Bushfire Protection Assessment

Proposed Residential Subdivision

Precinct 3, Edmondson Park

Landcom

ecological AUSTRALIA
A TETRA TECH COMPANY

1300 646 131
www.ecoaus.com.au

DOCUMENT TRACKING

Project Name	Bushfire Protection Assessment: Proposed Residential Subdivision – Precinct 3, Edmondson Park
Project Number	**22SYD2235**
Project Manager	**Geraint Breese**
Prepared by	**Melinda Losh**
Reviewed by	Bruce Horkings FPAA BPAD Certified Practitioner No. BPAD29962-L3
Approved by	Bruce Horkings FPAA BPAD Certified Practitioner No. BPAD29962-L3
Status	**Draft**
Version Number	**v1**
Last saved on	**18 January 2023**

This report should be cited as 'Eco Logical Australia (ELA). 2023. *Bushfire Protection Assessment: Proposed Residential Subdivision – Precinct 3, Edmondson Park*. Prepared for Landcom.'

LIMITATIONS

The bushfire protection measures recommended in this report do not completely remove the risk to life and property, and they do not guarantee that a development will not be impacted by a bushfire event. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions.

ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from Landcom

Template 2.8.1

Contents

List of Figures

List of Tables

Abbreviations

Abbreviation	Description
AS 3959	Australian Standard AS 3959-2018 'Construction of buildings in bushfire-prone areas'
APZ	Asset Protection Zone
BAL	Bushfire Attack Level
BFPL	Bush fire prone land
BPM	Bushfire protection measures
BFSA	Bush fire safety authority
CDC	Complying Development Certificate
DA	Development application
DtS	Deemed-to-Satisfy
EP&A Act	*Environmental Planning and Assessment Act 1979*
FDI	Fire Danger Index
IPA	Inner Protection Area
NASH	National Association of Steel-framed Housing
NCC	National Construction Code
PBP	'Planning for Bush fire Protection 2019'
RF Act	*Rural Fires Act 1997*
RF Reg	*Rural Fires Regulation 2013*
RFS	NSW Rural Fire Service

1. Property and proposal

Table 1 identifies the subject property and outlines the type of development proposed.

Table 1: Subject site and development proposal summary

Street address:	Cnr Campbelltown Rd and Macdonald Road, Edmondson Park
Postcode:	2174
Lot/DP no:	Lot 2, Lot 3 and Lot 5, DP 1272931
Local Government Area:	Liverpool City Council
Fire Danger Index (FDI)	100
Current land zoning:	R1 / RE1
Type of development proposed:	Residential subdivision

1.1 Description of proposal

The proposal is for subdivision of 3 lots into 250 lots, associated infrastructure and public open space (excluding public open space in RE1) as shown in Figure 1.

The subdivision is located on land identified as bush fire prone land (BFPL) on the Bushfire Prone Land layer within the ePlanning Spatial Viewer[1].

The proposal was assessed in accordance with Section 100B of the Rural Fires Act 1997, Clause 45 of the Rural Fires Regulation 2022 and Planning for Bush Fire Protection (RFS 2019), herein referred to as PBP.

This assessment is based on the following information sources:

- Background documentation provided by Landcom;
- Information contained within the site plan from Urbanco plan 021.EP.015 Rev 06; and
- GIS analysis including online spatial resources (i.e. Google Earth, SIX Maps, Near Maps and the NSW Government Planning Portal).

Table 2 identifies the bushfire protection measures assessed and whether an acceptable or performance-based solution is proposed.

Table 2: Summary of bushfire protection measures assessed

Bushfire Protection Measure	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	☑	☐	3.1
Landscaping	☑	☐	3.2
Construction standard	☑	☐	3.3
Access	☑	☑	3.4

[1] https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address

Bushfire Protection Measure	Acceptable Solution	Performance Solution	Report Section
Water supply	☑	☐	3.5
Electrical services	☑	☐	3.6
Gas services	☑	☐	3.7

1.2 Significant environmental features

An assessment of significant environmental features, threatened species, populations or ecological communities under the *Biodiversity Conservation Act 2016* that may potentially be affected by the proposed bushfire protection measures has not been undertaken in this report as it is covered by other parts of the Development Application (DA) process.

The impact footprint of the bushfire protection measures (e.g. Asset Protection Zone [APZ]) is identified within this report and therefore capable of being assessed by a suitably qualified person. Liverpool City Council is the determining authority for this development; they will assess more thoroughly any potential environmental issues.

1.3 Aboriginal cultural heritage

An assessment of any Aboriginal cultural heritage objects (within the meaning of the *National Parks and Wildlife Act 1974*) that may potentially be affected by the proposed bushfire protection measures has not been undertaken in this report as it is covered by other parts of the Development Application (DA) process.

The impact footprint of the bushfire protection measures (e.g. APZ) is identified within this report and therefore capable of being assessed by a suitably qualified person. Liverpool City Council is the determining authority for this development; they will assess more thoroughly any potential Aboriginal cultural heritage issues.

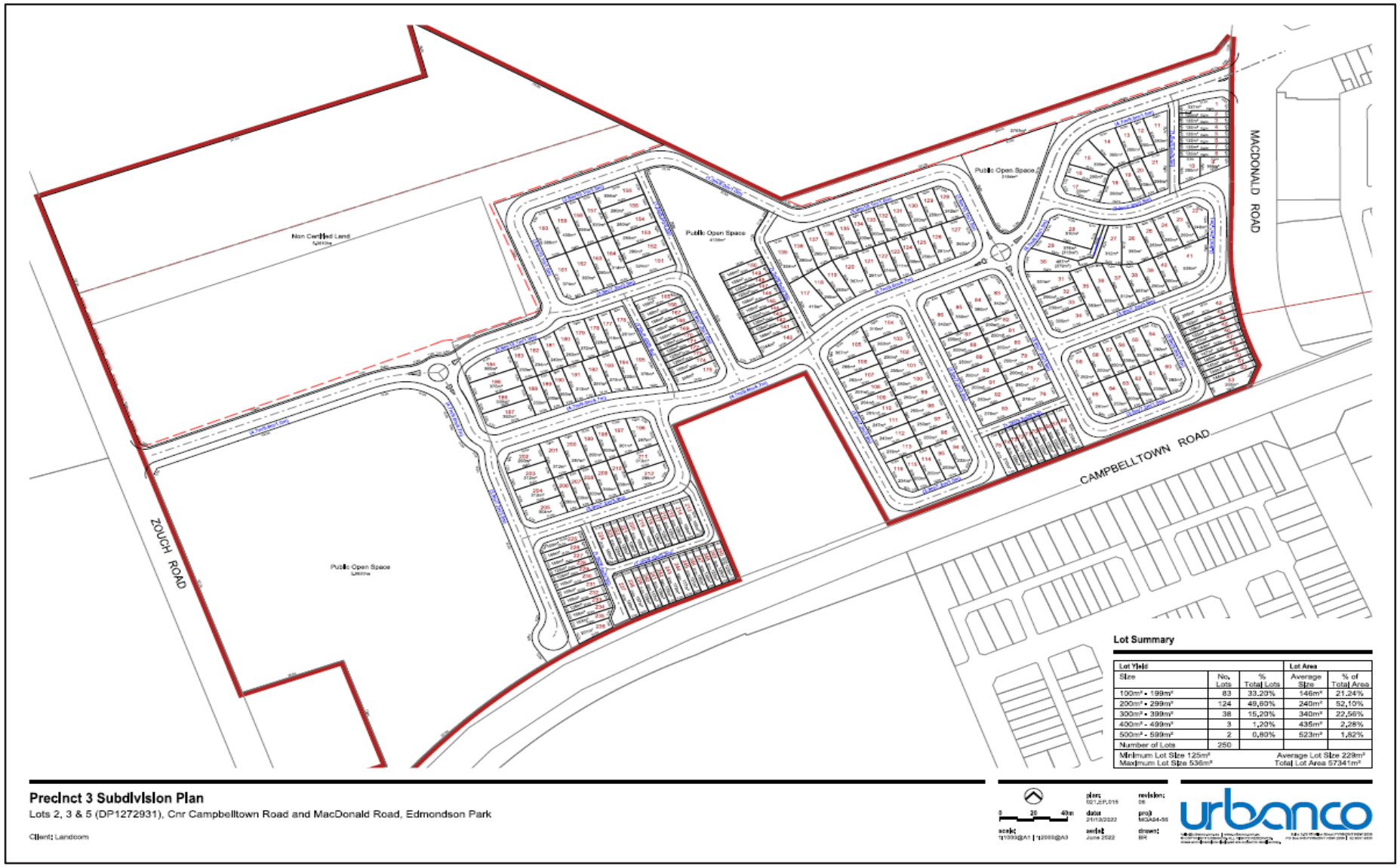


Figure 1: Subdivision layout

2. Bushfire hazard assessment

2.1 Process

The site assessment methodology from Appendix 1 of PBP has been applied in this assessment to determine the required APZ requirements.

Figure 2 and Table 3 show the effective slope and predominant vegetation representing the highest bushfire threat potentially posed to the subdivision from various directions.

2.2 Vegetation assessment

In accordance with PBP, the predominant vegetation formation has been assessed for a distance of at least 140 m from the subject land in all directions.

The predominant vegetation has been determined from online vegetation mapping (DPE 2022).

2.3 Slope assessment

In accordance with PBP, the slope that would most significantly influence fire behaviour was determined over a distance of 100 m from the boundary of the proposed development under the classified vegetation.

The effective slope has been determined from 2 m contour data.

2.4 Summary of assessment

There is bushfire prone vegetation located to the north and north-west of the subject land. This vegetation is classified as 'Grassy Woodland' by PBP. The effective slope under the vegetation falls into the PBP slope categories of 'upslopes and flat' and '>0 to 5 degrees downslope'.

The Public Open Space (POS) areas (2) within the R1 zoning will be designed and maintained so that they will not constitute a bushfire hazard. The vegetation within the RE1 land to the west is considered a temporary bushfire hazard until such time as this area is redeveloped into a proposed maintained POS.

In all other directions, there are managed lands in the form of existing residential development and land cleared and managed for future residential development.

Table 3: Bushfire hazard assessment, APZ requirements and BALs

Transect #	Slope	Vegetation Formation	Residential APZ	Proposed APZ	Bushfire Attack Level (BAL)	Comments
1	All upslope and flat land	Woodland	12 m	≥12 m	BAL-29: 12 to <18 m BAL-19: 18 to <26 m BAL-12.5: 26 to <100 m BAL-LOW: >100 m	APZ contained within subject land
2	All upslope and flat land	Woodland	12 m	≥12 m	BAL-29: 12 to <18 m BAL-19: 18 to <26 m BAL-12.5: 26 to <100 m BAL-LOW: >100 m	APZ contained within subject land
3	>0° to 5° downslope	Woodland	16 m	≥16 m	BAL-29: 16 to <23 m BAL-19: 23 to <32 m BAL-12.5: 32 to <100 m BAL-LOW: >100 m	APZ contained within subject land
All other directions	Managed Land					

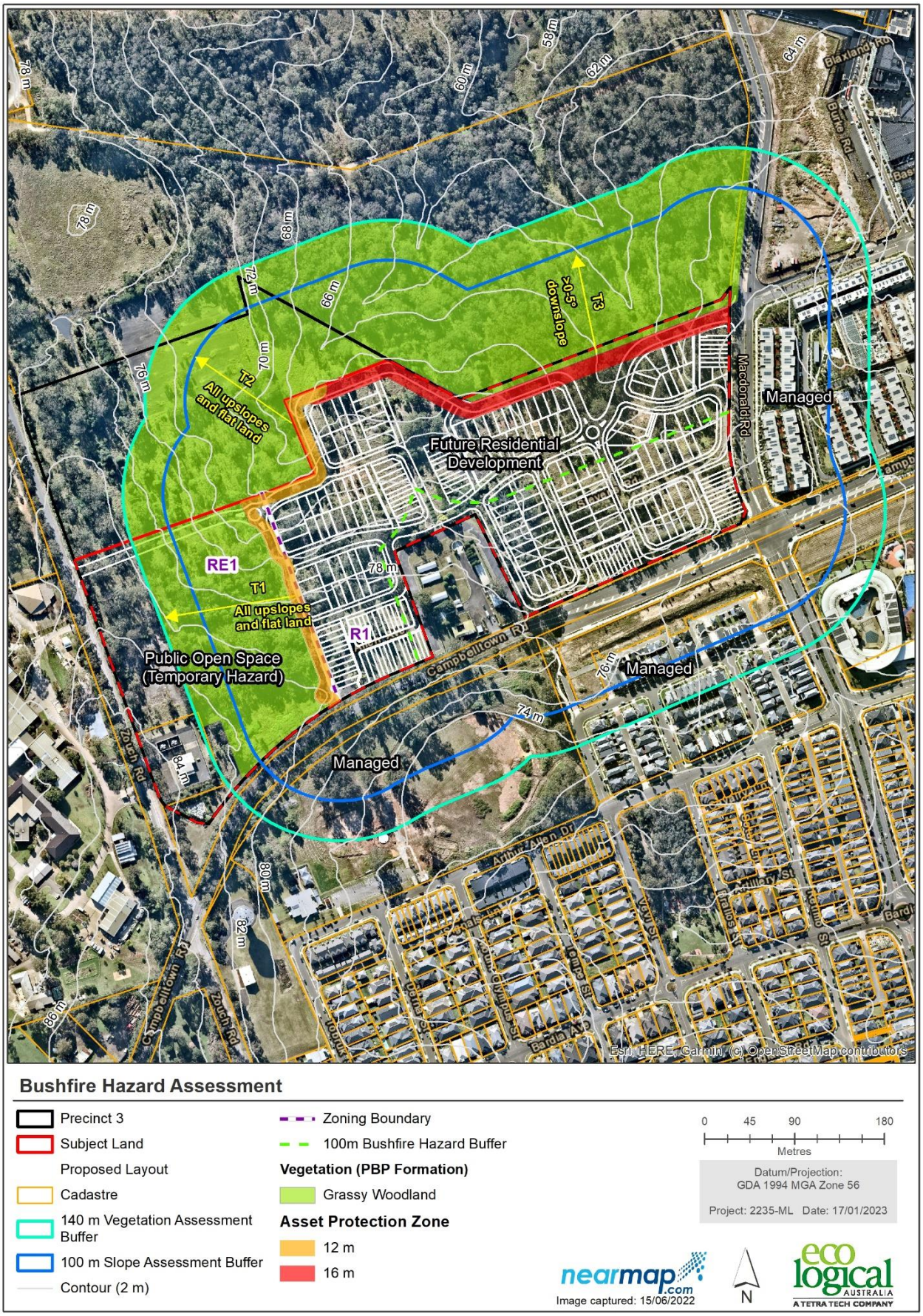


Figure 2: Bushfire hazard assessment

3. Bushfire protection measures

3.1 Asset Protection Zones

Table 3 shows the dimensions of the required APZ and where relevant, information on how the APZ is to be provided is included. The footprint of the APZ is also shown on Figure 2.

Whilst the RE1 area within the development site is not developed or maintained, a temporary APZ will be provided until such time as the hazard is removed and the space is maintained in a suitable manner to ensure it does not pose a future bushfire hazard to the adjacent residential dwellings.

The compliance of the proposed APZ with Section 5.3.1 of PBP is documented in Table 4.

Table 4: APZ requirements and compliance (adapted from Table 5.3a of PBP)

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
Potential building footprints will not be exposed to radiant heat levels exceeding 29 kW/m² on each proposed lot.	APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FDI.	**Complies** APZ provided in accordance with table A1.12.2 as shown in Table 3 and Figure 2.
APZs are managed and maintained to prevent the spread of a fire towards the building.	APZs are managed in accordance with the requirements of Appendix 4 of PBP.	**To comply** Identified APZ (temporary and permanent) to be maintained in accordance with PBP. Fuel management specifications are provided in Appendix A.
The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	**Complies** APZ located wholly within development site.
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZs are located on lands with a slope less than 18 degrees.	**Complies** APZs are not located on slopes greater than 18°.

3.2 Landscaping

The compliance of the proposed landscaping with Section 5.3.1 of PBP is documented in Table 5.

Table 5: Landscaping requirements and compliance (adopted from Table 5.3a of PBP)

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
Landscaping is managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Landscaping is in accordance with Appendix 4 of PBP; and	**To comply** APZ / Landscaping is to be managed in accordance with PBP. Landscaping specifications provided in Appendix A.
	Fencing is constructed in accordance with Section 7.6 of PBP.	**To comply** Fencing to be constructed in accordance with Section 7.6 of PBP (see Section 3.3.1 for further details).

3.3 Construction standards

The Bushfire Attack Level (BAL) for future dwellings within the proposed subdivision will be determined during the individual dwelling Complying Development Certificate (CDC) or DA process, however, a maximum of BAL-29 is provided by the subdivision design. The separation distances for different BALs are provided in Table 3.

3.3.1 Fences and gates

To comply with Section 7.6 of PBP, all fencing and gates are to be constructed of hardwood or non-combustible material. Where fencing is within 6 m of a building or in areas of BAL-29 or greater, they should be made of non-combustible material only.

3.3.2 Class 10a buildings (sheds etc.)

To comply with section 8.3.2 of PBP, proposed Class 10a structures within 6 m of any proposed dwelling must be constructed in accordance with the NCC. Where the structure is greater than 6 m, no bushfire requirements apply.

3.4 Access

Public road access to the subdivision will be provided from Zouch Road to the West and Macdonald Road to the East which both link to the existing Campbelltown Road to the south.

Figure 1 and Figure 2 show the proposed roads and existing public roads within and adjacent to the subdivision. The performance criteria and acceptable solutions for each of these access types are shown in Table 13**,** Table 14, Table 15 and Table 16 (Appendix B), along with comment on the subdivision design compliance or otherwise.

A summary of the compliance assessment with PBP can be found in Table 6 below whilst all access performance solutions are detailed in Table 7.

Table 6: Access summary of compliance

Access type	Acceptable Solution	Performance Solution	Further details
General	☑	☑	Table 7 and Table 13
Perimeter road	☑	☐	Table 7 and Table 14
Non-perimeter road	☑	☑	Table 7 and Table 15
Property Access	☑	☐	Table 7 and Table 16

Table 7: Access performance solution

Access Type	Description	Performance criteria	Acceptable Solutions	Comments
General	Proposed roads shown in Figure 1	Firefighting vehicles are provided with safe, all-weather access to structures.	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;	Two dead end roads are proposed within the subdivision layout however, both dead ends are greater than 200 m from the identified bushfire hazard to the north and through access is considered unnecessary. Access is available to all structures including from Campbelltown Rd. The dead-end turning area adjacent to the RE1 land will support a turning area for garbage trucks. Given these roads are >100 m from the permanent bushfire hazard, no additional bushfire specifications should apply.
Non-perimeter roads	Proposed roads shown in Figure 1	Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500 m;	Two dead end roads are proposed within the subdivision layout however, both dead ends are greater than 200 m from the identified bushfire hazard to the north and through access is considered unnecessary. The two dead ends are linked to the internal road system at less than 100 m intervals. Given these roads are >100 m from the permanent bushfire hazard, no additional bushfire specifications should apply.

3.5 Water supplies

The compliance assessment of the proposed water supply with Section 5.3.3 of PBP is documented in Table 8.

Table 8: Assessment of requirements for the supply of water services (adapted from Table 5.3c of PBP)

Performance Criteria	Acceptable Solution	Compliance Notes
Adequate water supplies is provided for firefighting purposes.	Reticulated water is to be provided to the development where available; A static water supply 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 of PBP.	**To Comply** Proposal will be serviced by a reticulated water supply. **Not Applicable**
Water supplies are located at regular intervals; and The water supply is accessible and reliable for firefighting operations.	Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1 (SA 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.	**To comply** The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and table 5.3c and table 5.3d of PBP.
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1 (SA 2005).	
The integrity of the water supply is maintained.	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.	**To comply** **Not applicable**

3.6 Electricity services

The compliance assessment of the proposed supply of electricity services with Section 5.3.4 of PBP is documented in Table 9.

Table 9: Assessment of requirements for the supply of electricity services (adapted from Table 5.3c of PBP)

Performance Criteria	Acceptable Solution	Compliance Notes
Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	Where practicable, electrical transmission lines are underground; Where overhead, electrical transmission lines are proposed as follows: • Lines are installed with short pole spacing (30 m), unless crossing gullies, gorges or riparian areas; and	**To Comply** Electricity services to the subject site are to be located underground. **Not applicable –**

Performance Criteria	Acceptable Solution	Compliance Notes
	• No part of a tree is closer to a power line than the distance set out in ISSC3 Guide for the Management of Vegetation in the Vicinity of Electricity Assets (ISSC3 2016).	

3.7 Gas services

The compliance assessment of the proposed supply of gas services (reticulated or bottle gas) with Section 5.3.4 of PBP is documented in Table 10.

Table 10: Assessment of requirements for the supply of gas services (adapted from Table 5.3c of PBP)

Performance Criteria	Acceptable Solution	Compliance Notes
Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	• 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 10 m 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.	**To comply** The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and Table 5.3c of PBP.

3.8 Staged development

Where the proposed development is constructed in a staged manner, it is the responsibility of the proponent to implement the identified bushfire protection measures to each stage as identified in this assessment. Implementation of these measures may be temporary in nature (i.e. APZ, fire trails, turning areas) until future stages are developed. It will be necessary to provide temporary APZ to the public open space(s) where residential development proceeds prior to vegetation clearing or management.

4. Conclusion

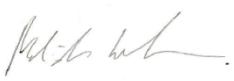
The proposed subdivision has been assessed against the specifications and requirements of *Planning for Bush Fire Protection* (RFS 2019), as outlined in Table 11

Table 11: Development bushfire protection measures and associated recommendations

Bushfire Protection Measures	Recommendations	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	APZ dimensions are detailed in Table 3 and shown in Figure 2. Identified APZ to be maintained in perpetuity, or until the identified hazard is removed, to the specifications detailed in Appendix A.	☑	☐	3.1
Landscaping	Any future landscaping meets the requirements of PBP listed in Appendix A.	☑	☐	3.2
Construction standard	BAL for dwellings to be determined at individual CDC/DA stage however, a maximum of BAL-29 is achievable.	☑	☐	3.3
Access	Access to meet standards summarised in Table 6. Performance solution(s) detailed in Table 7 addresses the requirement for safe, all-weather access to structures and safe access and egress for firefighting vehicles while residents are evacuating as specified in Table 14 and Table 16.	☑	☑	3.4
Water supply	Reticulated water supply to meet PBP acceptable solution specifications for a subdivision.	☑	☐	3.5
Electricity service	Electricity supply located underground.	☑	☐	3.6
Gas service	Gas services are to be installed and maintained in accordance with AS/NZS 1596:2014.	☑	☐	3.7

5. Recommendations

It is recommended that the subdivision be issued a Bush Fire Safety Authority in line with the recommendations in Table 11.



Melinda Losh
Bushfire Consultant

Bruce Horkings
Senior Bushfire Consultant
FPAA BPAD Certified Practitioner No. BPAD29962-L3

6. References

Industry Safety Steering Committee 3 (ISSC3). 2016. *Guide for the Management of Vegetation in the Vicinity of Electricity Assets*. ISSC3, Sydney.

Keith, D. 2004. *Ocean Shores to Desert Dunes*. NSW Department of Environment and Conservation, Sydney.

National Association of Steel Framed Housing (NASH). 2014. *Steel Framed Construction in Bush Fire Prone Areas*. NASH, Melbourne.

NSW Department of Planning and Environment (DPE). 2022. *State Vegetation Type Map* (SVTM) 2022. Sharing and Enabling Environmental Data (SEED), NSW Government.

NSW Rural Fire Service (RFS). 2019. *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Homeowners*. Australian Government Publishing Service, Canberra.

Standards Australia (SA). 2005. *Fire hydrant installations - System design, installation and commissioning*, AS 2419.1:2005. SAI Global, Sydney.

Standards Australia (SA). 2014. *The storage and handling of LP Gas*, AS/NZS 1596:2014. SAI Global, Sydney.

Standards Australia (SA). 2018. *Construction of buildings in bushfire-prone areas,* AS 3959:2018. SAI Global, Sydney.

Appendix A - Asset protection zone and landscaping standards

The following APZ management specifications apply to the identified APZ in Figure 2 and any future landscaping and maintenance within Public Open Space areas.

Further details on APZ implementation and management can be found on the NSW RFS website (https://www.rfs.nsw.gov.au/resources/publications).

Table 12: APZ management specifications

Vegetation Strata	Inner Protection Area (IPA)
Trees	• Tree 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 2 m above ground; • Canopies should be separated by 2 to 5 m; and • 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 should be provided; • Shrubs should not be located under trees; • Shrubs should not form more than 10% ground cover; and • 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 100 mm in height); and • Leaves and vegetation debris should be removed.

Appendix B - Access Standards

Table 13: General access requirements (adapted from Table 5.3b of PBP)

Performance Criteria	Acceptable Solutions	Compliance notes
The intent may be achieved where:		
Firefighting vehicles are provided with safe, all-weather access to structures.	Property access roads are two-wheel drive, all-weather roads;	**Complies** All roads will be sealed, two-wheel drive.
	Perimeter roads are provided for residential subdivisions of three or more allotments;	**Complies**. Perimeter roads are proposed to the north within the subject land and provided by existing public roads to the west, south and east**.**
	Subdivisions of three or more allotments have more than one access in and out of the development;	**Complies** Through access is provided from Zouch Road to Macdonald Road.
	Traffic management devices are constructed to not prohibit access by emergency services vehicles;	**Can comply** Details not provided at this stage.
	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;	**Complies** Roads do not exceed 10 degrees.
	All roads are through roads;	**Complies with performance criteria** Refer to Table 7 for performance solution details.
	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;	**Complies with performance criteria** Refer to Table 7 for performance solution details.
	Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road;	**To comply** Details not provided at this stage.
	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;	**Not applicable** Access/egress traverses managed lands.
	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.	**Not applicable** No one way public access roads proposed.

Performance Criteria	Acceptable Solutions	Compliance notes
The capacity of access roads is adequate for firefighting vehicles.	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.	**To comply** Details not provided at this stage.
There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression;	**To comply** Details not provided at this stage.
	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2017 – Fire hydrant installations system design, installation and commissioning; and	**To comply** Details not provided at this stage.
	There is suitable access for a Category 1 fire appliance to within 4 m of the static water supply where no reticulated supply is available.	**Not applicable** Reticulated water supply proposed.

Table 14: Perimeter road requirements (adapted from table 5.3b of PBP)

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
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.	Are two-way sealed roads;	**Complies**
	Minimum 8m carriageway width kerb to kerb;	**Complies**
	Parking provided outside of the carriageway width;	**To Comply** Parking is provided outside of 8 m carriageway, or No Parking signs are provided.
	Hydrants are located clear of parking areas;	**Complies**
	There are through roads, and these are linked to the internal road system at an internal of no greater than 500m;	**Complies**
	Curves of roads have a minimum inner radius of 6m;	**To comply** The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and table 5.3b of PBP.
	The maximum grade road is 15 degrees and average grade is 10 degrees;	
	The road crossfall does not exceed 3 degrees;	
	A minimum vertical cleared of 4m to any overhanging obstructions, including tree branches, is provided.	

Table 15: Non-perimeter road requirements (adapted from Table 5.3b of PBP)

Performance Criteria	Acceptable Solutions	Compliance notes
The intent may be achieved where:		
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5 m width kerb to kerb;	**Complies** Proposed roads range from 5.5 m to 7.2 m.
	Parking is provided outside of the carriageway width;	**To comply** Parking provided outside carriageway, or No Parking signs are to be provided.
	Hydrants are located clear of parking areas;	**To comply** Details not provided at this stage.
	Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500 m;	**Complies with performance criteria** Refer to Table 7 for performance solution details.
	Curves of roads have a minimum inner radius of 6 m	**To comply** The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and Table 5.3b of PBP.
	The road crossfall does not exceed 3 degrees;	
	A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches, is provided.	

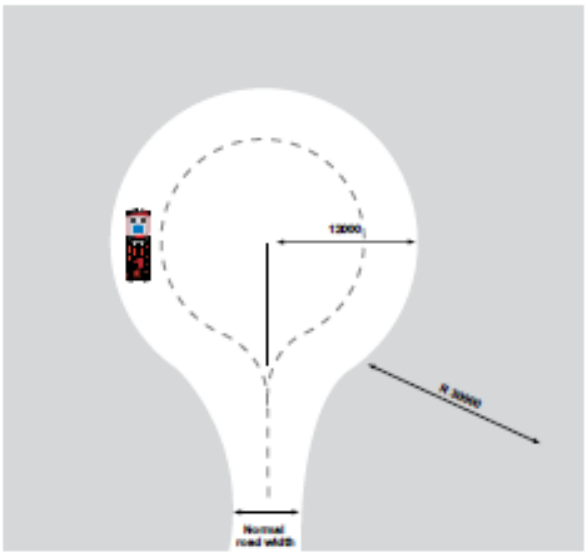
Table 16: Property access requirements (adapted from table 5.3b of PBP)

Performance Criteria	Acceptable Solutions	Compliance notes
The intent may be achieved where:		
Firefighting vehicles can access the dwelling and exit the property safely.	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:	**Complies**
	Minimum 4m carriageway width;	**Not applicable**
	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;	**Not applicable**
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;	**Not applicable**
	Provide a suitable turning area in accordance with Appendix 3;	**Not applicable**
	Curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;	**Not applicable**
	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;	
	A development comprising more than three dwellings has access by dedication of a road and not by right of way.	**Not Applicable**
	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.	**Not Applicable**

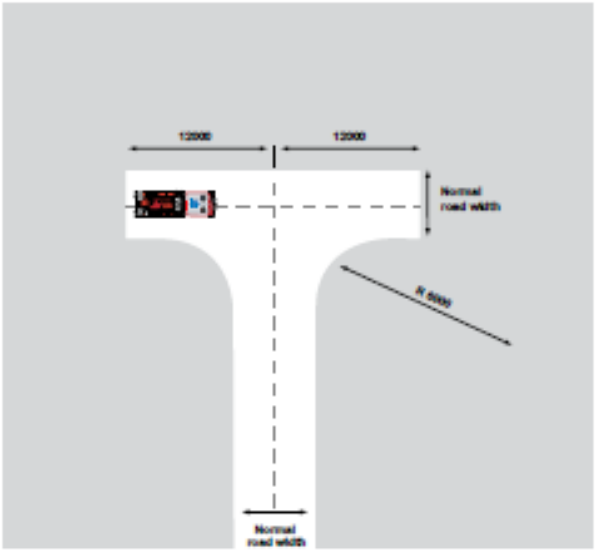
Appendix C - Vehicle Turning Requirements

Dead end roads that are greater than 200 m long must be provided with a turning head area that avoids multipoint turns. These must comply with the Appendix 3 of PBP and as illustrated below with Type A being the preferred option.

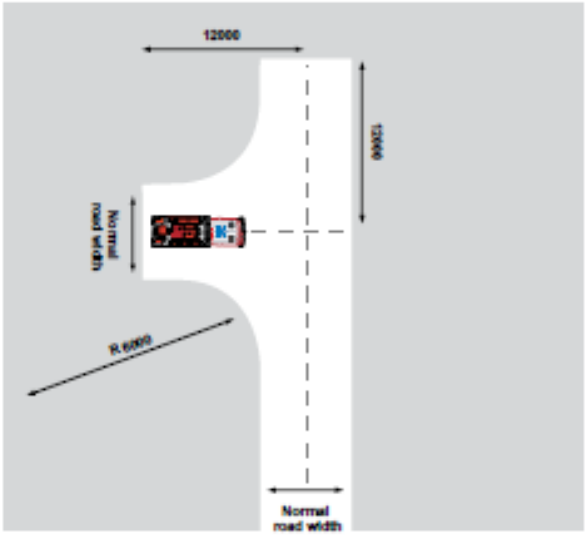
Type A



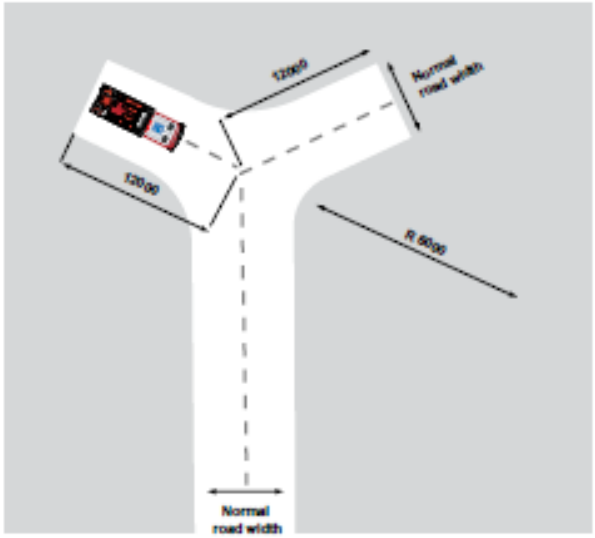
Type B



Type C



Type D



ecological AUSTRALIA
A TETRA TECH COMPANY

1300 646 131
www.ecoaus.com.au