



Bushfire Protection Assessment

Proposed subdivision - Lot 10 DP 1223020 Penrith Panthers Precinct

Prepared for
ESQ1818 Pty Ltd

3 August 2018



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Client Name	ESQ1818 Pty Ltd
Project Manager	Kristina Rajkovic Suite 28 and 29, Level 7, 19 Bolton Street, Newcastle NSW 2300 (02) 4910 3408
Prepared by	Kristina Rajkovic and Steven Houghton
Reviewed by	Bruce Horkings
Approved by	Bruce Horkings
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Contents

1	Property and proposal	1
1.1	Description of proposal.....	1
1.2	Assessment process	1
1.3	Bush fire prone land status.....	3
2	Bushfire threat assessment	6
3	Bushfire protection measures.....	8
3.1	Asset Protection Zones (APZ)	8
3.2	Construction standard	9
3.3	Access	9
3.4	Services – Water, electricity and gas	10
3.4.1	Water	10
3.4.2	Electricity services	10
3.4.3	Gas services	10
4	Assessment of environmental issues	11
5	Conclusion	11
6	Recommendations	12
7	References	13
	Appendix A – Assessment process	14
	Appendix B – Access specifications.....	15
	Appendix C – Photographs	17

List of figures

Figure 1: Location of the proposed development.....	2
Figure 2: Bushfire Prone Land mapping, Red denotes Category 1 vegetation and yellow denotes a 100 m buffer (https://www.planningportal.nsw.gov.au/find-a-property).....	3
Figure 3: Proposed subdivision layout	4
Figure 4: Proposed Road network.....	5
Figure 5: Bushfire hazard assessment and Asset Protection Zones (APZ).....	7

List of tables

Table 1: Subject site summary	1
Table 2: Summary of bushfire protection measures assessed	1
Table 3: Performance criteria for reticulated water supplies (PBP page 27)	10
Table 4: Summary of bushfire protection measures assessed	11
Table 5: Performance criteria for proposed public roads (PBP page 21)	15

1 Property and proposal

Table 1: Subject site summary

Street address or property name:	Mulgoa Road		
Suburb, town or locality:	Penrith	Postcode:	2750
Lot/DP no:	Lot 10 DP 1223020		
Local Government Area:	Penrith City Council		
Zoning:	SP3 – Tourist		
Type of development:	Residential subdivision		

1.1 Description of proposal

SJP Planning on behalf of ESQ1818 Pty Ltd commissioned Eco Logical Australia Pty Ltd (ELA) to prepare a bushfire protection assessment (BPA) for a proposed subdivision of Lot 10 DP 1223020 (Mulgoa Road, Penrith) (hereafter referred to as the subject land) in the local government area of Penrith City Council (**Figure 1**).

The proposal is for subdivision for the purpose of future residential and commercial development (See **Figure 3**).

1.2 Assessment process

The proposal is assessed in accordance with Section 100B of the *Rural Fires Act 1997* and 'Planning for Bush Fire Protection 2006' (RFS 2006), herein referred to as PBP (See **Appendix A** for a summary of the assessment process).

Assessment included a review of background documentation, design team consultation, GIS analysis and a site inspection on 11 December 2017 by Steven Houghton.

Table 2 identifies the bushfire protection measures assessed and whether these involved acceptable or performance solutions.

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
Construction standard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.2
Access	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.3
Water supply	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.4
Gas and electrical supplies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.4



Figure 1: Location of the proposed development

1.3 Bush fire prone land status

The subdivision includes land classified as bush fire prone on the Penrith City Council's bush fire prone land (BFPL) map¹ (**Figure 2**).



Figure 2: Bushfire Prone Land mapping, Red denotes Category 1 vegetation and yellow denotes a 100 m buffer (<https://www.planningportal.nsw.gov.au/find-a-property>)

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

Bushfire Protection Assessment
Proposed subdivision - Lot 10 DP 1223020 Penrith Panthers Precinct

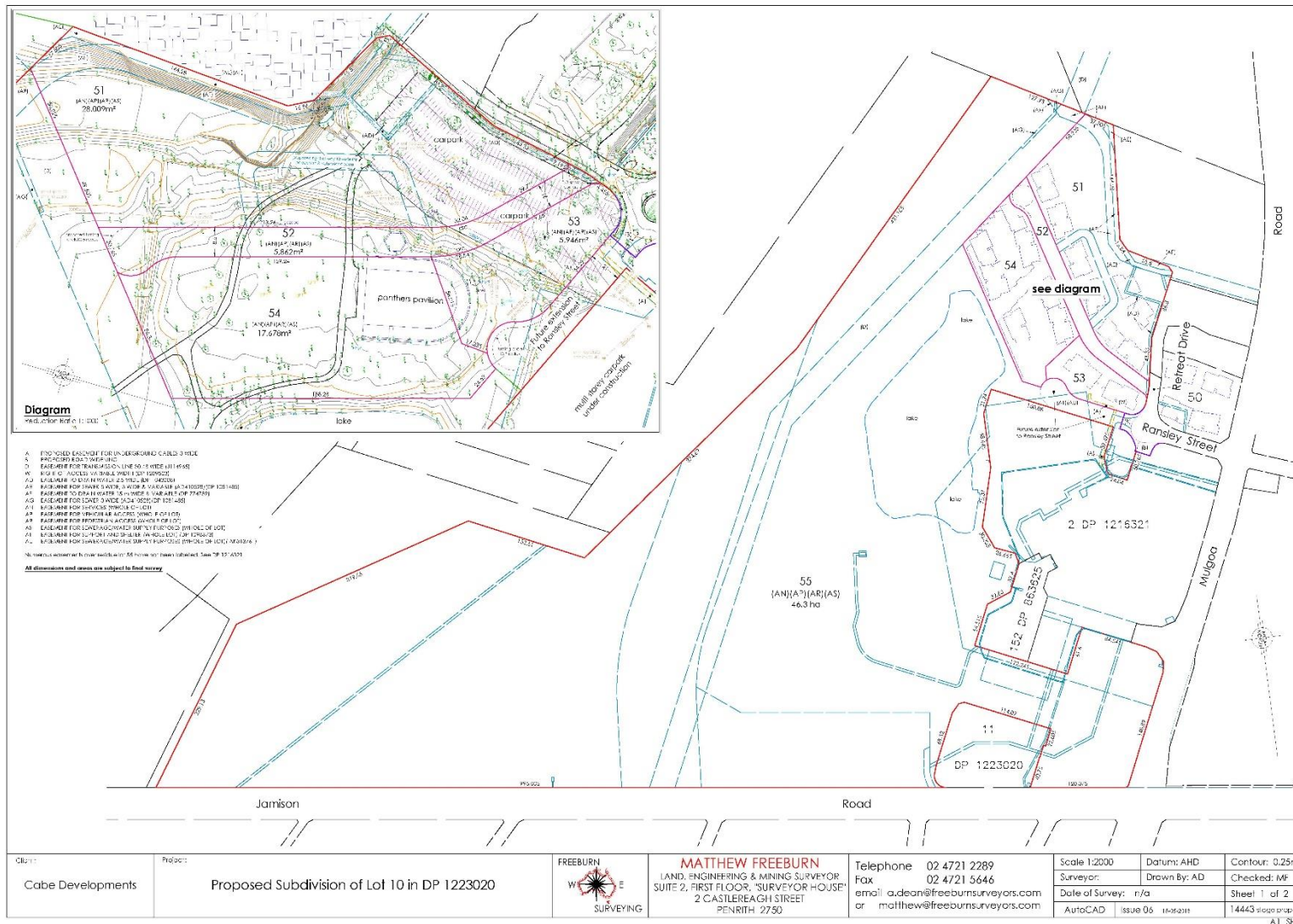


Figure 3: Proposed subdivision layout

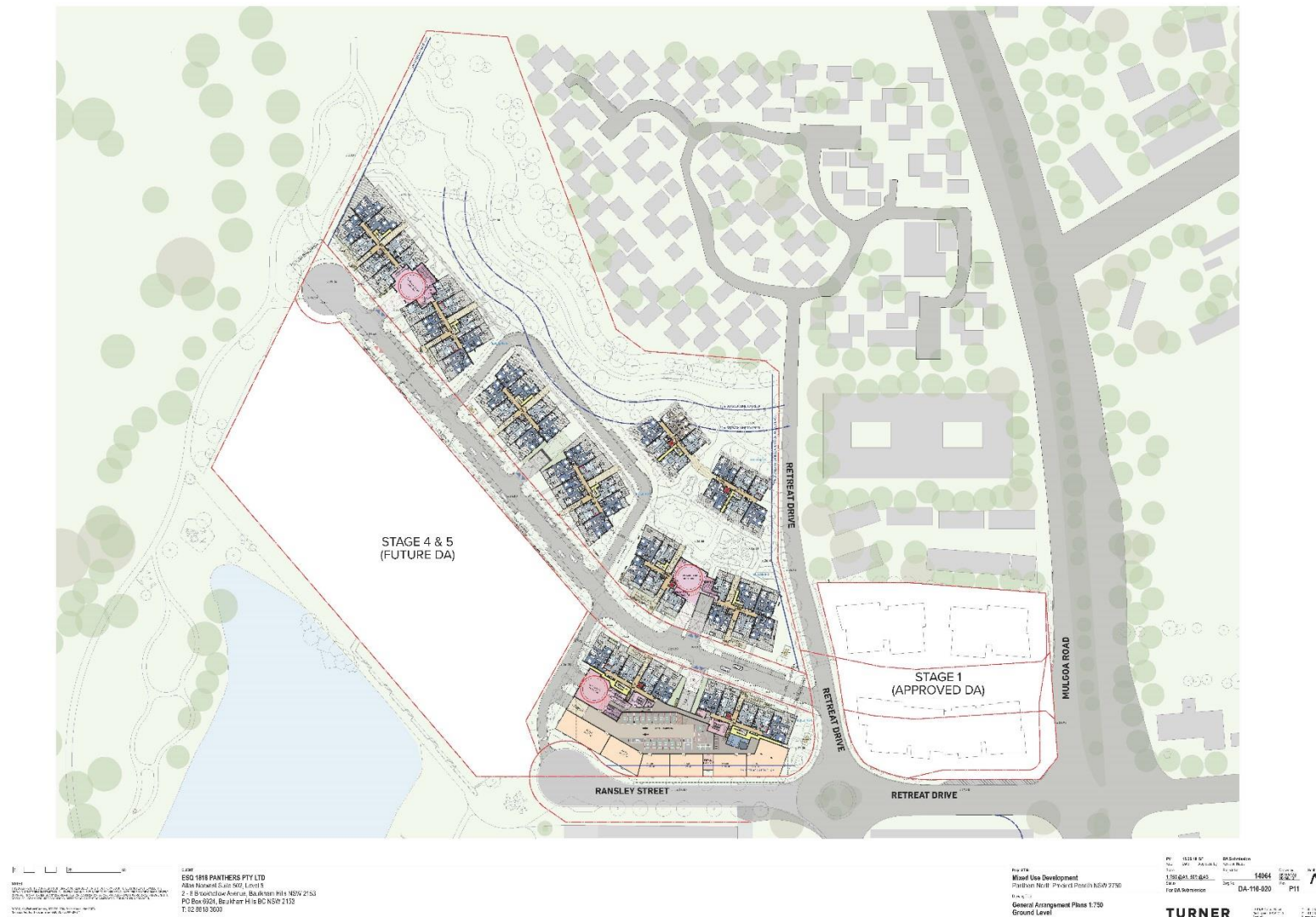


Figure 4: Proposed Road network

2 Bushfire threat assessment

Figure 5 shows the effective slope and predominant vegetation on transect lines representing the highest bushfire threat potentially posed to the subdivision from various directions. The site is located within the Local Government Area (LGA) of Penrith City Council and has a Fire Danger Index (FDI) of 100.

The slope that would most significantly influence fire behaviour was determined over a distance of 100 m within the vegetated areas (**Figure 5**). The effective slope has been determined from 2 m contour data and revised where required by site assessment. The site is generally very flat.

Figure 5 shows the vegetation and slope information assessed. Where required additional information is provided on why and how the chosen slope and vegetation has been calculated.

The predominant vegetation has been determined from the site assessment. The vegetation within the site mostly consists of managed lawn and sparse exotic and native canopy (**Plate 1** to **Plate 4**). Surrounding the site is a mix of managed lawn/open space and developed areas.

The current riparian corridor within proposed Lot 51 consists of mostly exotic trees such as Weeping Willow (*Salix* sp.) and exotic ground covers. Recently, the creekline was subject to weed removal which has reduced the bushfire hazard significantly. A riparian corridor 10 m either side of the creek (**Figure 5**) is proposed to be rehabilitated. The revegetation of the riparian corridor will be undertaken in a manner that will not increase the bushfire hazard (in accordance with APZ management specification). This will include sparse planting of native canopy trees, wet groundcovers species with minimal mid-storey species. The riparian corridor will be managed to an Asset Protection Zone (APZ) standard due to the proximity of an aged care facility adjoining the reserve. The remaining area within Lot 51 will largely be turfed parkland with some feature trees.

Although this is not in line with the 'Guidelines for riparian corridors on waterfront land', and concurrence with the Department of Primary Industries – Water (DPI Water) is required, to ensure management of this corridor within Lot 51 to an APZ standard, a Vegetation Management Plan (VMP) is required and must reflect the required APZ management specifications (condition of approval). Management of Lot 51 should be sole responsibility of the landowner.

Therefore, there is no current or future hazard in the proximity of the proposed works.

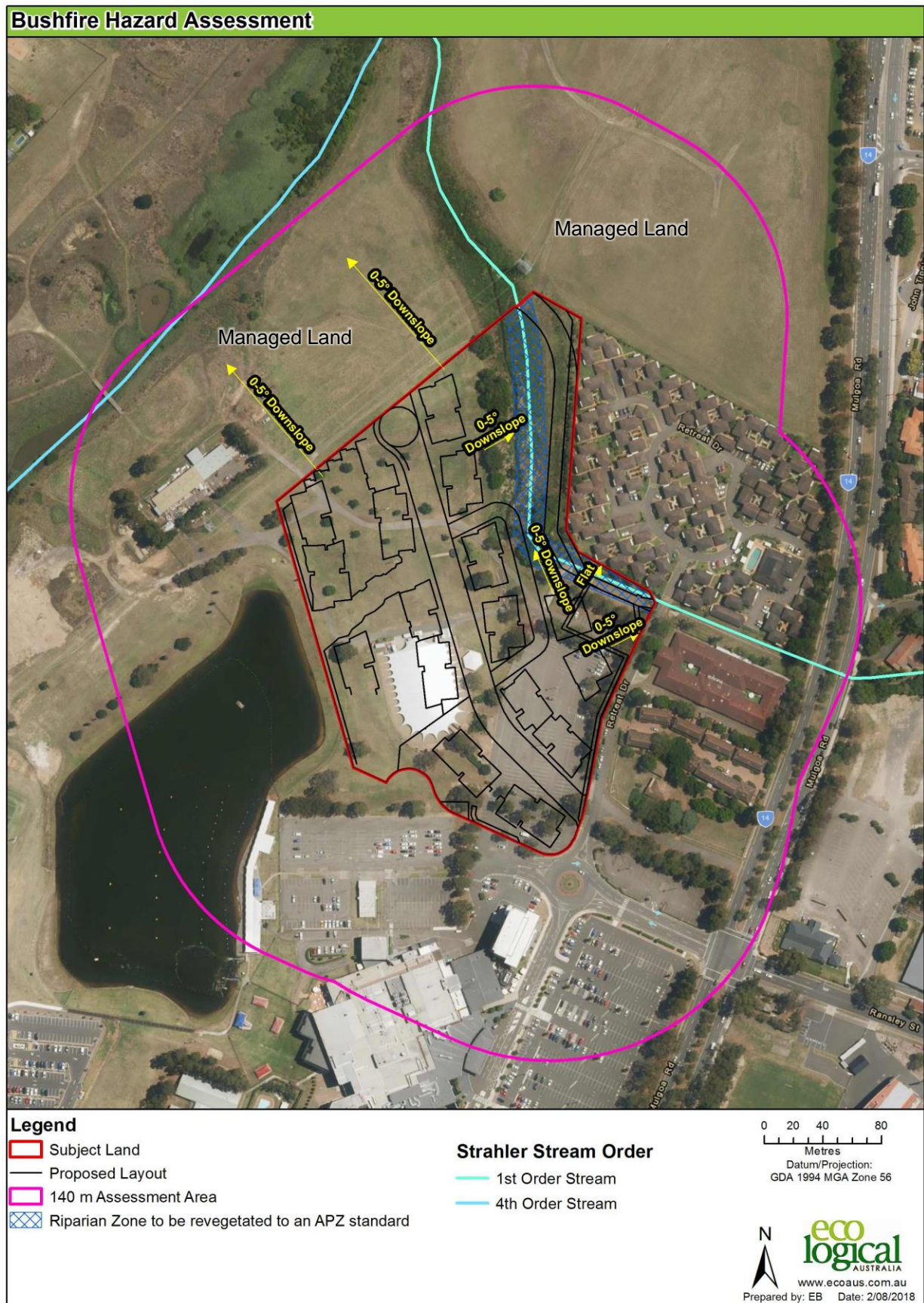


Figure 5: Bushfire hazard assessment and Asset Protection Zones (APZ)

3 Bushfire protection measures

3.1 Asset Protection Zones (APZ)

No APZs are required to be established. However, the revegetation of the riparian corridor within Lot 51 will be required to be established and continually managed by the landowner in accordance with 'Planning for Bush Fire Protection 2006' (RFS 2006) APZ standards.

The revegetation of the riparian corridor is to be managed to an Inner Protection Area APZ standard to the following PBP compliant specification:

- No tree or tree canopy is to occur within 2 m of the future building rooflines;
- The presence of a few shrubs or trees is acceptable provided they:
 - Are well spread out and do not form a continuous canopy;
 - Are not species that retain dead material or deposit excessive quantities of ground fuel in a short period or in a danger period; and
 - Are located far enough away from the building so that they will not ignite future buildings by direct flame contact or radiant heat emission.
- Any landscaping or plantings should preferably be local endemic mesic species or other low flammability species;
- A minimal ground fuel is to be maintained to include less than 4 tonnes per hectare of fine fuel (fine fuel means ANY dead or living vegetation of <6 mm in diameter e.g. twigs less than a pencil in thickness. 4 t/ha is equivalent to a 1 cm thick layer of leaf litter); and
- Any structures storing combustible materials such as firewood (e.g. sheds) must be sealed to prevent entry of burning debris.

Further details on implementation and management can be found in Appendix 2 and 3 of 'Planning for Bush Fire Protection 2006' (RFS 2006) and on the NSW RFS website including:

https://www.rfs.nsw.gov.au/_data/assets/pdf_file/0010/13321/Standards-for-Asset-Protection-Zones.pdf.

3.2 Construction standard

The building construction standard is based on the determination of the Bushfire Attack Level (BAL) in accordance with Method 1 of *Australian Standard AS 3959-2009 'Construction of buildings in bushfire-prone areas'* (Standards Australia 2009). The BAL is based on known vegetation type, effective slope, and separation distance between the development and the bushfire hazard.

BAL-LOW will be achieved within the development as no hazard is present.

3.3 Access

Existing public road access to the subdivision is from the east via Retreat Drive and Mulgoa Road. Future units within the site will be accessed via an internal road network (**Figure 3** and **Figure 4**). The proposed road will have a turning head.

Figure 3 and **Figure 4** show the internal access within the subdivision. It shows the following types of access:

- Internal public roads

The proposed road network includes a central public road with an 8 m carriageway and private strata roads that will have an easement permitting public access (including service authorities) over them. No perimeter roads are required as there is no hazard. Dead ends are proposed however they are not more than 200 m from a through road.

The performance criteria and acceptable solutions for this access types are shown in **Appendix B**, along with comment on the subdivision design compliance or otherwise. All access within the subdivision meets or will meet the acceptable solutions within PBP.

The proposed public roads within the development are to comply with all of the PBP design requirements as outlined in **Table 5**.

3.4 Services – Water, electricity and gas

3.4.1 Water

The proposal will be serviced by a reticulated water supply. **Table 3** identifies the acceptable solution requirements of Section 4.1.3 of PBP for which the proposal is compliant with, subject to the following specifications:

Table 3: Performance criteria for reticulated water supplies (PBP page 27)

Performance Criteria	Acceptable Solutions	Complies
The intent may be achieved where:		
<ul style="list-style-type: none"> water supplies are easily accessible and located at regular intervals 	<ul style="list-style-type: none"> reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads. 	Shall Comply
	<ul style="list-style-type: none"> fire hydrant spacing, sizing and pressures comply with AS 2419.1 – 2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles. 	Shall Comply
	<ul style="list-style-type: none"> hydrants are not located within any road carriageway 	Shall Comply
	<ul style="list-style-type: none"> all above ground water and gas service pipes external to the building are metal, including and up to any taps. 	N/A
	<ul style="list-style-type: none"> the provisions of parking on public roads are met. 	Shall Comply

3.4.2 Electricity services

Electricity supply to / within the subject land is located underground and therefore complies with Section 4.1.3 of PBP.

3.4.3 Gas services

Gas services (reticulated or bottle gas) are compliant with Section 4.1.3 of PBP, subject to the following specifications:

- Any gas services are to be installed and maintained in accordance with Australian Standard AS/NZS 1596 *The storage and handling of LP Gas* (SA 2014). Metal piping is to be used;
- All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation;
- If gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal; and
- Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used.

4 Assessment of environmental issues

No studies such as a Flora and Fauna Assessment (FFA) or an Aboriginal Due Diligence Assessment (ADD) were undertaken for the site and therefore comments on the environmental issues cannot be made.

Penrith City Council is the determining authority for this development; they will assess more thoroughly any potential environmental and heritage issues.

5 Conclusion

The proposed subdivision complies with the acceptable solutions within 'Planning for Bush Fire Protection 2006', (see **Table 2**). All performance solutions used are substantiated within the section of this assessment identified in **Table 4**.

Table 4: Summary of bushfire protection measures assessed

Bushfire Protection Measures	Complies	Requirements	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	<input checked="" type="checkbox"/>	No APZ required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.1
APZ Maintenance plan	<input checked="" type="checkbox"/>	Identified riparian corridor to be maintained in perpetuity to the detailed specifications in Section 8 .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.1
Construction standard	<input checked="" type="checkbox"/>	BAL-LOW.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.2
Access	<input checked="" type="checkbox"/>	Access to meet standards detailed in Table 5 .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.3
Water supply	<input checked="" type="checkbox"/>	Reticulated water supply to meet PBP acceptable solution specifications for a subdivision.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.4
Electricity service	<input checked="" type="checkbox"/>	Electricity supply located underground.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.4
Gas service	<input checked="" type="checkbox"/>	Gas services are to be installed and maintained in accordance with AS/NZS 1596:2014.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.4

6 Recommendations

It is recommended that the subdivision be issued a Bush Fire Safety Authority subject to the following consent conditions:

1. Open space within Lot 51 to be managed to APZ standards;
2. Vegetation Management Plan (VMP) be obtained reflecting the requirement for the riparian corridor to be managed to an APZ standard; and
3. Management of Lot 51 to be sole responsibility of landowner.

Yours sincerely



Kristina Rajkovic
Environmental Consultant

Reviewed by
Bruce Horkings
Senior Bushfire Consultant
FPAF BPAD L3 Certified Practitioner No. BPAD29963-L3



7 References

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

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

NSW Rural Fire Service (RFS). 2006. *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners* including the 2010 Appendix 3 Addendum. Australian Government Publishing Service, Canberra.

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

Standards Australia (SA). 2009. *Construction of buildings in bushfire-prone areas (including Amendments 1 – 3)*, AS 3959-2009. SAI Global, Sydney.

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

Appendix A – Assessment process

Vegetation types

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

Effective slope

In accord 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 where the vegetation was found.

Asset Protection Zone determination

Table A2.4 (FDI 100) of PBP has been used to determine the width of required Asset Protection Zone (APZ) for the proposed development using the vegetation and slope data identified in **Section 2**.

Appendix B – Access specifications

Table 5: Performance criteria for proposed public roads (PBP page 21)

Performance Criteria	Acceptable Solutions	Complies
The intent may be achieved where:		
<ul style="list-style-type: none"> firefighters are provided with safe all weather access to structures (thus allowing more efficient use of firefighting resources) 	<ul style="list-style-type: none"> public roads are two-wheel drive, all weather roads 	Complies
<ul style="list-style-type: none"> public road widths and design that allows safe access for firefighters while residents are evacuating an area 	<ul style="list-style-type: none"> urban perimeter roads are two-way, that is, at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb), allowing traffic to pass in opposite directions. Non perimeter roads comply with Table 4.1 – Road widths for Category 1 Tanker (Medium Rigid Vehicle) the perimeter road is linked to the internal road system at an interval of no greater than 500 metres in urban areas traffic management devices are constructed to facilitate access by emergency services vehicles public roads have a cross fall not exceeding 3 degrees public 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 direct traffic away from the hazard curves of roads (other than perimeter roads) are a minimum inner radius of six metres 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 there is a minimum vertical clearance to a height of four metres above the road at all times 	<p>NA. No perimeter road required.</p> <p>N/A. No perimeter road required.</p> <p>Shall comply</p> <p>Shall comply</p> <p>Complies. Dead end proposed. See Section 3.3</p> <p>Shall comply</p> <p>Complies</p> <p>Shall comply</p>
<ul style="list-style-type: none"> the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles 	<ul style="list-style-type: none"> the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles (approximately 15 tonnes for areas with reticulated water, 28 tonnes or 9 tonnes per axle for all other areas). Bridges clearly indicated load rating 	Shall comply

Performance Criteria	Acceptable Solutions	Complies
<ul style="list-style-type: none"> roads that are clearly sign posted (with easy distinguishable names) and buildings / properties that are clearly numbered 	<ul style="list-style-type: none"> public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression 	Shall comply
	<ul style="list-style-type: none"> public roads between 6.5 metres and 8 metres wide are No Parking on one side with the services (hydrants) located on this side to ensure accessibility to reticulated water for fire suppression 	Shall comply
<ul style="list-style-type: none"> there is clear access to reticulated water supply 	<ul style="list-style-type: none"> public roads up to 6.5 metres wide provide parking within parking bays and located services outside of the parking bays to ensure accessibility to reticulated water for fire suppression 	Shall comply
	<ul style="list-style-type: none"> one way only public access roads are no less than 3.5 metres wide and provide parking within parking bays and located services outside of the parking bays to ensure accessibility to reticulated water for fire suppression 	Shall comply
<ul style="list-style-type: none"> parking does not obstruct the minimum paved width 	<ul style="list-style-type: none"> parking bays are a minimum of 2.6 metres wide from kerb to kerb edge to road pavement. No services or hydrants are located within the parking bays 	Shall comply
	<ul style="list-style-type: none"> public roads directly interfacing the bush fire hazard vegetation provide roll top kerbing to the hazard side of the road 	N/A. no bushfire hazard

Appendix C – Photographs



Plate 1: Degraded creek line



Plate 2: Vegetation within the site



Plate 3: Planted *Ficus* sp. with managed grassland in the background



Plate 4: Exotic and native trees within the creek bed



HEAD OFFICE

Suite 2, Level 3
668-672 Old Princes Highway
Sutherland NSW 2232
T 02 8536 8600
F 02 9542 5622

CANBERRA

Level 2
11 London Circuit
Canberra ACT 2601
T 02 6103 0145
F 02 9542 5622

COFFS HARBOUR

35 Orlando Street
Coffs Harbour Jetty NSW 2450
T 02 6651 5484
F 02 6651 6890

PERTH

Suite 1 & 2
49 Ord Street
West Perth WA 6005
T 08 9227 1070
F 02 9542 5622

DARWIN

16/56 Marina Boulevard
Cullen Bay NT 0820
T 08 8989 5601
F 08 8941 1220

SYDNEY

Suite 1, Level 1
101 Sussex Street
Sydney NSW 2000
T 02 8536 8650
F 02 9542 5622

NEWCASTLE

Suites 28 & 29, Level 7
19 Bolton Street
Newcastle NSW 2300
T 02 4910 0125
F 02 9542 5622

ARMIDALE

92 Taylor Street
Armidale NSW 2350
T 02 8081 2685
F 02 9542 5622

WOLLONGONG

Suite 204, Level 2
62 Moore Street
Austinmer NSW 2515
T 02 4201 2200
F 02 9542 5622

BRISBANE

Suite 1, Level 3
471 Adelaide Street
Brisbane QLD 4000
T 07 3503 7192
F 07 3854 0310

HUSKISSON

Unit 1, 51 Owen Street
Huskisson NSW 2540
T 02 4201 2264
F 02 9542 5622

NAROOMA

5/20 Canty Street
Narooma NSW 2546
T 02 4302 1266
F 02 9542 5622

MUDGEES

Unit 1, Level 1
79 Market Street
Mudgee NSW 2850
T 02 4302 1234
F 02 6372 9230

GOSFORD

Suite 5, Baker One
1-5 Baker Street
Gosford NSW 2250
T 02 4302 1221
F 02 9542 5622

ADELAIDE

2, 70 Pirie Street
Adelaide SA 5000
T 08 8470 6650
F 02 9542 5622