

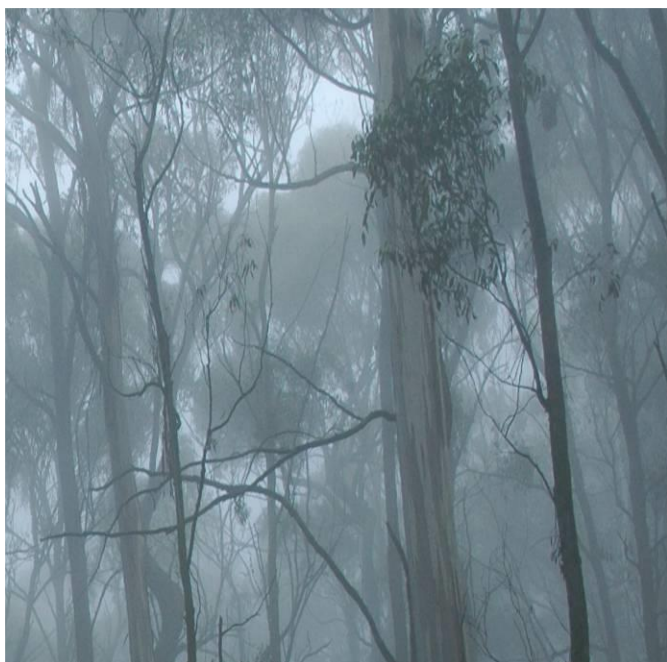


## Bushfire Protection Assessment

Proposed subdivision – Edmondson Park South Stage 2

Prepared for  
**Frasers Property Australia**

1 August 2017



## DOCUMENT TRACKING

Item	Detail
Project Name	Bushfire Protection Assessment: Proposed subdivision – Edmondson Park
Project Number	17CAN_7730
Project Manager	Mick George Level 2, 11 London Circuit, Canberra ACT 2601 (02) 6103 2319
Prepared by	Mick George
Reviewed by	Bruce Horkings (FPAA BPAD Certified Practitioner No. BPAD29962-L3)
Approved by	Bruce Horkings
Status	FINAL
Version Number	1
Last saved on	1 August 2017

This report should be cited as 'Eco Logical Australia August 2017. Bushfire Protection Assessment: Proposed subdivision – Edmondson Park South Stage 2'. Prepared for Frasers Property Australia

### 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 Frasers Property Australia (the Client). The scope of services was defined in consultation with the Client 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.*

Bushfire template 12/8/13

# Contents

<b>1</b>	<b>Property and proposal .....</b>	<b>1</b>
1.1	Description of proposal .....	1
1.2	Location and description of subject land .....	1
<b>2</b>	<b>Bushfire threat assessment .....</b>	<b>5</b>
2.1	Vegetation types .....	5
2.2	Effective slope .....	5
<b>3</b>	<b>Asset protection zones .....</b>	<b>6</b>
3.1	APZ maintenance plan .....	6
<b>4</b>	<b>Construction standard .....</b>	<b>6</b>
<b>5</b>	<b>Utilities and access .....</b>	<b>8</b>
5.1	Water supply .....	8
5.2	Gas and electrical supplies.....	8
5.3	Access .....	8
5.3.1	Public roads .....	8
5.3.2	Access and egress .....	9
<b>6</b>	<b>Assessment of environmental issues .....</b>	<b>11</b>
<b>7</b>	<b>Recommendations and conclusion .....</b>	<b>12</b>
	<b>References .....</b>	<b>13</b>

## List of figures

Figure 1: Location.....	2
Figure 2: Bushfire hazard assessment.....	3
Figure 3: Liverpool LGA Bush Fire Prone Land Map .....	4
Figure 4: Bushfire Attack Level .....	7

## List of tables

Table 1: Threat assessment, APZ and category of bushfire attack .....	6
Table 2: Performance criteria for proposed public roads (PBP p. 23) .....	10

# 1 Property and proposal

<b>Street or property name:</b>	Edmondson Park South		
<b>Suburb, town or locality:</b>	Edmondson Park	<b>Postcode:</b>	2179
<b>Lots and DPs:</b>	Lot 1 DP 1220978		
<b>Local Government Area:</b>	Liverpool City Council		
<b>Type of area:</b>	Residential		
<b>Type of development:</b>	Residential subdivision		

## 1.1 Description of proposal

Fraser Property Australia has commissioned Eco Logical Australia Pty Ltd (ELA) to prepare a bushfire protection assessment (BPA) for Stage 2 of Edmondson Park South (hereafter referred to as the subject land).

The proposal aims to develop 128 lots in Stage 2 of Residential Precinct 1 to the direct east of Stage 1 and to the west of the existing display village. The subject land is South West Priority Growth Area.

## 1.2 Location and description of subject land

The subject land is located within the newly designated western Sydney suburb of Edmondson Park in the Liverpool City Council local government area, as shown in **Figure 1**. The site is approximately 8 km south-west of Liverpool and 3km north of Ingleburn. The subdivision is part of the larger Edmondson Park Release of the South West Priority Growth area.

The subject land was previously part of the Ingleburn Army Camp and is currently open space. Development is underway to create residential precincts in stages, with smaller residential lots expected to be established in the area.

**Figure 2** shows the subject land and the location of the proposed development in relation to the nearest bush fire prone vegetation.



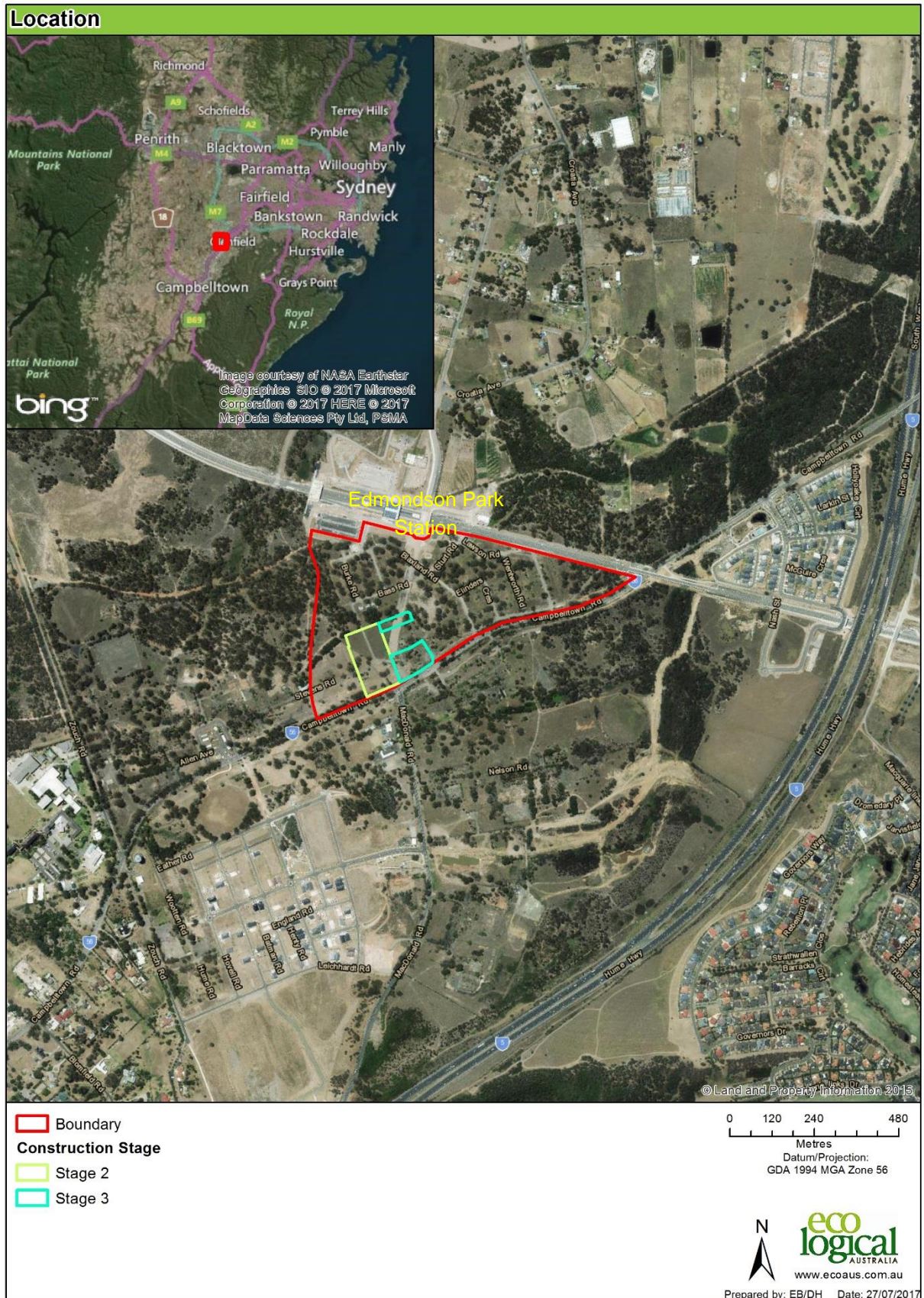


Figure 1: Location





Figure 2: Bushfire hazard assessment



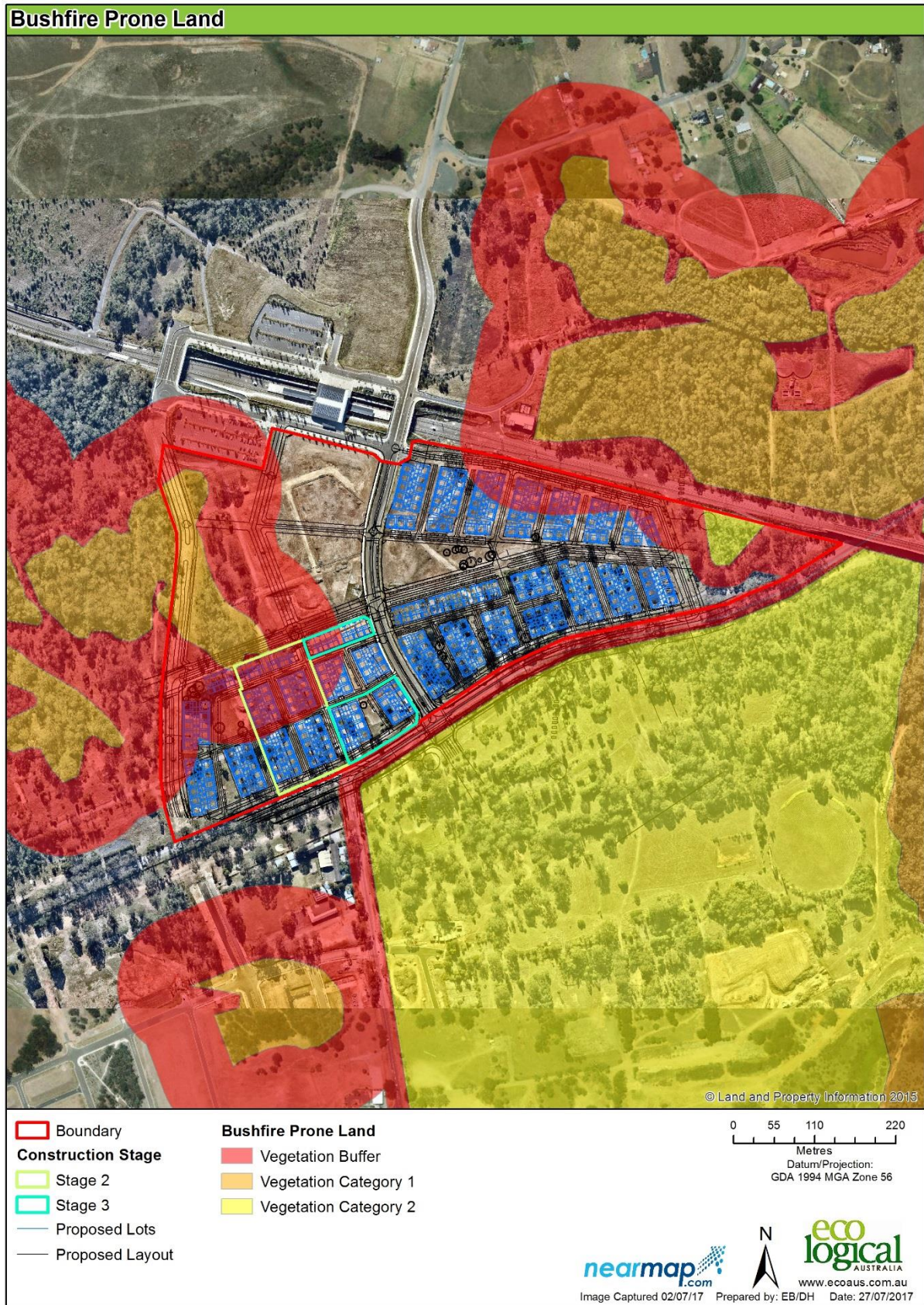


Figure 3: Liverpool LGA Bush Fire Prone Land Map



## 2 Bushfire threat assessment

The subject land is identified as bush fire prone land by Liverpool City Council as shown in **Figure 3**. The following assessment is prepared 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.

### 2.1 Vegetation types

In accordance with PBP, the predominant vegetation class has been assessed within the property boundaries and for a distance of at least 140 m out from the proposed development (**Figure 2**).

Vegetation to the north and west is designated Vegetation Category 1 by the Liverpool City Council Bush Fire Prone Land map. Vegetation to the east and south is sparser and less prone to bushfire attack and is classed as Vegetation Category 2 (see **Figure 3**). The future plans for the Edmondson Park Precinct will result in the development of 827 hectares of land in the surrounding region. It is therefore expected that most of the land surrounding the study site will be either managed land or residential development as future stages are completed. This will ensure little of the current vegetation will remain in situ in its current form.

The predominant vegetation within the development is classified as Shale Plains Woodland. The adjoining land to the south is in the process of being subdivided with the land managed in the interim so that a bushfire hazard does not exist (confirmed during a site inspection on 27 July 2016 – refer to Stage 1 Bushfire Protection Assessment, ELA 2016). The land immediately to the east and west is also being developed as part of Residential Precinct 1 (Stage 0 and 3 to the east, and Stage 1 to the west). To the north-west the area identified as a future regional park remains vegetated and is a bushfire hazard. Within the study site Shale Plains Woodland exists sparsely and is being cleared or managed for the proposed development.

Shale Plains Woodland is part of the Cumberland Plain Woodland (CPW) community which is listed as an endangered ecological community under the NSW *Threatened Species Conservation Act 1995* and the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*. CPW is considered a Coastal Valley Grassy Woodland by Keith (2004) and is categorised as ‘woodland’ in PBP.

### 2.2 Effective slope

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 where the vegetation was found. This assessment was made with a topographic map with 2 m contours (**Figure 2**). The land is almost flat with a gentle downward slope from the site in all directions. It falls within the PBP slope class of ‘downslope >0-5 degrees’.

### 3 Asset protection zones

Table A2.4 of PBP has been used to indicate the required APZ dimensions for the development using the vegetation and slope data identified in **Section 2**. The APZ calculation is tabulated below.

**Table 1: Threat assessment, APZ and category of bushfire attack**

Direction from envelope	Slope <sup>1</sup>	Vegetation <sup>2</sup>	PBP required APZ <sup>3</sup>	Available APZ	Comments
North, North-west	>0-5° downslope	Woodland	15 m	>15 m	APZ located in adjoining stage along property boundary provided by the proposed Bernera and Greenway roads and building setbacks

All other directions – under development or managed

<sup>1</sup> Slope most significantly influencing the fire behaviour of the site having regard to vegetation found. Slope classes are according to PBP.

<sup>2</sup> Predominant vegetation is identified, according to PBP and “Where a mix of vegetation types exist the type providing the greater hazard is said to be predominate”.

<sup>3</sup> Assessment according to Table A2.4 of PBP

#### 3.1 APZ maintenance plan

The following fuel management specifications are to be considered for any landscaping or open space areas undertaken within the subject land:

- No tree or tree canopy is to occur within 2 m of the dwelling roofline.
- The presence of a few shrubs or trees in the APZ is acceptable provided that 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
  - are located far enough away from the building so that they will not ignite the building by direct flame contact or radiant heat emission.
- Any landscaping or plantings should preferably low flammability species.

### 4 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 managed separation distance between the development and the bushfire hazard.

**Figure 4** shows the location of the development and preliminary Bushfire Attack Levels (BAL) based on the current management of land. As can be seen, only the northern-western corner of Stage 2 fall within BAL-12.5 and are to be constructed in accordance with *Australian Standard 3959 Construction of buildings in bushfire-prone areas 2009*.





Figure 4: Bushfire Attack Level



## 5 Utilities and access

### 5.1 Water supply

The furthest point from any dwelling to a hydrant will be less than 90 m in accordance with *Australian Standard AS 2419.1 'Fire hydrant installations – System design installation and commissioning'* (Standards Australia 2005).

The reticulated water supply is to also comply with the following acceptable solutions within Section 4.1.3 of PBP:

- Reticulated water supply uses a ring main system for areas with perimeter roads;
- Hydrants are not located within any road carriageway;
- All above ground water and gas service pipes external to the building are metal, including and up to any taps; and
- The PBP provisions of parking on public roads are met.

### 5.2 Gas and electrical supplies

In accordance with PBP, electricity lines should be installed underground.

Any gas services are to be installed and maintained in accordance with AS/NZS 1596:2014 (Standards Australia 2014). Metal piping shall be used.

### 5.3 Access

#### 5.3.1 Public roads

**Table 2** sets out the performance criteria and acceptable solution requirements of *Planning for Bush Fire Protection 2006* (PBP) for public roads.

As part of the acceptable solutions for non-perimeter two-way roads, a specification of a minimum trafficable surface of 6.5 m is required in accordance with Table 4.1 of PBP to achieve the performance criteria '*public road widths and design that allow safe access for firefighters while residents are evacuating an area*'. It is acknowledged that while the proposed Local Streets have carriageways of 6 m wide (0.5 m less than the acceptable solution), they achieve the performance criteria as outlined below:

- The proposed 6 m wide carriageways do not exceed 50 m in length before intersecting with other thoroughfares with carriageways in excess of 6.5 m in width;
- The reticulated water supply and hydrants are located within the adjacent verge and not within the carriageway;
- Any proposed on street parking is located within indented parking bays that do not inhibit the carriageway and through traffic;
- Whilst the land is mapped as being bush fire prone land, the majority of the proposed dwellings are located greater than 100 m from bushfire vegetation; and
- The Edmondson Park development is bound by a significant road system in Bernera Road, Campbelltown Road and Soldiers Parade that provides separation from surrounding bushland.

Upon assessment of the proposed access arrangements, it is considered that the abovementioned performance criteria is adequately addressed and satisfied through the current subdivision planning and design. Road widths provided are only marginally less than those prescribed within PBP, and are



considered in conjunction with the lower fire risk presented by the hazard at the interface which will continue to be developed as future stages are completed. This scenario will allow safe access for fire fighters while residents are evacuating from an area. Services will also be situated outside of the trafficable road width, therefore ensuring clear access to reticulated water supplies at all times.

### **5.3.2 Access and egress**

Dwellings within the proposed development will be accessed via standard residential driveways. These residential driveways do not need to comply with any specific bushfire access design requirements because the following applies to the proposed development:

- The proposed development will be serviced by reticulated water;
- The furthest point of any future dwellings within the proposed development from the nearest hydrant will be no greater than 70 m; and
- The speed limit within the proposed development will be less than 70 kph.

Table 2: Performance criteria for proposed public roads (PBP p. 23)

Intent may be achieved where:	Acceptable solutions	Complies
<ul style="list-style-type: none"> <li>firefighters are provided with safe all weather access to structures (thus allowing more efficient use of firefighting resources)</li> </ul>	<ul style="list-style-type: none"> <li>public roads are two-wheel drive, all weather roads</li> </ul>	Can comply
<ul style="list-style-type: none"> <li>public road widths and design that allows safe access for firefighters while residents are evacuating an area</li> </ul>	<ul style="list-style-type: none"> <li>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) requiring a minimum trafficable surface of 6.5 metres</li> <li>the perimeter road is linked to the internal road system at an interval of no greater than 500 metres in urban areas</li> <li>traffic management devices are constructed to facilitate access by emergency services vehicles</li> <li>public roads have a cross fall not exceeding 3 degrees</li> <li>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</li> <li>curves of roads (other than perimeter roads) are a minimum inner radius of six metres</li> <li>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</li> <li>there is a minimum vertical clearance to a height of four metres above the road at all times</li> <li>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</li> </ul>	<p>No perimeter road required as not located next to hazard. Performance solution addresses road width (see Section 5.3.1)</p> <p>No perimeter road required as not located next to hazard. Performance solution addresses road width (see Section 5.3.1)</p> <p>Can comply</p> <p>Can comply</p> <p>Can comply</p> <p>Can comply</p> <p>Can comply</p> <p>Can comply</p> <p>Can comply</p>
<ul style="list-style-type: none"> <li>the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles</li> </ul>	<ul style="list-style-type: none"> <li>public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression</li> </ul>	Achieves criteria (see Section 5.3.1)



Intent may be achieved where:	Acceptable solutions	Complies
<ul style="list-style-type: none"> <li>roads that are clearly sign posted (with easy distinguishable names) and buildings / properties that are clearly numbered</li> </ul>	<ul style="list-style-type: none"> <li>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</li> <li>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</li> </ul>	<p>Achieves criteria (see Section 5.3.1)</p> <p>Can comply</p>
<ul style="list-style-type: none"> <li>there is clear access to reticulated water supply</li> </ul>	<ul style="list-style-type: none"> <li>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</li> <li>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</li> </ul>	<p>Can comply</p> <p>Can comply</p>
<ul style="list-style-type: none"> <li>parking does not obstruct the minimum paved width</li> </ul>	<ul style="list-style-type: none"> <li>public roads directly interfacing the bush fire hazard vegetation provide roll top kerbing to the hazard side of the road</li> </ul>	<p>Can comply</p>

## 6 Assessment of environmental issues

The subject land is situated within the Sydney Growth Centres biodiversity certification area, with certification pending. Under Part 7AA of the *Threatened Species Conservation Act 1995* (TSC Act), biodiversity certification removes the need to conduct impact assessment on certified land for threatened species population and communities listed under the TSC Act.

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

## 7 Recommendations and conclusion

The proposal consists of a residential subdivision located within a bushfire prone area. The development satisfies the standard of PBP for a residential development as outlined below:

- Asset protection zones are provided as outlined in **Section 3** of this report. Landscaping shall also comply with the landscaping principles within Appendix 5 of PBP and guided by the fuel management principles listed in **Section 3**;
- Water supply is to be installed in accordance with the requirements outlined in **Section 5**;
- Electrical services are to be underground where possible (**Section 5**);
- Gas services are to be installed and maintained in accordance with AS/NZS 1596:2014 (Standards Australia 2014); and
- Public roads are to comply with the requirements outlined in **Section 5** of this report.

In the author's professional opinion the bushfire protection requirements listed in this assessment provide an adequate standard of bushfire protection for the proposed development, a standard that is consistent with *Planning for Bush Fire Protection 2006* and appropriate for the issue of a Bush Fire Safety Authority.



Mick George  
**Senior Bushfire Consultant**



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



# References

Eco Logical Australia. 2016. *Bushfire Protection Assessment: Proposed subdivision – Edmondson Park*. Prepared for Frasers Property Australia.

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. 2005. Fire hydrant installations - System design, installation and commissioning, AS 2419.1, Fourth edition 2005, SAI Global, Sydney

Standards Australia. 2009. Construction of buildings in bushfire-prone areas, AS 3959-2009. SAI Global, Sydney.

Standards Australia. 2014. *The storage and handling of LP Gas*, AS/NZS 1596-2014, Eighth edition 2014, Standards Australia International Ltd, Sydney.





#### 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 6103 0148

#### 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 08 9322 1358

#### DARWIN

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

#### SYDNEY

Level 6  
299 Sussex Street  
Sydney NSW 2000  
T 02 8536 8650  
F 02 9264 0717

#### NEWCASTLE

Suites 28 & 29, Level 7  
19 Bolton Street  
Newcastle NSW 2300  
T 02 4910 0125  
F 02 4910 0126

#### ARMIDALE

92 Taylor Street  
Armidale NSW 2350  
T 02 8081 2681  
F 02 6772 1279

#### WOLLONGONG

Suite 204, Level 2  
62 Moore Street  
Austinmer NSW 2515  
T 02 4201 2200  
F 02 4268 4361

#### BRISBANE

Suite 1 Level 3  
471 Adelaide Street  
Brisbane QLD 4000  
T 07 3503 7191  
F 07 3854 0310

#### HUSKISSON

Unit 1 51 Owen Street  
Huskisson NSW 2540  
T 02 4201 2264  
F 02 4443 6655

#### NAROOMA

5/20 Cauty Street  
Narooma NSW 2546  
T 02 4476 1151  
F 02 4476 1161

#### MUDGEES

Unit 1, Level 1  
79 Market Street  
Mudgee NSW 2850  
T 02 4302 1230  
F 02 6372 9230

#### GOSFORD

Suite 5, Baker One  
1-5 Baker Street  
Gosford NSW 2250  
T 02 4302 1220  
F 02 4322 2897

1300 646 131  
[www.ecoaus.com.au](http://www.ecoaus.com.au)