> › fire hydrant spacing, design and sizing comply with the Australian Standard AS 2419.1:2005; › hydrants are not located within any road carriageway; › reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.
	<ul style="list-style-type: none"> › flows and pressure are appropriate 	<ul style="list-style-type: none"> › fire hydrant flows and pressures comply with AS 2419.1:2005.
	<ul style="list-style-type: none"> › the integrity of the water supply is maintained 	<ul style="list-style-type: none"> › all above-ground water service pipes are metal, including and up to any taps.
FOR 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 	<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 (30m), unless crossing gullies, gorges or riparian areas; › no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines.
FOR 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. 	<ul style="list-style-type: none"> › reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and 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; › above-ground gas service pipes are metal, including and up to any outlets.

Table 5.3d

Water supply requirements for non-reticulated developments or where reticulated water supply cannot be guaranteed

DEVELOPMENT TYPE	WATER REQUIREMENTS
Residential lots (<1000m ²)	5000L/lot
Rural-residential lots (1000-10,000m ²)	10,000L/lot
Large rural/lifestyle lots (>10,000m ²)	20,000L/lot
Multi-dwelling housing (including dual occupancies)	5000L/dwelling

22 ATTACHMENT C- ACCESS

Table 5.3b

Performance criteria and acceptable solutions for access for residential and rural residential subdivisions

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
The intent may be achieved where:	
<ul style="list-style-type: none"> ➤ firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation 	<ul style="list-style-type: none"> ➤ property access roads are two-wheel drive, all-weather roads; and ➤ perimeter roads are provided for residential subdivisions of three or more allotments; and ➤ subdivisions of three or more allotments have more than one access in and out of the development; and ➤ traffic management devices are constructed to not prohibit access by emergency services vehicles; and ➤ 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; and ➤ all roads are through roads. Dead end roads are not recommended, but if unavoidable, dead ends 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; and ➤ where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road; and ➤ where access/egress can only be achieved through forest, woodland or heath vegetation, secondary access shall be provided to an alternate point on the existing public road system.
<ul style="list-style-type: none"> ➤ the capacity of access roads is adequate for firefighting vehicles 	<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.
<ul style="list-style-type: none"> ➤ there is appropriate access to water supply 	<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 in accordance with AS 2419.1:2005; ➤ there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.

Table 5.3b Continued

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
The intent may be achieved where:	
<ul style="list-style-type: none"> ➤ firefighting vehicles can access the dwelling and exit safely 	<p>No specific access requirements apply in an urban area where a 70 metre unobstructed path can be demonstrated 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 (i.e. a hydrant or water supply).</p> <p>In circumstances where this cannot occur, the following requirements apply:</p> <ul style="list-style-type: none"> ➤ minimum carriageway width of 4m; ➤ 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; and ➤ a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; and ➤ provide a suitable turning area in accordance with Appendix 3; and ➤ curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress; and ➤ the minimum distance between inner and outer curves is 6m; and ➤ the crossfall is not more than 10°; and ➤ maximum grades for sealed roads do not exceed 15° and not more than 10° 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. <p>Note: Some short constrictions in the access may be accepted where they are not less than the minimum (3.5m), 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>

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
The intent may be achieved where:	
<ul style="list-style-type: none"> ➤ access roads are designed to allow safe access and egress for medium rigid 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 	<ul style="list-style-type: none"> ➤ perimeter roads are two-way sealed roads; and ➤ 8m carriageway width kerb to kerb; and ➤ parking is provided outside of the carriageway width; and ➤ hydrants are located clear of parking areas; and ➤ there are through roads, and these are linked to the internal road system at an interval of no greater than 500m; and ➤ curves of roads have a minimum inner radius of 6m; and ➤ the maximum grade road is 15° and average grade is 10°; and ➤ the road crossfall does not exceed 3°; and ➤ a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.
<ul style="list-style-type: none"> ➤ access roads are designed to allow safe access and egress for medium rigid firefighting vehicles while residents are evacuating 	<ul style="list-style-type: none"> ➤ minimum 5.5m width kerb to kerb; and ➤ parking is provided outside of the carriageway width; and ➤ hydrants are located clear of parking areas; and ➤ roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m; and ➤ curves of roads have a minimum inner radius of 6m; and ➤ the road crossfall does not exceed 3°; and ➤ a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.

23 ATTACHMENT D- EMBER PROOFING

BUILDING ELEMENT	MINIMAL PROTECTION MEASURES	ADDITIONAL PROTECTION MEASURES
GENERAL	Seal all gaps (>3mm) around the house (excluding subfloor) with: <ul style="list-style-type: none"> appropriate joining strips; flexible silicon based sealant; or mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium. 	<ul style="list-style-type: none"> Install a bush fire sprayer system. (Please contact a bush fire consultant or relevant industry expert to discuss options) Seal all gaps (>3mm) around the house (excluding subfloor) with: <ul style="list-style-type: none"> appropriate joining strips flexible silicon based sealant; or mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium.
WALLS	Install sarking with a flammability index of not more than 5 behind weatherboards or other external cladding when they are being replaced for maintenance or other reasons.	<ul style="list-style-type: none"> Replace wall materials with non-combustible materials Install sarking with a flammability index of not more than 5 behind weatherboards or other external cladding.
SUBFLOOR	Removal of combustible materials and keeping areas clear and accessible.	<ul style="list-style-type: none"> Enclose subfloor with non-combustible material.
DOORS	Install weather strips, draught excluders or draught seals at the base of side-hung doors.	<ul style="list-style-type: none"> Replace external doors with non-combustible or solid timber doors with minimum thickness of 35mm. Replace or over-clad parts of door frames less than 400mm above the ground, decks and similar elements or fittings with non-combustible material. Install weather strips, draught excluders or draught seals at the base of side-hung doors.
VENTS & WEEPHOLES	Seal vents and weepholes in external walls with mesh (with an aperture size of 2 mm) of corrosion resistant steel, bronze or aluminium.	<ul style="list-style-type: none"> Seal vents and weepholes in external walls with mesh (with an aperture size of 2 mm) of corrosion resistant steel, bronze or aluminium.
ROOFS	Seal around roofing and roof penetrations with a non-combustible material. Install sarking with a flammability index of not more than 5 beneath existing roofing when it is being replaced for maintenance or other reasons. If installed, gutter and valley leaf guards shall be non-combustible.	<ul style="list-style-type: none"> Replace fascia and roof materials with non-combustible materials. Seal around roofing and roof penetrations with a non-combustible material. Install sarking with a flammability index of not more than 5 beneath existing roofing. If installed, gutter and valley leaf guards shall be non-combustible.
WINDOWS	Install mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium to all external doors and openable windows	<ul style="list-style-type: none"> Installing appropriately tested shutters to doors and windows Install mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium to all external doors and windows Replacing glass with toughened or laminated safety glass Replace overhead glazing with 'grade a' safety glass
EXTERNAL STRUCTURES		<ul style="list-style-type: none"> External structures to be located >10 metres from the main dwelling.
DECKING		<ul style="list-style-type: none"> Replace decking with non-

24 ATTACHMENT E -FENCES

7.6 Fences and gates

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.