Bushfire Protection Assessment

Proposed Subdivision: Village 12 and Village Centres (VC) 4, 5, 6 and 8

Prepared for
Lend Lease

6 November 2013

DOCUMENT TRACKING

ITEM	DETAIL
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1 Property and proposal

Name:	Maryland Development Company		
Street or property Name:	Jordan Springs, Village 12 and Village Centres 4, 5, 6 and 8		
Suburb, town or locality:	Jordan Springs	**Postcode:**	2747
Lot/DP no:	Lot 1 DP 1179653		
Local Government Area:	Penrith City Council		
Type of development:	Subdivision for future development (residential subdivision and medium density residential)		

1.1 INTRODUCTION

Maryland Development Company commissioned Eco Logical Australia Pty Ltd (ELA) to prepare a bushfire protection assessment (BPA) for a proposed subdivision at Jordan Springs to create seven super lots, of which five will be utilized for future development.

This assessment has been prepared by the ELA Senior Bushfire Consultant Daniel Copland (FPAA BPAD-A Certified Practitioner No. BPD-PA-28853). Daniel is recognised by the NSW Rural Fire Service as a qualified bushfire consultant in bushfire risk assessment.

1.2 LOCATION AND DESCRIPTION OF SUBJECT LAND

The subject land is located within the central portion of the Jordan Springs residential community as shown in **Figure 1**. The site is bounded by Cullen Avenue to the north, Alinta Promenade to the east, and Lakeside Parade to the south and west. Beyond these streets are newly subdivided residential lots and the lake precinct.

1.3 DESCRIPTION OF PROPOSAL

The proposal consists of a subdivision to create seven lots as shown in **Figure 2**. The future use of each lot is described below:

- Proposed Lot 14 – future medium density housing (Village Centre (VC) 8)
- Proposed Lot 15 – future medium density housing (VC 6)
- Proposed Lot 16 – future medium density housing (VC 4)
- Proposed Lot 17 – future medium density housing (VC 5)
- Proposed Lot 18 – riparian corridor (channel earthworks and revegetation approved)
- Proposed Lot 19 – future residential subdivision (Village 12)

- Proposed Lot 20 – future lake, managed landscape and managed open space.

This assessment addresses the proposed subdivision based on the known intended use of the seven lots when created. The bushfire protection measures required for the above future uses in each respective lot are detailed in the following sections. Only five of the seven lots are proposed for future residential development, and there is no construction proposed as part of this subdivision proposal.

It is also important to note that the bushfire protection measures as determined within this assessment are based on the current intended landscaping and management practices as provided at the time of assessment. Should areas of proposed managed open space of managed landscape become more densely vegetated or not managed in perpetuity then the hazard classification and subsequent bushfire protection measures, including Asset Protection Zones (APZs), within the proposed allotments may need to be reviewed.

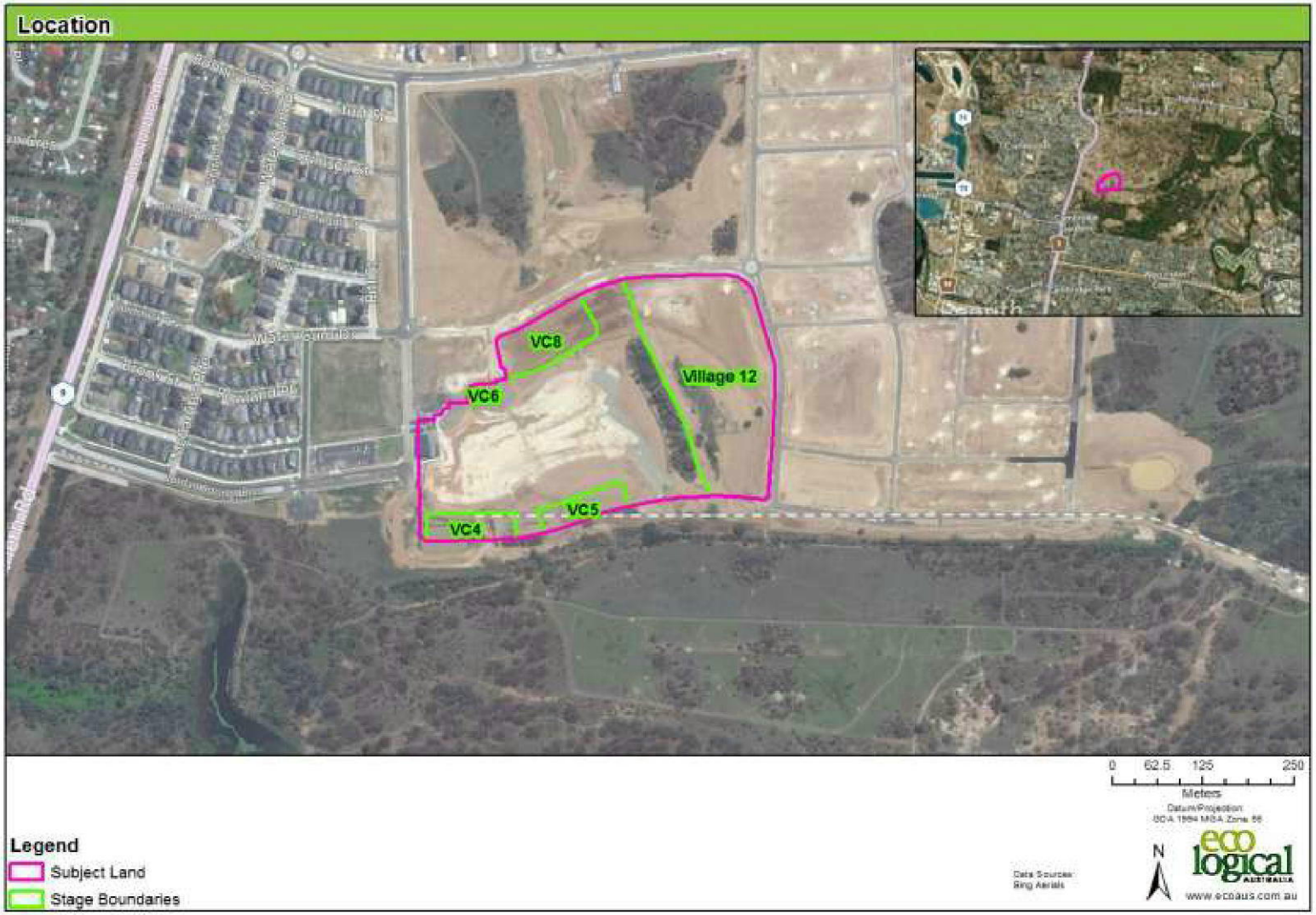

Figure 1: Location of Village 12 and Village Centres 4, 5, 6 and 8

Figure 2: Proposed subdivision layout plan

2 Bushfire threat assessment

2.1 ASSESSMENT REQUIREMENTS

The subject land is identified as containing Bush Fire Prone Land by Penrith City Council. The following assessment is therefore prepared in accordance with Section 100B of the *Rural Fires Act 1997*, Clause 44 of the *Rural Fires Regulation 2008*, and 'Planning for Bush Fire Protection 2006' (RFS 2006) herein referred to as PBP.

The assessment also adopts the recommendations approved within the Precinct Plan relating to bushfire protection described within the report '*Bushfire Protection Assessment – St Marys Western and Central Precincts*' prepared by BES (2009). This assessment follows and builds upon the findings of the initial bushfire report.

2.2 VEGETATION TYPES AND SLOPES

The vegetation and slope have been assessed outwards from the boundaries of the proposed subdivision stages in the direction of any bushfire hazards found. In accordance with PBP the predominant vegetation class has been calculated for a distance of at least 140 metres out from the boundary of the subject land and the slope class most significantly affecting fire behaviour was determined for a distance of at least 100 metres. The predominant vegetation and effective slope assessments are shown in **Figure 3** and summarised in **Table 1** within the following Section 3 – Asset Protection Zones.

The main area of bushfire hazard that will be located within 140 metres of the subdivision perimeter consists of the proposed riparian corridor that will exist within proposed Lot 18, and partly into the eastern extent of Lot 20 adjacent to the lake. The corridor will have Lot 19 intended for future development on its eastern side and Lot 20 that will form the future lake, some revegetation adjacent to the corridor, and managed open space to the west.

The riparian corridor works and revegetation has been approved in a previous DA and is proposed to create a vegetated corridor the full width of the lot ranging from approximately 40 to 80 metres, including revegetation to the east of the lake precinct. The climax vegetation community is to represent the surrounding Cumberland Plain Woodland and is therefore categorised as 'woodland' in accordance with PBP (Refer to **Figure 3**) and the BES (2009) assessment.

The corridor will drain from north to south on a very gentle gradient therefore the vegetation will be on a slope within the PBP slope class of 'downslope >0-5 degrees.

To the south, a riparian corridor hazard is also present within the adjoining stage – on the immediate southern side of Lakeside Parade. The width and vegetation structure of this corridor is consistent with that noted above within Lot 18.

This corridor will drain from east to west on a very gentle gradient therefore the vegetation will be on a slope within the PBP slope class of 'downslope >0-5 degrees.

3 Asset Protection Zones (APZ)

The subdivision proposal involves the creation of super lots for future development applications and does not include construction or the creation of residential lots. Therefore specific APZs are not required for the proposal. The assessment below demonstrates that the proposed lots are able to accommodate future development with the required APZ wholly within the lot boundary.

Table 1 below shows the APZ calculation based on intended future use. The location of future APZs are shown in **Figure 3**. All proposed APZs comply with the PBP Acceptable Solutions as listed below:

- Lot 14 (VC 8); Lot 15 (VC 6); Lot 16 (VC 4); Lot 17 (VC 5); and Lot 19 (Village 12) – residential subdivision requirements

Future development applications will be required to demonstrate the provision of a compliant APZ (see **Table 1**) between the proposed development and the riparian corridors, both within Lot 18 and to the south of Lakeside Parade.

It is also important to note that the bushfire protection measures as determined within this assessment are based on the current intended landscaping and management practices as provided at the time of assessment. Should areas of proposed managed open space of managed landscape become more densely vegetated or not managed in perpetuity then the hazard classification and subsequent bushfire protection measures, including Asset Protection Zones (APZs), within the proposed allotments may need to be reviewed.

Table 1: Asset Protection Zone assessment

Location (Refer to **Figure 3**)	Slope	Vegetation	PBP APZ	Comment
Lot 14 (VC 8)	Downslope >0-5º	Woodland	15 m	Future medium density residential development within proposed Lot 14 will require a minimum APZ of 15 m. Lot 14 will be able to accommodate an APZ of this size.
Lot 16 (VC 4)	Downslope >0-5º	Woodland	15 m	Future medium density residential development within proposed Lot 16 will require a minimum APZ of 15 m. Lakeside Parade will provide an APZ exceeding this size.
Lot 17 (VC 5)	Downslope >0-5º	Woodland	15 m	Future medium density residential development within proposed Lot 17 will require a minimum APZ of 15 m. Lakeside Parade will provide an APZ exceeding this size.
Lot 19 (Village 12)	Downslope >0-5º	Woodland	15 m	Future subdivision or housing within proposed Lot 19 will require a minimum APZ of 15 m. Lot 19 will be able to accommodate an APZ of this size.
Lot 15 (VC 6)	Downslope >0-5º	Woodland	PBP does not require a specific APZ where the existing separation distance is >100m to the nearest hazard.	
Lot 20	Downslope >0-5º	Woodland	PBP does not require an APZ for the intended future use of proposed Lot 20 (lake, open space and managed landscape).	

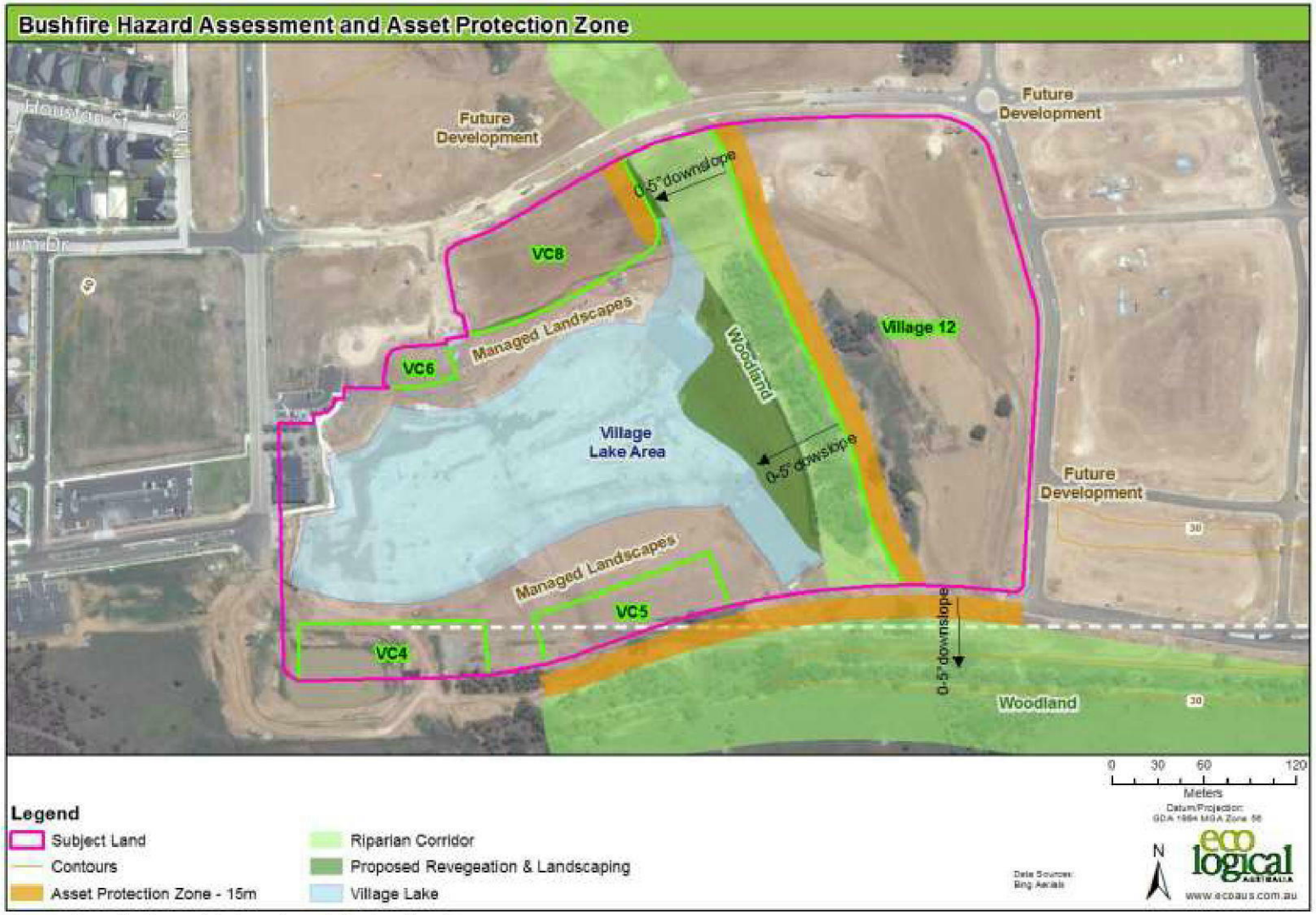

Figure 3: Bushfire hazard analysis and future Asset Protection Zones

4 Bushfire Attack Levels

A Bushfire Attack Level (BAL) map has been prepared for proposed Lots 14, 15, 16, 17, and 19 (see **Figure 4**). The map was prepared in accordance with the PBP Acceptable Solution (deemed-to-satisfy) method, which is to apply BALs based on the vegetation and slope assessment methodology within PBP and Table 2.4.2 (Method 1) of *AS 3959-2009 Construction of buildings in bushfire-prone areas* (Standards Australia 2009).

The BAL map indicates the areas potentially affected by the various AS 3959 BALs. Construction in these areas will need to comply with the respective construction requirements. The BALs have been mapped based on an understanding of the future revegetation within the riparian corridors.

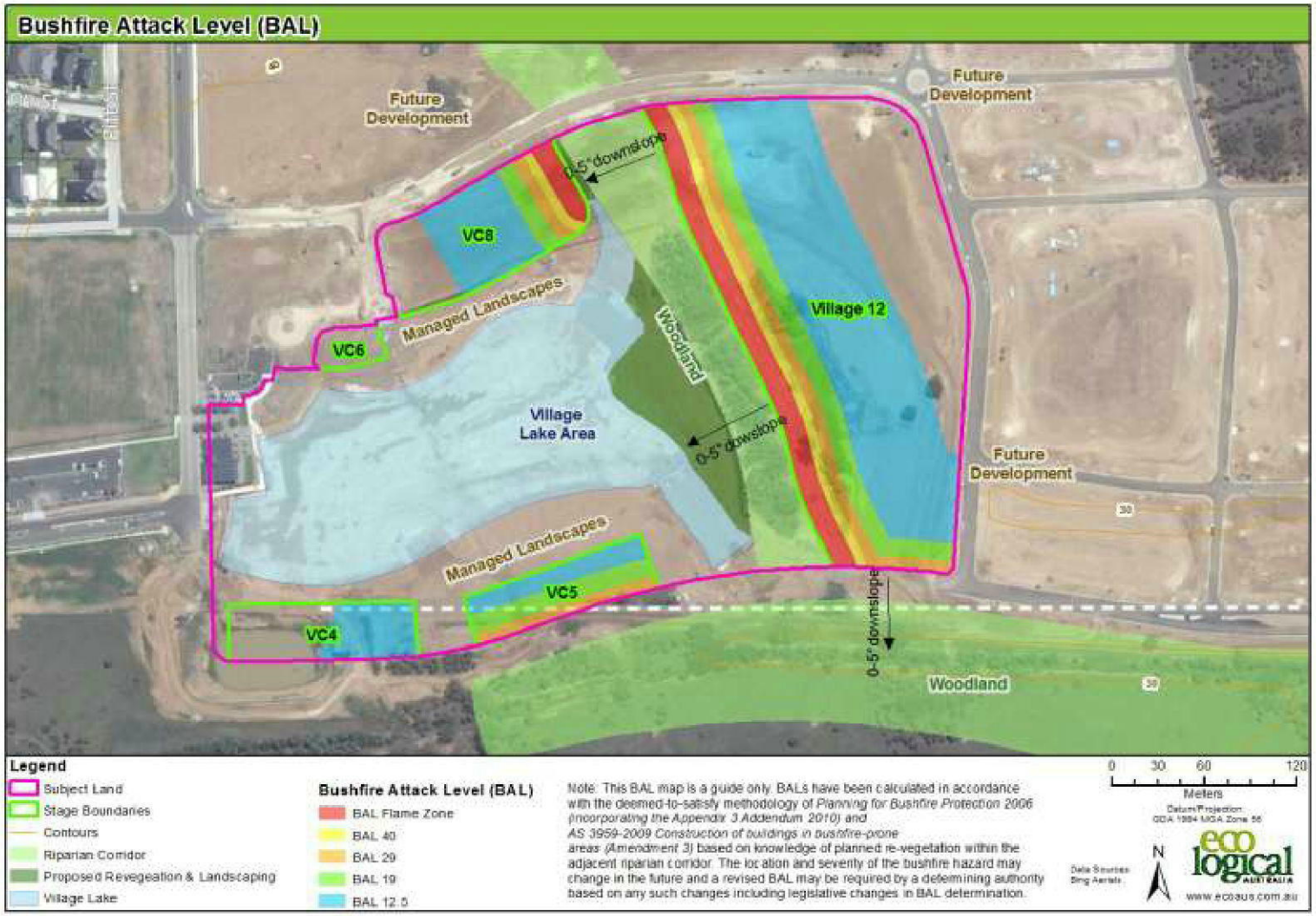

Figure 4: Bushfire Attack Levels (BALs)

5 Access and egress

Proposed Lots 14, 15, 16, 17 and 19 will front public roads (see **Figure 2**) with linkages throughout the remainder of the Jordan Springs community. The surrounding public road layout complies with PBP.

The subdivision proposal does not involve the creation of roads. Any future internal road layout should comply with the acceptable solutions of PBP for the design and construction of public roads as listed in **Table 2**. PBP also requires access to the bushfire hazard interface (perimeter of the riparian corridor). Although PBP prefers a public perimeter road at the bushland interface, it is acceptable in some cases not to have a continuous public road. The acceptability of which is determined on a case-by-case basis and reasoning to support this approach is usually based on a combination of risk factors developed within an alternate solution.

Table 2: Performance criteria for proposed public roads

Performance Criteria	Acceptable Solutions
The intent may be achieved where:	
▪ 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
▪ 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) ▪ 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 and minimal in number to allow for rapid access and egress ▪ the minimum distance between inner and outer curves is 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	▪ 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
▪ roads that are clearly sign posted (with easy distinguishable names) and buildings / properties that are clearly numbered	▪ public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression ▪ 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
▪ there is clear access to reticulated water supply	▪ 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 ▪ 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 does not obstruct the minimum paved width	▪ 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 ▪ public roads directly interfacing the bush fire hazard vegetation provide roll top kerbing to the hazard side of the road

6 Utilities

The subdivision proposal does not involve construction or the installation of utilities. These will be subject to future development applications.

6.1 WATER SUPPLY

A future development application will need to demonstrate the proposal to install a reticulated water supply compliant with Section 4.1.3 of PBP. The provisions include:

- Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads;
- Fire hydrant spacing, sizing and pressures comply with *AS 2419.1 – 2005 Fire hydrant installations - System design, installation and commissioning*. 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;
- 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.

6.2 GAS AND ELECTRICAL SUPPLIES

A future development application will need to demonstrate the adequate installation of gas and electricity compliant with Section 4.1.3 of PBP. The provisions include:

- Electricity should be underground wherever practicable, otherwise no part of a tree should be closer to a powerline than the distance specified in "Vegetation Safety Clearances" issued by Ausgrid (NS179, December 2010); and
- Any gas services are to be installed and maintained in accordance with *AS/NZS 1596:2008 The storage and handling of LP Gas* (Standards Australia 2008).

7 Statement of compliance

This assessment demonstrates that the proposal to subdivide Lot 1 DP 1179653 into seven super lots complies with the PBP Acceptable Solutions for the subdivision of bushfire prone land, and hence satisfies the aim and objectives of PBP. The proposal does not involve construction or the creation of residential lots therefore there are no specific requirements or recommendations for the issue of a Bush Fire Safety Authority (BFSA).

The intended future use of the super lots consists of residential subdivision, medium density housing, riparian zone, lake precinct and managed open space. Development applications for these future lots and uses will need to address the relevant specifications and requirements of PBP for each use. This assessment provides a guide on the likely requirements for each intended use. These are as follows:

- Asset Protection Zones : Section 3 – **Table 1** and **Figure 3**
- Construction standards(BALs): Section 4 – **Figure 4**
- Access: Section 5 – **Table 2**
- Utilities: Section 6

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

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