Bushfire Protection Assessment

Section 75W Modification – Frasers Edmondson Park Town Centre

Edmondson Park

Prepared for
Frasers Property Australia

March 2016

DOCUMENT TRACKING

Item	Detail
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1 Property and proposal

Street or property name:	Edmondson Park South		
Suburb, town or locality:	Edmondson Park	**Postcode:**	2179
Lots and DPs:	Lot 212DP1186108 Lot 2 DP1204198 Lot 1 DP1204198 (Part)		
Local Government Area:	Liverpool Council		
Type of area:	Rural		
Type of development:	Fraser's concept for the town centre (south)		

1.1 Description of proposal

Fraser Property Australia has commissioned Eco Logical Australia Pty Ltd (ELA) to prepare a bushfire protection assessment (BPA) for the Fraser's concept of the Town Centre (see Figure 3). The proposal is located on approximately 25 hectares of land at Edmondson Park (hereafter referred to as the subject land).

The proposal aims to develop several adjacent lots to form two areas of development. The Town Centre, which is a mixture of commercial and residential buildings, adjacent to Edmondson Park Railway Station and a residential precinct (see **Figure 1**). The current land zoning is 'B4 Mixed Use' and 'RE1 Public Recreation'.

This report is an addendum to the original Bushfire Assessment (Bushfire Risk Assessment, August 2010, McKinlay Morgan and Associates Pty Ltd).

1.2 Location and description of subject land

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

The subject land was previously part of the Ingleburn Army Camp and is currently open space. As development occurs across the precinct smaller residential lots are 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.

A plan of the development is shown in **Figure 3**.

Figure 1: Location

Figure 2: Vegetation mapping

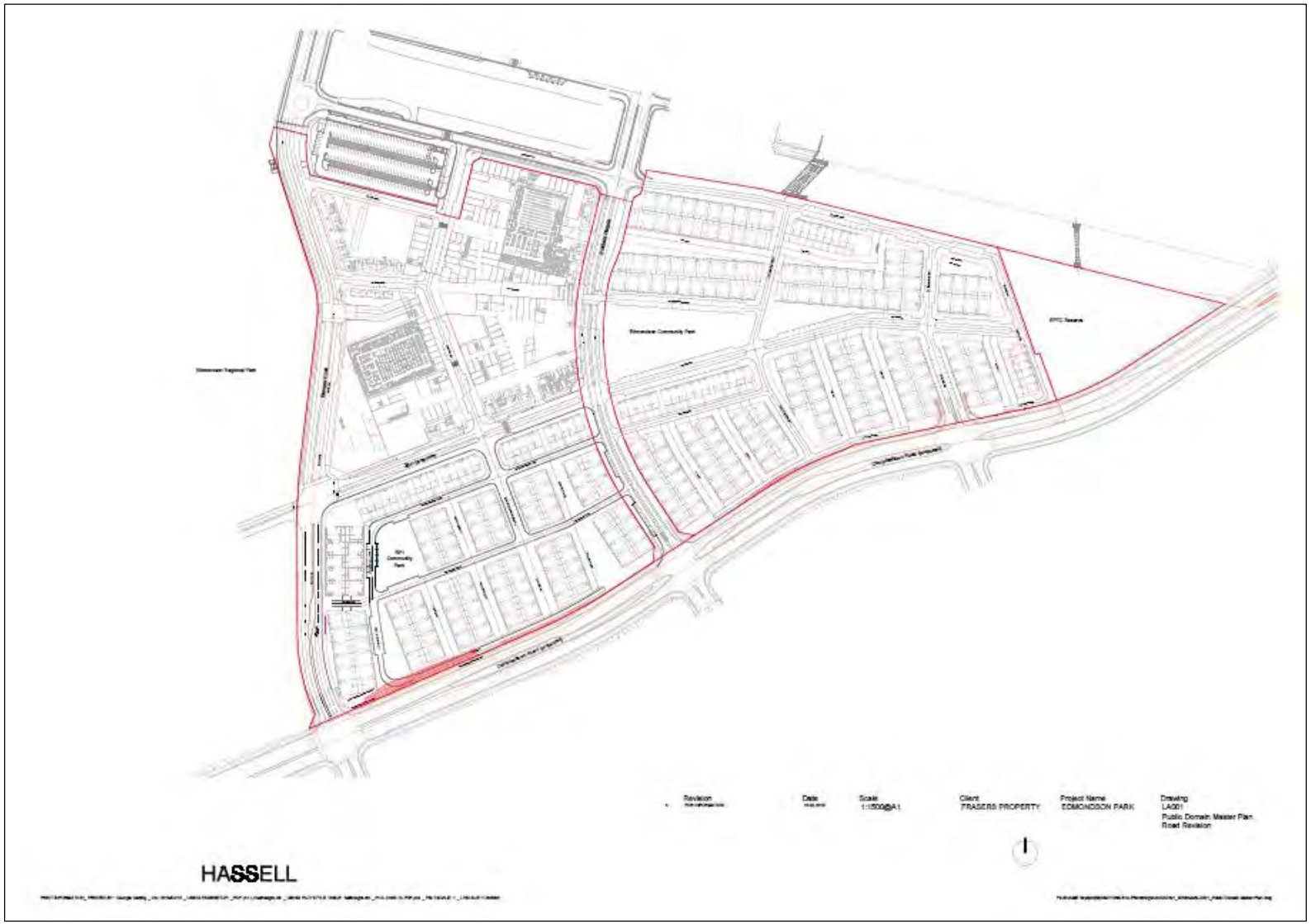

Figure 3: Development plan

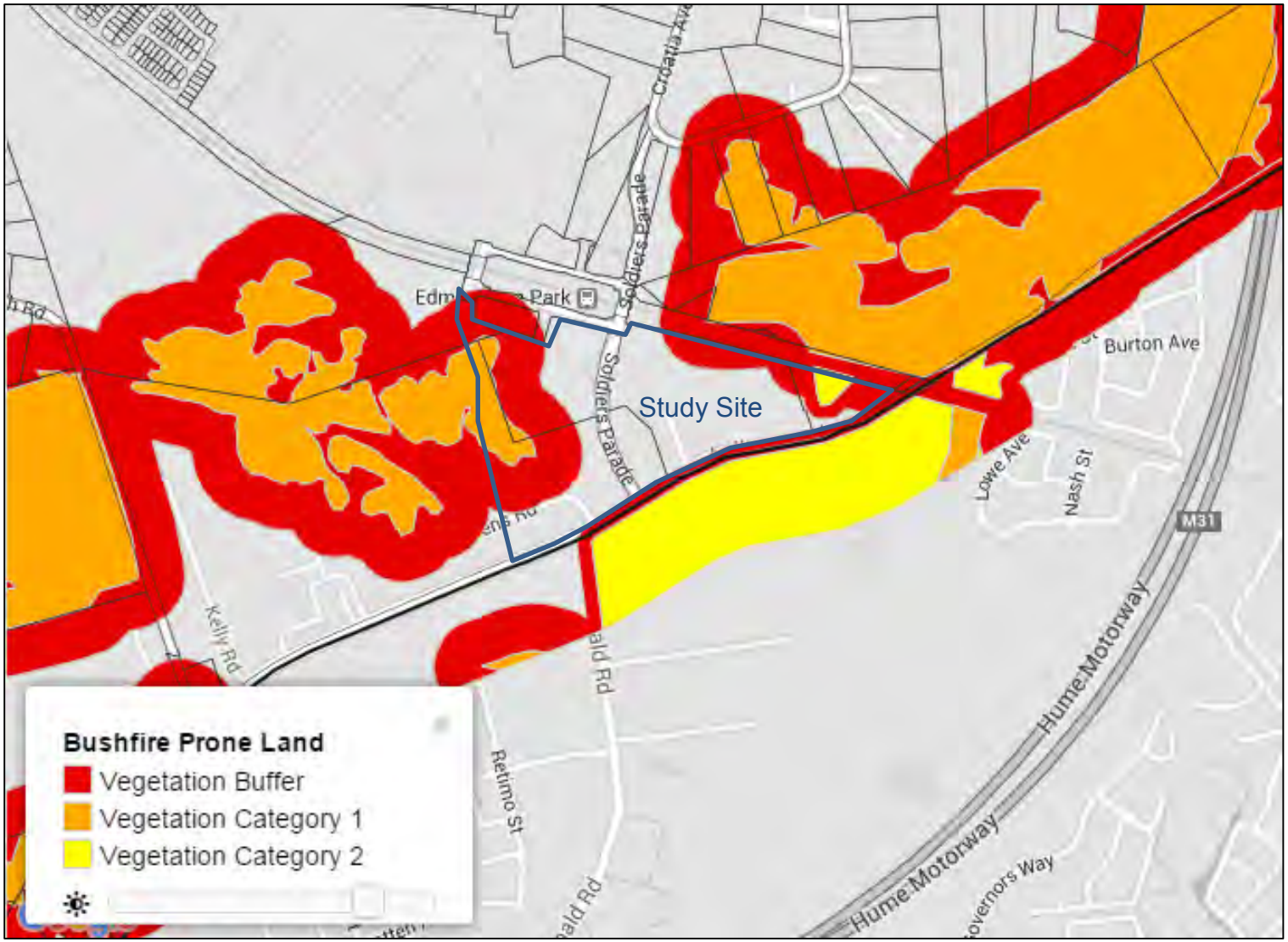

Figure 4: Liverpool LGA Bush Fire Prone Land Map

2 Bushfire threat assessment

The subject land is identified as bush fire prone land by Liverpool Council as shown in **Figure 4**. 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 calculated for a distance of at least 140 m out from the proposed development.

Vegetation to the north and west is designated Vegetation Category 1 by the Liverpool Council Bush Fire Prone Land amp. Vegetation to the east and south is sparser and less prone to bushfire attack and is classed as Vegetation Category 2 (see **Figure 4**). 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. Shale Plains Woodland is found toward the north in a medium density, open canopy formation. Within the study site Shale Plains Woodland exists sparsely and would be cleared or managed for the proposed development. A small pocked park occurs within the eastern corner of the proposed development which is identified as Open Space. Given the intended use of this area, its small size (less than 2 hectares) and it's separation from more extensive tracks of vegetation to the south and north by Campbelltown Road (25 m) and the South West Rail Link (40 m) it is considered to be a low hazard in accordance with PBP.

Shale Hills Woodland exists in small pockets to the south of the site (**Figure 2**), however, much of this vegetation has been previously disturbed**.** Both Shale Plains and Shale Hills Woodland are elements 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.

Alluvial Woodland is located in a small pocket to the east of the site and further to the north. Alluvial Woodland is part of the Sydney Coastal River Flat Forest Community, which is also listed under the NSW *Threatened Species Conservation Act 1995*. Alluvial Woodland is considered to be a Coastal Floodplain Woodland by Keith (2004) and is categorised as 'forested wetland' 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. 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[1]	Vegetation[2]	PBP required APZ[3]	Available APZ	Comments
North	>0-5° downslope	Woodland	15 m	>30 m	Provided by Railway
East	>0-5° downslope	Low hazard	10 m	>15 m	Provided by proposed road
West	>0-5° downslope	Woodland	15 m	>15 m	
South	>0-5° downslope	Woodland	15 m	>15 m	Provided by Campbelltown Road. See Section 3.1 regarding temporary APZ

[1] Slope most significantly influencing the fire behaviour of the site having regard to vegetation found. Slope classes are according to PBP.

[2] 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".*

[3] Assessment according to Table A2.4 of PBP

3.1 APZ considerations

Development to the south of Campbelltown Road is expected to occur in the near future resulting in much of the vegetation in this area removed (see **Figure 6**). In the interim, the provision of a temporary APZ (to provide a 100 m separation from unmanaged vegetation) within the adjoining Lot 214 DP 1186108 will ensure that no unnecessary bushfire construction requirements are imposed on future dwellings within the subject land. The same principle could be applied to land to the west that is also identified for partial development.

3.2 APZ maintenance plan

The following fuel management specifications are to be considered for any landscaping 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 be local endemic mesic species or other low flammability species.

Figure 5: Asset protection zone

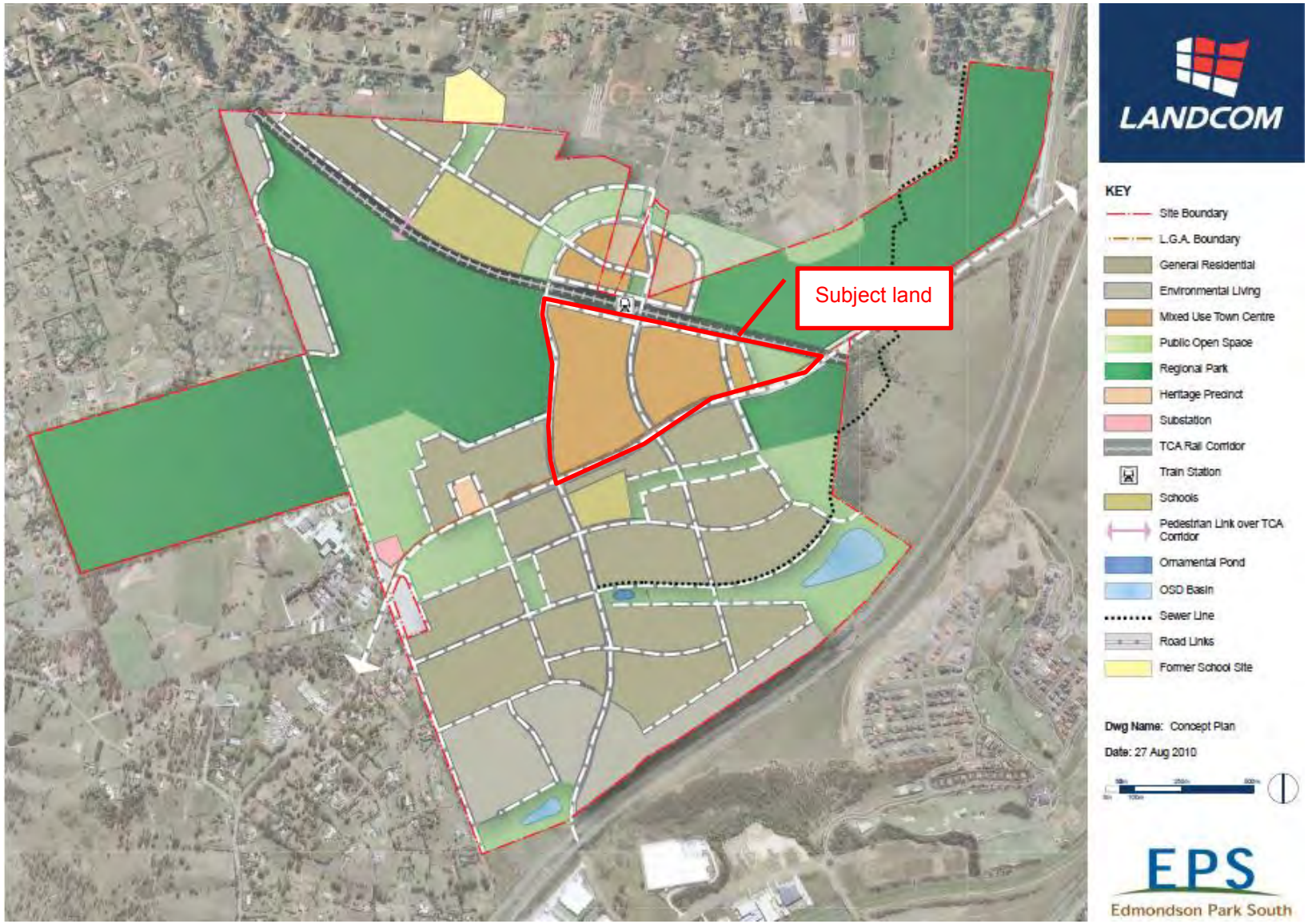

Figure 6: Edmondson Park South Structure Plan

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.

There are six bush fire attack levels that are used to determine the appropriate construction to be applied to a development:

BAL-LOW Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation.

BAL-12.5 Attack by burning debris is significant with low levels of radiant heat (not greater than 12.5kW/m2). Radiant heat is unlikely to threaten building elements (i.e. unscreened glass). Specific construction requirements for ember protection and accumulation of debris are warranted (Level 1 construction standards).

BAL-19 Attack by burning debris is significant with an increased radiant heat levels (not greater than 19kW/m2) threatening some building elements. Specific construction requirements for protection against embers and radiant heat are warranted (Level 2 construction standards).

BAL-29 Attack by burning debris is significant and radiant heat levels (not greater than 29kW/m2) can threaten building integrity. Specific construction requirements for protection against embers and higher radiant heat are warranted. Some flame contact is possible.

BAL-40 Increased attack from burning debris with significant radiant heat and the potential for flame contact. The extreme radiant heat and potential flame contact could threaten building integrity. Buildings must be designed and constructed in a manner that can withstand the extreme heat and potential flame contact.

Flame Zone Radiant heat levels will exceed 40kW/m2. Radiant heat levels and flame contact are likely to significantly threaten building integrity and result in significant risk to residents who are unlikely to be adequately protected. The flame zone is outside the scope of the BCA and the NSW Rural Fire Service may recommend protection measures where the applicant does not provide an adequate performance solution. Other measures such as drenching systems and radiant heat barriers may also be required.

Within the proposed development, BALs are expected to range from BAL-Low to BAL 40.

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.
- The PBP provisions of parking on public roads are met.

5.2 Gas and electrical supplies

In accordance with PBP, electricity should be underground wherever practicable. Where overhead electrical transmission lines are installed:

- Lines are to be installed with short pole spacing, unless crossing gullies
- No part of a tree should be closer to a powerline than the distance specified in the ISSC 3 *Guideline for Managing Vegetation Near Power Lines* (Industry Safety Steering Committee, 2005)

Any gas services are to be installed and maintained in accordance with *Australian Standard AS/NZS 1596 'The storage and handling of LP Gas'* (Standards Australia 2008).

5.3 Access

5.3.1 Public roads

The proposed public roads within the development are able to comply with all of the PBP design requirements as outlined in **Table 2**. Perimeter roads are not required as the development does not interface a bushfire hazard.

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
• firefighters are provided with safe all weather access to structures (thus allowing more efficient use of firefighting resources)	• public roads are two-wheel drive, all weather roads	Can comply
• public road widths and design that allows safe access for firefighters while residents are evacuating an area	• 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 • 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 • 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	Can comply Can comply Can comply Can comply Can comply Can comply Can comply Can comply
• the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles	• public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression	Can comply
• roads that are clearly sign posted (with easy distinguishable names) and buildings / properties that are clearly numbered	• 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 • 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	Can comply Can comply
• there is clear access to reticulated water supply	• 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 • 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	Can comply Can comply
• parking does not obstruct the minimum paved width	• public roads directly interfacing the bush fire hazard vegetation provide roll top kerbing to the hazard side of the road	Can comply

6 Recommendations and conclusion

This assessment has been prepared to support a Section 75W modification for the proposed Edmondson Park Town Centre (north). The conditions to satisfy the standard of PBP for the concept are outlined below:

- Asset protection zones are provided as outlined in **Section 3** of this report
- 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**).
- Any gas services are to be installed and maintained in accordance with AS/NZS 1596:2008 (**Section 5**).
- 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.

If further information is required, please contact Danielle Meggos on 8536 8605 prior to the issue of the Bush Fire Safety Authority.

Danielle Meggos

Senior Bushfire Planner

References

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ISO 14001 Environmental Management

AS/NZS 4801:2001 Occupational Health and Safety Management

ISO 9001 Quality Management

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