



Bushfire Protection Assessment

Subdivision

412-414 Cessnock Road, Gillieston Heights Subdivision

Universal Property Group Pty Ltd

DOCUMENT TRACKING

Project Name	Bushfire Protection Assessment – Subdivision: 412-414 Cessnock Road, Gillieston Heights
Project Number	21SYD20059
Project Manager	Kate Mannell
Prepared by	Kate Mannell
Reviewed by	Bruce Horkings (FPAA BPAD Accredited Practitioner No. BPAD29962-L3)
Approved by	Bruce Horkings (FPAA BPAD Accredited Practitioner No. BPAD29962-L3)
Status	Final
Version Number	v1
Last saved on	20 June 2022

This report should be cited as ‘Eco Logical Australia 2022. *Bushfire Protection Assessment – Subdivision: 412-414 Cessnock Road, Gillieston Heights*. Prepared for Universal Property Group Pty Ltd.’

ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from The Bathla Group.

Disclaimer

This document may only be used for the purpose for which it was commissioned and in accordance with the contract between Eco Logical Australia Pty Ltd and Universal Property Group Pty Ltd. The scope of services was defined in consultation with Esker Pty Ltd and Universal Property Group Pty Ltd, by time and budgetary constraints imposed by the client, and the availability of reports and other data on the subject area. Changes to available information, legislation and schedules are made on an ongoing basis and readers should obtain up to date information. Eco Logical Australia Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report and its supporting material by any third party. Information provided is not intended to be a substitute for site specific assessment or legal advice in relation to any matter. Unauthorised use of this report in any form is prohibited.

Contents

1. Property and proposal	1
1.1 Description of proposal	1
1.2 Assessment process.....	1
1.3 Significant environmental features.....	2
1.4 Aboriginal cultural heritage	2
2. Bushfire hazard assessment	4
2.1 Process.....	4
2.2 Vegetation assessment.....	4
2.3 Slope assessment.....	4
2.4 Summary of assessment	4
3. Bushfire protection measures.....	6
3.1 Asset Protection Zones	6
3.2 Landscaping	6
3.3 Construction standards.....	7
3.4 Access	7
3.5 Water Supplies.....	7
3.6 Electricity Services	8
3.7 Gas Services	8
3.8 Staged development.....	9
4. Conclusion	10
5. Recommendations.....	11
6. References.....	12
Appendix A - Asset protection zone and landscaping standards	13
Appendix B - Access Standards	14

List of Figures

Figure 1: Subdivision layout	3
Figure 2: Bushfire hazard assessment.....	5

List of Tables

Table 1: Subject site and development proposal summary.....	1
Table 2: Summary of bushfire protection measures assessed.....	2
Table 3: Bushfire hazard assessment, APZ requirements and BALs	4
Table 4: APZ requirements and compliance (adapted from Table 5.3a of PBP).....	6
Table 5: Landscaping requirements and compliance (adopted from Table 5.3a of PBP)	6
Table 6: Access summary of compliance	7
Table 7: Access performance solution	7
Table 8: Assessment of requirements for the supply of water services (adapted from Table 5.3c of PBP)	7
Table 9: Assessment of requirements for the supply of electricity services (adapted from Table 5.3c of PBP)	8
Table 10: Assessment of requirements for the supply of gas services (adapted from Table 5.3c of PBP)	8
Table 11: Development bushfire protection measures and associated recommendations.....	10
Table 12: APZ management specifications	13
Table 13: General access requirements (adapted from Table 5.3b of PBP)	14
Table 14: Non-perimeter road requirements (adapted from Table 5.3b of PBP).....	15

Abbreviations

Abbreviation	Description
AS 3959	Australian Standard AS 3959-2018 <i>Construction of buildings in bushfire prone areas</i>
APZ	Asset Protection Zone
BAL	Bushfire Attack Level
BFPL	Bush Fire Prone Land
BPM	Bushfire Protection Measures
CDC	Complying Development Certificate
DA	Development Application
FDI	Fire Danger Index
IPA	Inner Protection Area
PBP	Planning for Bush fire Protection 2019
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:	412-414 Cessnock Road, Gillieston Heights
Postcode:	2321
Lot/DP no:	Lot 21 and Lot 22 DP 1092105
Local Government Area:	Maitland City Council
Fire Danger Index (FDI)	100
Current land zoning:	R1 – General Residential
Type of development proposed:	Procedural subdivision

1.1 Description of proposal

The proposal is for subdivision of Lot 21 and Lot 22 DP 1092105 (herein referred to as ‘subject land’) into sixty-three (63) residential allotments, a drainage reserve and associated road reserves (see Figure 1).

The subdivision is located on land classified as bush fire prone on the Maitland City Council Bush Fire Prone Land (BFPL) map¹.

1.2 Assessment process

The proposal was assessed in accordance with Section 100B of the *Rural Fires Act 1997*, Clause 44 of the *Rural Fires Regulation 2013* 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 The Bathla Group;
- Information contained within the site plan from The Bathla Group, DA02 Rev 1 dated 10 December 2021; and
- GIS analysis including online spatial resources (i.e. Google Earth, SIX Maps, Nearmap and the NSW Government Planning Portal).

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

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

Table 2: Summary of bushfire protection measures assessed

Bushfire Protection Measure	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.1
Landscaping	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.2
Construction standard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.3
Access	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3.4
Utilities	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5

1.3 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 clearly identified within this report and therefore capable of being assessed by suitably qualified persons as required. Maitland City Council is the determining authority for this development; they will assess more thoroughly any potential environmental issues.

1.4 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 clearly identified within this report and therefore capable of being assessed by suitably qualified persons as required. Maitland City Council is the determining authority for this development; they will assess more thoroughly any potential Aboriginal cultural heritage issues.

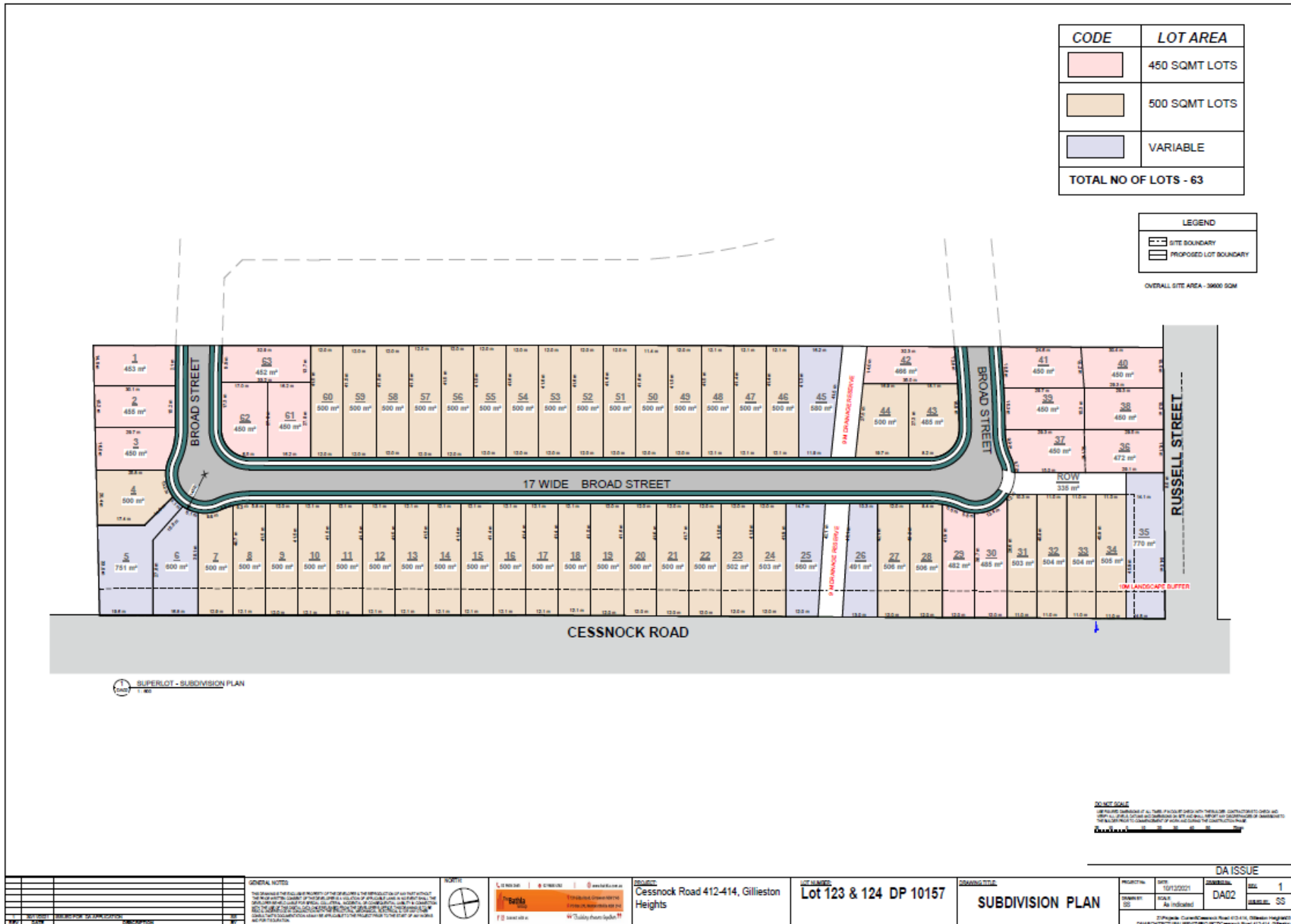


Figure 1: Subdivision layout

2. Bushfire hazard assessment

2.1 Process

The site assessment methodology set out in Appendix 1 of PBP has been utilised in this assessment to determine the required APZ and Construction 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 maps (DPIE 2012).

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

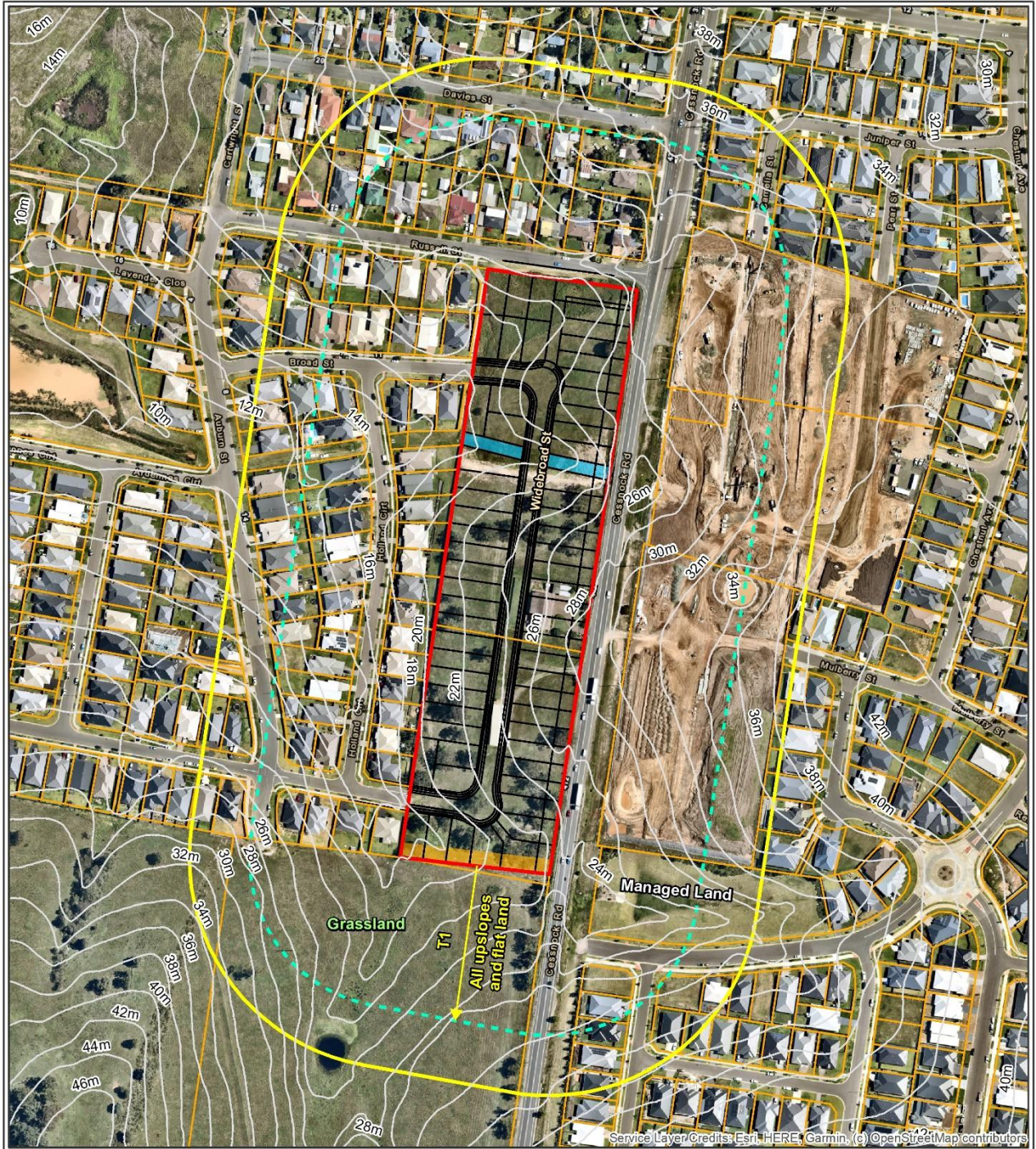
The only bushfire hazard within 140 m of the subject land is identified as unmanaged grassland to the south, which is classified as 'grassland' in accordance with PBP. The effective slope under this bushfire hazard is 'all upslopes and flat land'.

The land to the east of the subdivision is managed as part of the Wallis Creek residential estate, including a managed drainage reserve.

The proposed drainage reserve within the subdivision connects with the established drainage channel maintained by Council to the west.

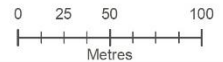
Table 3: Bushfire hazard assessment, APZ requirements and BALs

Transect #	Slope	Vegetation Formation	Required APZ	Available APZ	Comments
1 (South)	All upslope and flat land	Grassland	10 m	≥10 m	APZ provided within development site.



Bushfire Hazard Assessment

- Subject Land
- Subdivision Layout
- 140 m Vegetation Buffer
- 100 m Slope Buffer
- Cadastre
- Contours (2m)
- Drainage reserve
- 10 m Asset Protection Zone (PBP 2019)



Datum/Projection:
GDA 1994 MGA Zone 56
Project: 20059-EH Date: 20/06/2022



Imagery: 15/12/2021



ATETRA TECH COMPANY



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.

The compliance of the proposed APZ with Section 5.3.1 of PBP, is detailed 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/m ² 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.	Can comply APZ to be managed in accordance with PBP. Fuel management specifications provided in Appendix A.
The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	Complies APZ is provided 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 APZ is 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 3.2 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.

3.4 Access

Public road access to the subdivision is via Broad Street and Ardennes Circuit.

Figure 1 and Figure 2 show the internal access within the subdivision. The performance criteria and acceptable solutions for each of these access types are shown in Table 13 and Table 14 (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	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Table 7 and Table 13
Perimeter road	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Table 7
Non-perimeter road	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Table 7 and Table 14
Property Access	N/A	N/A	N/A

Table 7: Access performance solution

Access Type	Performance Criteria	Acceptable Solution	Comments
General	Perimeter roads are provided for residential subdivisions of three or more allotments;	Firefighting vehicles are provided with safe, all-weather access to structures.	<p>A perimeter road is not provided to Lots 1-5 however this is not considered imperative based on the following:</p> <ul style="list-style-type: none"> All lots are accessible via the proposed internal road network; <ul style="list-style-type: none"> The hazard is considered low risk grassland; and APZ can be accommodated within rear of proposed allotments within the subdivision boundary.

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.	<p>Reticulated water is to be provided to the development where available;</p> <p>A static water supply and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and</p> <p>Static water supplies shall comply with Table 5.3d of PBP.</p>	<p>Complies</p> <p>Proposal serviced by a reticulated water supply.</p>
	Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1 (SA 2005);	Can comply

Performance Criteria	Acceptable Solution	Compliance Notes
Water supplies are located at regular intervals; and The water supply is accessible and reliable for firefighting operations.	Hydrants are not located within any road carriageway; and Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	The 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.	

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;	Can comply Electricity services to the subject site are located underground.
	Where overhead, electrical transmission lines are proposed as follows: <ul style="list-style-type: none"> • Lines are installed with short pole spacing (30 m), unless crossing gullies, gorges or riparian areas; and • No part of a tree is closer to a power line than the distance set out in ISSC3 Guide for the Management of Vegetation in the Vicinity of Electricity Assets (ISSC3 2016). 	Not applicable

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.	<ul style="list-style-type: none"> • Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 ‘The storage and handling of LP gas’, the requirements of relevant authorities, and metal piping is used; • All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 m and shielded on the hazard side; • Connections to and from gas cylinders are metal; 	Can 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.

Performance Criteria	Acceptable Solution	Compliance Notes
	<ul style="list-style-type: none">• Polymer-sheathed flexible gas supply lines are not used; and• Above-ground gas service pipes are metal, including and up to any outlets.	

3.8 Staged development

The proposed development will not be staged.

4. Conclusion

The proposed subdivision was assessed against the specifications and requirements of 'Planning for Bush Fire Protection 2019', as outlined in Table 11 below.

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 to the specifications detailed in Appendix A.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.1
Landscaping	Any future landscaping meets the requirements of PBP listed in Appendix A.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.2
Construction standard	BAL for dwellings to be determined at individual CDC/DA stage however, a maximum of BAL-29 is achievable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.3
Access	Access to meet standards summarised in Table 6. Performance solution detailed in Table 7.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3.4
Water supply	Reticulated water supply to meet PBP specifications for a subdivision.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5
Electricity service	Electricity supply located underground.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.6
Gas service	Gas services are to be installed and maintained in accordance with AS/NZS 1596:2014.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.7

5. Recommendations

It is recommended that the subdivision be issued a Bush Fire Safety Authority.



Kate Mannell
Bushfire Consultant



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



6. References

Department of Planning, Industry and Environment (DPIE). 2012. *Greater Hunter Native Vegetation Mapping v4.0. VIS ID 3855*. Sharing and Enabling Environmental Data, NSW Government.

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

NSW Rural Fire Service (RFS). 2019. *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Homeowners - issued December 2019*. 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.

Appendix A - Asset protection zone and landscaping standards

The following APZ management specifications in Table 12 apply to APZs specified in Table 3 and shown in Figure 2. These APZ management specifications should be considered for any landscaping and ongoing management within the subject land.

The APZs identified in Table 3 are to be maintained in perpetuity and management undertaken on an annual basis (as a minimum) and prior to the commencement of the fire season.

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	<p>Tree canopy cover should be less than 15% at maturity;</p> <p>Trees (at maturity) should not touch or overhang the building;</p> <p>Lower limbs should be removed up to a height of 2 m above ground;</p> <p>Canopies should be separated by 2 to 5 m; and</p> <p>Preference should be given to smooth barked and evergreen trees.</p>
Shrubs	<p>Create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;</p> <p>Shrubs should not be located under trees;</p> <p>Shrubs should not form more than 10% ground cover; and</p> <p>Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.</p>
Grass	<p>Should be kept mown (as a guide grass should be kept to no more than 100 mm in height); and</p> <p>Leaves and vegetation debris should be removed.</p>

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 with performance criteria Performance solution detailed in Table 7.
	Subdivisions of three or more allotments have more than one access in and out of the development;	Complies Access provided at two points.
	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 All proposed roads are to be 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;	Complies No dead-end roads proposed.
	Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road;	Can 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.
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.	Can 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;	Can 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	Can comply Details not provided at this stage.

There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.

Not applicable
Reticulated water supply proposed.

Table 14: 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 5.5m width kerb to kerb;	Complies Proposed roads provide minimum carriageway.
	Parking is provided outside of the carriageway width;	Can comply Parking to be provided outside carriageway.
	Hydrants are located clear of parking areas;	Can 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 500m;	Can comply All proposed roads are to be through roads.
	Curves of roads have a minimum inner radius of 6m	To comply
	The road crossfall does not exceed 3 degrees;	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.
A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.		

