Bringelly Road Business Hub State Significant Development (SSD 6324)

Bushfire Assessment

Prepared for
Western Sydney Parklands Trust

18 November 2014

DOCUMENT TRACKING

Item	Detail
Project Name	Bushfire Protection Assessment: Bringelly Road Business Hub
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1 Property and proposal

Name:	Bringelly Road Business Hub		
Street or property name:	Bringelly Road		
Suburb, town or locality:	Horningsea Park/Leppington	**Postcode:**	2171
Lot and DP:	Lots 1-5 and 10-13 DP 29104, Lot 8 DP 1156767, Lot 5 ad 21-22 DP 19406 and Lots 1-2 DP 876884		
Local Government Area:	Liverpool City Council		
Type of development:	Subdivision and site development works		

1.1 Description of proposal

Western Sydney Parklands Trust commissioned Eco Logical Australia Pty Ltd (ELA) to prepare a bushfire protection assessment (BPA) for the subdivision and development of the Bringelly Road Business Hub (hereafter referred to as the subject land).

The proposal is State Significant Development under Part 4 (Division 4.1) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). In accordance with the specific matter 14: Bush Fire Risk of the Director General Requirements (DGRs), this report assesses the level of hazard posed to future development and how hazards may change as a result of development. In particular it addresses the requirements of *Planning for Bush Fire Protection 2006* including the provision of access and water supply for fire fighting purposes.

The proposed development will involve:

- the subdivision of the site into 8 lots for commercial purposes
- bulk earthworks including clearing of vegetation
- the construction and delivery of site services and infrastructure
- development of internal access roads
- estate landscaping.

1.2 Location and description of subject land

The subject land is located in the Western Sydney suburb of Leppington within the Western Sydney Parklands as shown in **Figure 1**. It is located within the area bounded by the proposed realignment of Bringelly Road to the south, Stuart Road and Bedwell Park to the north and privately-owned land to the east.

Figure 3 shows the subject land and the location of the proposed subdivision in relation to the nearest bush fire prone vegetation.

Figure 3 shows the proposed development.

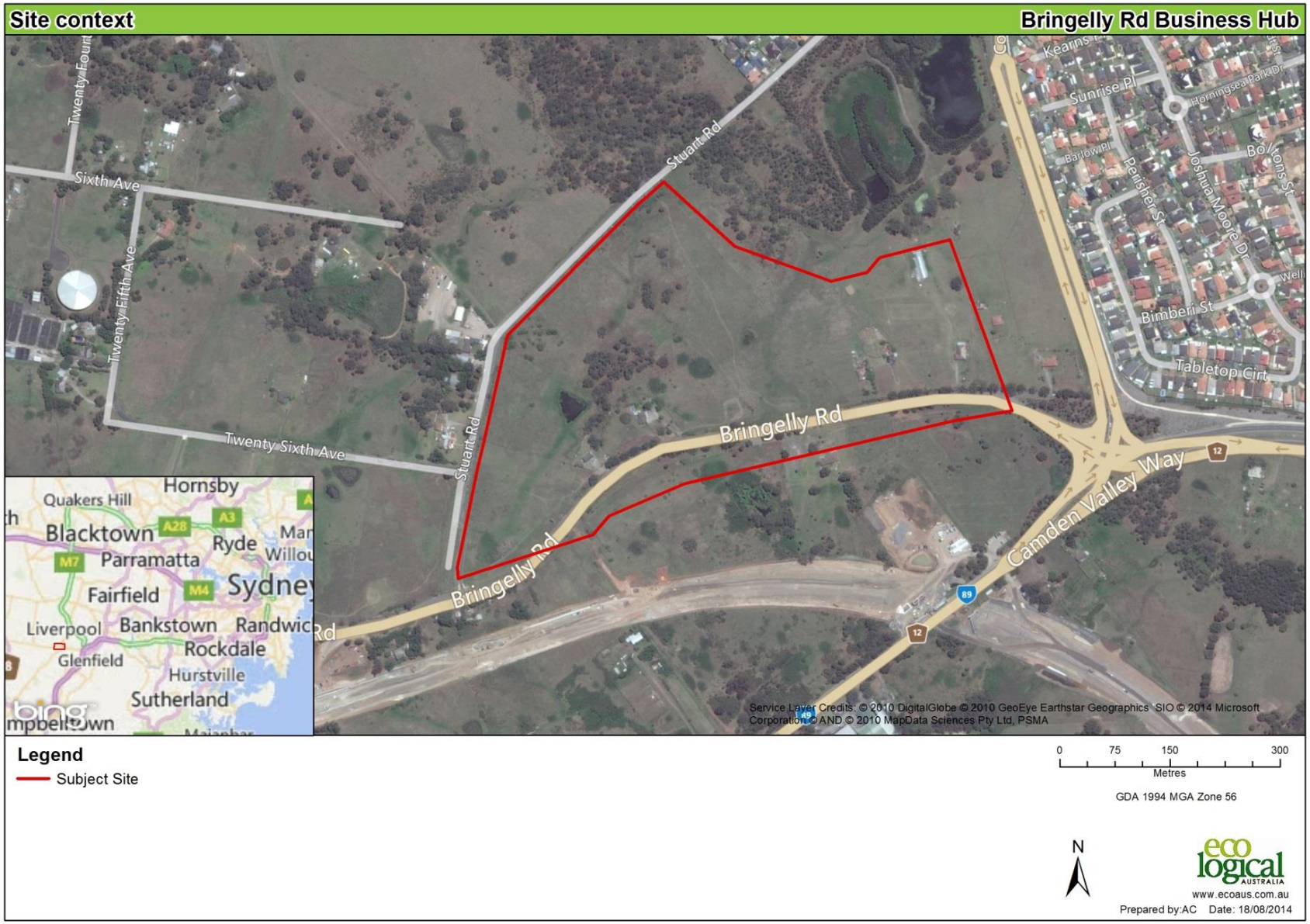


Figure 1: Study area

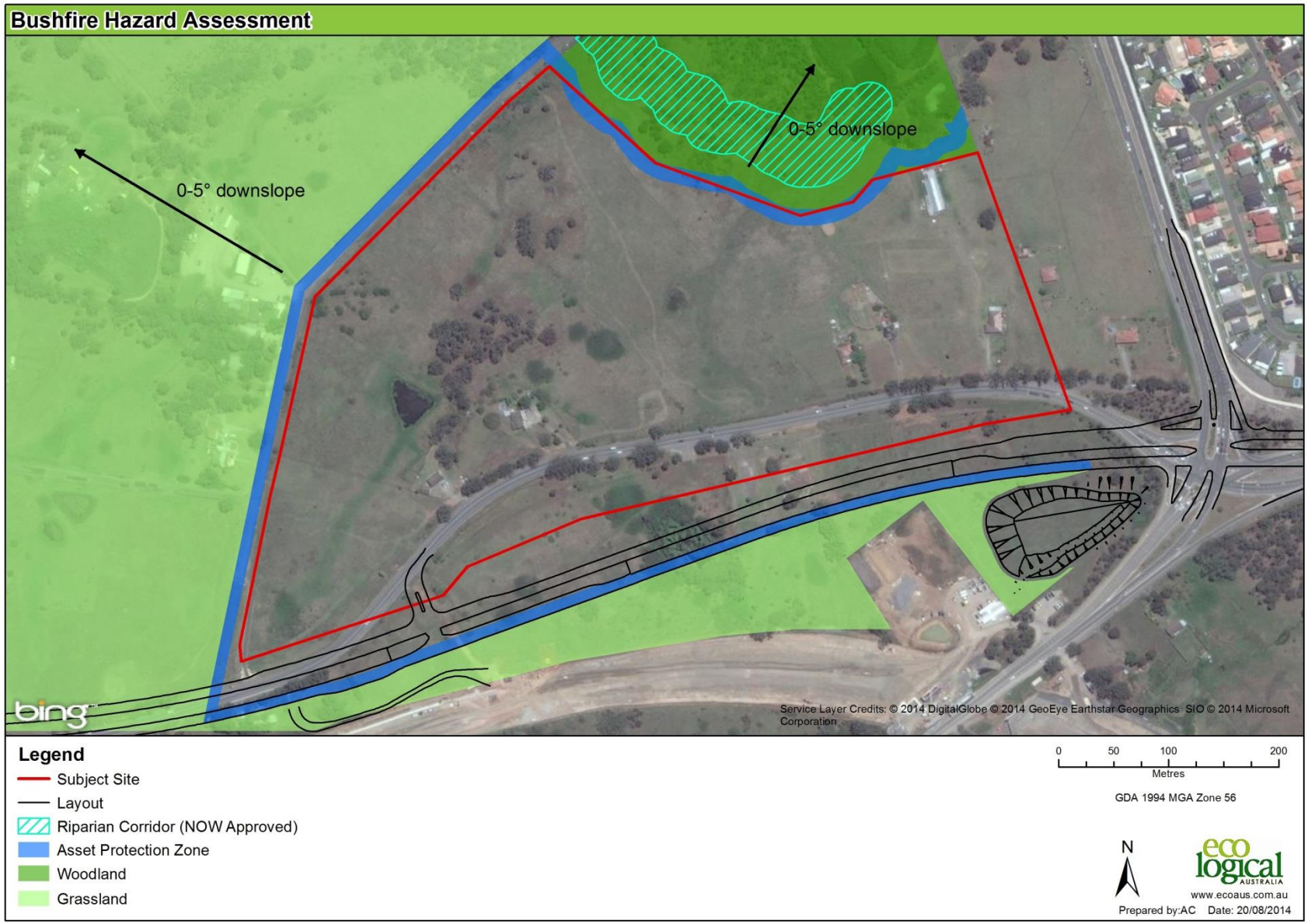
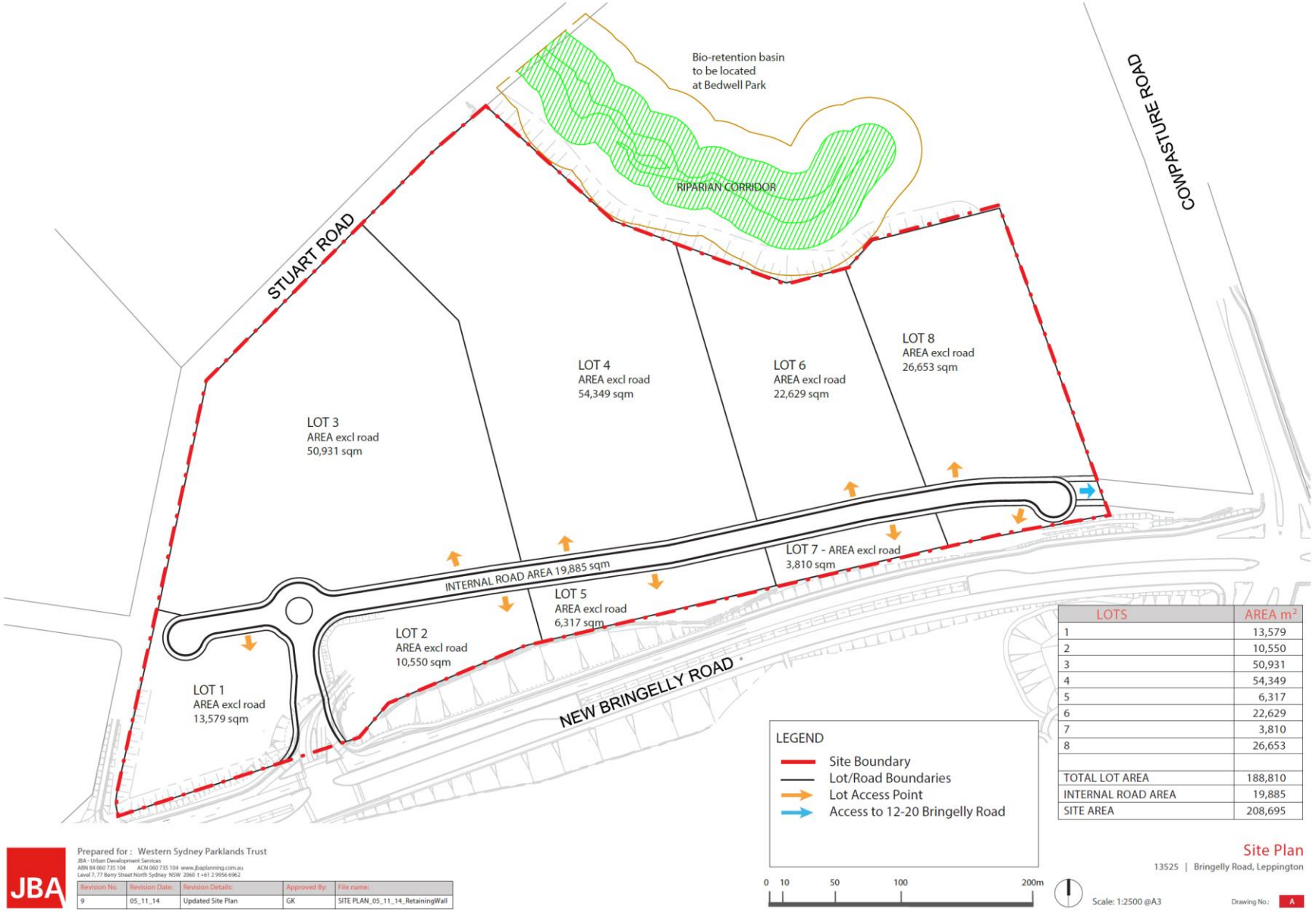


Figure 2: Bushfire Hazard influencing the proposed development



LOTS	AREA m²
1	13,579
2	10,550
3	50,931
4	54,349
5	6,317
6	22,629
7	3,810
8	26,653
TOTAL LOT AREA	188,810
INTERNAL ROAD AREA	19,885
SITE AREA	208,695

Figure 3: Development plan

2 Bushfire threat assessment

The subject land is identified as bush fire prone land by Liverpool City Council. As the proposal does not involve residential subdivision, the provisions of Section 100B of the *Rural Fires Act 1997* do not apply. The following assessment is prepared in accordance with *Planning for Bush Fire Protection 2006* (RFS 2006), herein referred to as PBP.

BCA Class 5, 6, 7, 8 and 10 buildings (which include offices, factories, warehouses and other commercial or industrial facilities) do not have specific bushfire performance requirements under the BCA and as such building construction standards under AS 3959 'Construction of Buildings in Bushfire Prone Areas' (Standards Australia 2009) do not apply as a set of deemed to satisfy provisions. The general fire safety constructions provisions within the BCA are taken as acceptable solutions, but the aim and objectives of PBP apply in relation to other matters such as access, water and services, emergency planning, and landscaping/vegetation management.

The objectives of PBP for this type of development are:

- Afford occupants of any building adequate protection from exposure to bushfire;
- Provide for defendable space to be located around buildings;
- Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;
- Ensure that safe operation access and egress for emergency service personnel and residents is available;
- Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in the asset protection zone (APZ); and,
- Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bushfire fighting.

2.1 Vegetation types

In accord with PBP the predominant vegetation class has been calculated for a distance of at least 140 m from the proposed development. The predominant vegetation and effective slope assessments are shown in **Table 1**.

The site predominantly consists of cleared grassland areas with scattered trees. Further clearing of vegetation will occur as a result of the proposed development.

The vegetation that would be considered the bushfire hazard lies to the north and north- west of the subject land and is Shale Plains Woodland (SHW) and Shale Hills Woodland (SPW) as seen in **Figure 2**. Both SPW and SHW are identified as Cumberland Plain Woodland which is a Grassy Woodland in accordance with page 310 of Keith (2006). For the purposes of applying PBP, the vegetation is categorised as 'woodland'.

2.2 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 proposed development. This assessment was made with a topographic map with 10 m contour intervals. The land is gently sloping with the steepest slope within the PBP slope class of '>0-5 degrees downslope'.

3 Asset protection zones

Table A2.4 of PBP has been used to determine the width of required Asset Protection Zone (APZ) for each proposed lot 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]	Proposed APZ	Comment
North and north-west	>0-5° downslope	Woodland	15 m	15 m	APZ to be provided within lot boundaries
West	>0-5° downslope	Grassland	10 m	10 m	Provided by Stuart Road
South	>0-5° downslope	Grassland and managed land	10 m	10 m	Provided by Bringelly Road
All other directions	Residential development				

[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 PBP.

3.1 APZ considerations

To satisfy the objectives of PBP for commercial development, it is proposed to provide an APZ of a size sufficient to provide a 'defendable space'. PBP defines 'defendable space' as "an area within the APZ that provides an environment in which a person can undertake property protection after the passage of a bushfire within some level of safety". This relies on the high standard of construction (with respect to bushfire protection) inherent within commercial buildings common to employment lands. A minimum defendable space of 10 m is usually recommended in these instances.

4 APZ maintenance plan

Future landscaping within the site is to be as follows:

- 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.

5 Construction standard

As the future use of the subject land will be for commercial or service type buildings *Australian Standard AS 3959-2009 'Construction of buildings in bushfire-prone areas'* (Standards Australia 2009) is unlikely to apply to future construction. However future buildings within 100 m of the bushfire hazard should incorporate ember protection consistent with the requirements of BAL 12.5.

6 Utilities and access

6.1 Water supply

The subject land will be serviced by reticulated water. The furthest point from any future buildings 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 comply with the following acceptable solutions within Section 4.1.3 of PBP:

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

6.2 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 *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).

6.3 Access

6.3.1 Public roads

The proposed lots are accessed from the realigned Bringelly Road which is compliant with all of the PBP design requirements for public roads. We have been advised that there is potential for the proposed internal roads to be designed as public roads against a future appeal that Council will take ownership of them. In order to meet the requirements for public roads they will need to comply with the PBP design requirements outlined in **Table 2**.

Table 2: Performance criteria for proposed public roads*[1]

Performance Criteria	Acceptable Solutions	Complies
The intent may be achieved where:		
firefighters are provided with safe all weather access to structures (thus allowing more efficient use of firefighting resources)	1. public roads are two-wheel drive, all weather roads	1 Can comply
public road widths and design that allows safe access for firefighters while residents are evacuating an area	2. 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) 3. the perimeter road is linked to the internal road system at an interval of no greater than 500 metres in urban areas 4. traffic management devices are constructed to facilitate access by emergency services vehicles 5. public roads have a cross fall not exceeding 3 degrees 6. 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 7. curves of roads (other than perimeter roads) are a minimum inner radius of six metres 8. 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 9. there is a minimum vertical clearance to a height of four metres above the road at all times	2 & 3 Perimeter roads are not required 4 Can comply 5 Can comply 6 Dead end roads will have adequate turning areas. 7-9 Can comply
the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles	10. 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	10 N/A
roads that are clearly sign posted (with easy distinguishable names) and buildings / properties that are clearly numbered	11. public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression 12. 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	11&12 Can comply

Performance Criteria	Acceptable Solutions	Complies
there is clear access to reticulated water supply	13. 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 14. 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	13&14 Can comply
parking does not obstruct the minimum paved width	15. 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 16. public roads directly interfacing the bush fire hazard vegetation provide roll top kerbing to the hazard side of the road	15&16 Can comply

*[1] PBP page 21

6.3.2 Internal roads

If the roads are only to be internal access roads as part of the development with no intention of proposing future Council ownership then the access roads are to comply with the PBP design requirements outlined in **Table 3**.

Table 3: Performance criteria for proposed internal roads*[2]

Performance Criteria	Acceptable Solutions	Complies
The intent may be achieved where:		
Internal road widths and design enable safe access for emergency services and allow crews to work with requirement about the vehicle	1. Internal roads are two-wheel drive, all weather roads 2. Internal perimeter roads are provided with at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb), and shoulders on each side, allowing traffic to pass in opposite directions 3. Roads are through roads. Dead end roads are not more than 100 metres in length from a through road, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end 4. Traffic management devices are constructed to facilitate access by emergency services vehicles 5. A minimum vertical clearance of four metres to any overhanding obstructions, including tree branches is provided 6. Curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress 7. The minimum distance between inner and outer curves is six metres. 8. Maximum grades do not exceed 15 degrees and an average grade of not more than 10 degrees 9. Cross fall of the pavement is not more than 3 degrees 10. Roads do not traverse through a wetland or other land potentially subject to periodic inundation (other than flood or storm surge) 11. Roads are clearly sign posted bridges clearly indicated load rating 12. The internal road surfaces and bridges have a capacity to carry fully-loaded fire fighting vehicles (15 tonnes)	1-12 Can comply

*[2] PBP page 35

7 Assessment of environmental issues

A Flora and Fauna Assessment has been undertaken by ELA for the subject land. This assessment determined that the proposed development is unlikely to significantly impact upon any threatened ecological communities, flora or fauna (including migratory) species.

At the time of assessment, there were no known significant Aboriginal relics that will affect or be affected by the bushfire protection measures in this report.

As a Stand Significant Development (SSD) under Part 4 (Division 4.1) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), the Department of Planning and Environment is the determining authority for this development and they will assess more thoroughly any potential environmental and heritage issues.

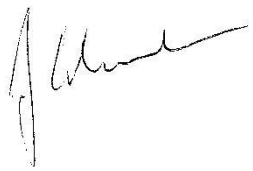
8 Recommendations and conclusion

The proposal consists of a new subdivision for commercial development that satisfies the specific objectives of PBP for non-residential development.

The following recommendations have been made within this report:

- Asset protection zones are to be provided in accordance with **Section 3**.
- The vegetation and fuels within the subject land are to be maintained as outlined in **Section 4**.
- Construction of future buildings is to address the requirements of **Section 5**.
- Hydrant water supply to be installed in accordance with **Section 6**.
- A 0.5 m clearance is to be maintained between any above ground power line conductors and tree branches (**Section 6**).
- Any gas services are to be installed and maintained in accordance with AS/NZS 1596:2008 (**Section 6**).
- Proposed roads are to comply with **Section 6**.

In the author's professional opinion the bushfire protection measures outlined in this assessment comply with *Planning for Bush Fire Protection 2006* and addresses the requirements of Section 79BA of the *Environmental Planning and Assessment Act 1979*.



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