Bushfire Protection Assessment

Proposed Industrial Rezoning – 380 Motorway Link, Wallarah

Prepared for
Darkinjung Local Aboriginal Land Council (LALC)

2 May 2018

DOCUMENT TRACKING

Item	Detail
Project Name	Bushfire Protection Assessment: Wallarah Industrial Rezoning
Project Number	16HNG_6137
Project Manager	Daniel Copland (FPAA BPAD Certified Practitioner No. BPD-L3-28853)
Prepared by	Daniel Copland
Reviewed by	Bruce Horkings (FPAA BPAD-A Certified Practitioner No. BPAD29962-L3)
Approved by	Bruce Horkings
Status	FINAL
Version Number	3
Last saved on	2 May 2018

This report should be cited as 'Eco Logical Australia May 2018. Bushfire Protection Assessment: Proposed Industrial Rezoning – 380 Motoway Link, Wallarah. Prepared for Darkinjung LALC.'

Contents

List of figures

List of tables

1 Introduction

1.1 Description of proposal

Darkinjung Local Aboriginal Land Council (LALC) (the client) commissioned Eco Logical Australia Pty Ltd (ELA) to prepare a Bushfire Protection Assessment (BPA) for a proposed industrial rezoning of a number of large allotments in Wallarah.

The sites are currently zoned as a mix of Environmental Conservation (E2) and Transition (RU6). Under the proposed rezoning, the Central Coast Council Local Environmental Plan (LEP) will be amended to allow for light industrial / commercial uses.

The proposed industrial rezoning within the subject site will be considered in accordance with the requirements of *Planning for Bush Fire Protection 2006* (PBP) (NSW RFS 2006).

1.2 Subject site

The subject site is located approximately 10 km to the north-east of the Wyong town centre, within the Central Coast Council area. The subject site is predominantly vegetated with no existing rural residential dwellings / structures present. The vegetated areas of the subject site has been previously disturbed and utilised for recreation uses, as such there is a network of tracks and trails present throughout the subject site, as shown in **Figure 1**.

The subject site consists of three (3) large land parcels, being:

- 380 Motorway Link, Wallarah; consisting of:
    - Lots 1-3 DP1156997

The subject site comprises one combined 'parcel' of land, bound by the Motorway Link road and Main Northern Railway. The Motorway Link road provides the main access to the existing lots and local roads / proposed rezoning area.

The entirety of the vegetation in the site will be cleared for future development purposes.

1.2.1 Aim and structure of report

ELA has been engaged to investigate the current bushfire risk of the subject site and the appropriate combination of bushfire protection measures to mitigate this risk in support of the rezoning. Specifically, this analysis responds to the requirements of PBP, *Australian Standard AS 3959 Construction of buildings in bushfire-prone areas* (AS3959) and the requirements of Council's Local Environmental Plan (LEP). This report details the outcomes of these investigations in the context of the proposed land use.

The overarching objective of this report is to identify all potential bushfire constraints to the future urban development of the subject site. The results of this assessment will directly support the preparation of necessary planning documentation. As such the objectives of this report are to:

- Ensure the statutory requirements for bushfire protection are identified and can be adequately met; and
- Implement suitable management frameworks for bushfire protection, whilst having consideration of the vegetation and ecological issues for the subject site, enabling long term conservation and management of these environmental values while facilitating safe urban development outcomes.

This report assesses the potential bushfire hazard across the subject site, in the context of existing vegetation (see **Figure 2** for vegetation coverage). It then identifies planning requirements as per PBP. Management of future Asset Protection Zones (APZ) and environmental areas are also considered.

Future subdivision of land and the construction of buildings will require an assessment against PBP. As such the provisions of this report are to be considered in the planning and design of any development following the rezoning process.

It is important to note that the new Draft *Planning for Bush Fire Protection* is likely to be released in April this year, with formal gazettal expected in late 2018. This revised framework is likely to modify the identified requirements noted within this report.

1.3 Legislative requirements

1.3.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is the principal planning legislation for NSW, providing a framework for the overall environmental planning and assessment of development proposals. A variety of other legislation and environmental planning instruments, such as the *Water Management Act 2000* and *Rural Fires Act 1997* (RF Act), are integrated with the EP&A Act.

1.3.2 Rural Fires Act 1997

Bushfire suppression and management is regulated by the RF Act. Both the EP&A Act and the RF Act were modified by the *Rural Fires and Environmental Assessment Legislation Amendment Act 2002* to enhance bushfire protection through the development assessment process. Key requirements of the RF Act include:

- The need for a bushfire safety authority to be issued by the RFS under section 100B of the RF Act for any development applications for subdivision (therefore considered integrated development); and
- All landowners to exercise a duty of care to prevent bushfire from spreading on or from their land under section 63 of the RF Act. This relates to the appropriate provision and maintenance of APZs, landscaping and any retained vegetation when developing land.

1.3.3 Direction 4.4 Planning for Bush Fire Protection

Direction 4.4 Planning for Bushfire Protection identifies matters for consideration for planning proposals that will affect, or are in proximity to land mapped as bush fire prone. In particular a planning proposal where development is proposed must:

- have regard to *Planning for Bush Fire Protection 2006* (PBP),
- provide an Asset Protection Zone (APZ) incorporating at a minimum:

  - an Inner Protection Area (IPA) bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and
  - an Outer Protection Area (OPA) managed for hazard reduction and located on the bushland side of the perimeter road,
- for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service (RFS). If the provisions of the planning proposal permit Special Fire Protection Purposes (as defined under section 100B of the RF Act), the APZ provisions must be complied with,
- contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks,
- contain provisions for adequate water supply for fire fighting purposes,
- minimise the perimeter of the area of land interfacing the hazard which may be developed,
- introduce controls on the placement of combustible materials in the Inner Protection Area.

Consideration must also be given to NSW RFS *Practice Note 2/12 Planning Instruments and Policies*. It is expected that the RFS, in its assessment of the proposal will consider the requirements of this Practice Note.

1.3.4 Planning for Bush Fire Protection 2006

Rezoning proposals require consultation with the NSW RFS as the lead agency for managing bushfire. As such the requirements of *Planning for Bush Fire Protection* (NSW RFS, 2006) are to be addressed. This includes having regard to the following planning principles of PBP:

- Provision of a perimeter road with adequate two way access which delineates the extent of the intended development;
- Provision, at the urban bushland interface, for the establishment of adequate asset protection zones for future housing;
- Specifying minimum industrial lot depths to accommodate asset protection zones for lots on perimeter roads;
- Minimising the perimeter of the area of land, interfacing the hazard, which may be developed;
- Introduction of controls which avoid placing inappropriate developments in hazardous areas; and
- Introduction of controls on the placement of combustible materials in asset protection zones.

Figure 1: Overview of Subject Site / Bush Fire Prone Land status (extract from Central Coast Council)

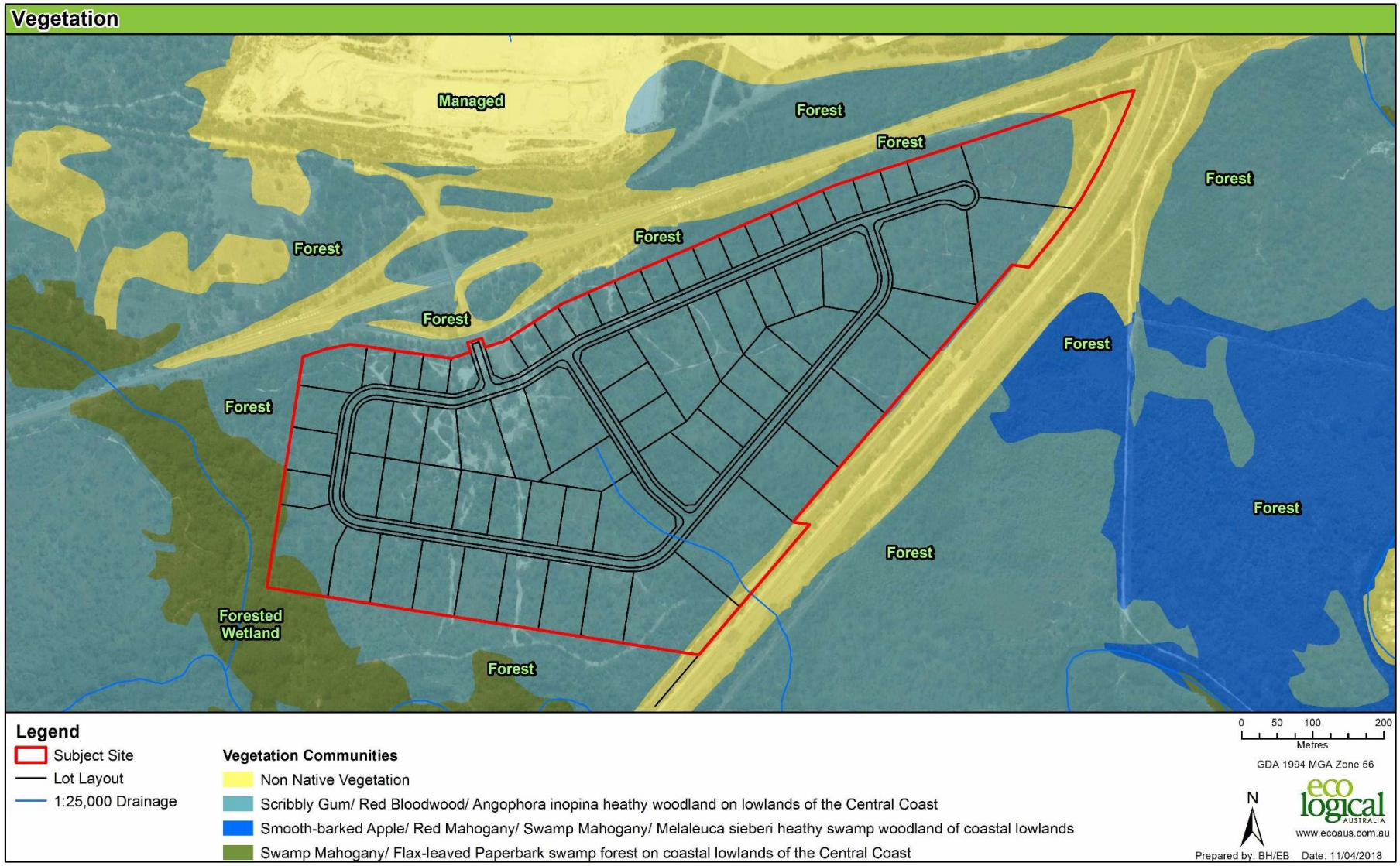

Figure 2: Vegetation Communities surrounding the Subject Site

2 Bushfire threat assessment

2.1 Assessment Overview

An assessment of the bushfire hazard is necessary to determine the application of bushfire protection measures such as Asset Protection Zone (APZ) location and dimensions. This section provides a detailed account of the vegetation communities (bushfire fuels) and the topography (effective slope) that combine to create the bushfire hazard that may affect bushfire behaviour impacting the subject site.

The concept of bushfire risk, as influenced by fire history and current and past bushfire issues, has little bearing on the determination of bushfire protection strategies for rezoning and future development within the subject site. This is due to the fact that PBP assesses bushfire protection based purely on vegetation and slope (i.e. hazard and not risk), making the assumption that a fire may occur in any patch of bushland at a worst-case scenario (based on a set design fire).

The proposed development will provide further asset protection for existing development surrounding the subject site by creating increased separation from bushfire hazards.

Strategic regional bushfire risk management frameworks, such as the Wyong Bush Fire Risk Management Plan (BFRMP) (WBFMC 2011) should be updated following development of the rezoning subject site (**Figure 3**).

2.2 Bushfire protection measures

PBP requires the assessment of a suite of bushfire protection measures that in total afford an adequate level of protection. The measures required to be assessed for rezoning are listed in **Table 1** and are discussed in detail in sections 2-5 of this report. The subject site has the cabability to accommodate the required bushfire protection measures and achieve the Direction 4.4 objectives and RFS requirements.

Table 1: PBP bushfire protection measures

Bushfire Protection Measure	Considerations
Asset Protection Zones (APZ)	Location and dimension of APZ setbacks from vegetation including prescriptions of vegetation management within the APZ.
Access	Assessment to include access and egress in and out of a developable area such as alternate access, operational response and evacuation options. APZ perimeter access to be considered as is design standards of public roads and any fire trails.
Water supply and other utilities	List requirements for reticulated water supply and hydrant provisions, and any static water supplies for fire fighting.
Building construction standards	Provide a guide on the application of construction standards for future buildings.

2.3 Vegetation types

In accord with PBP, the predominant vegetation class for retained vegetation has been assessed within the proposed development and for a distance of at least 140 m out from the proposed development. The predominant vegetation and effective slope assessments are shown **Table 3**.

Vegetation mapping shows the following vegetation communities present within and adjoining the subject site, and is further detailed within **Table 2** below.

Table 2: PBP bushfire protection measures

Vegetation Community	Equivalent PBP / Keith Vegetation Class – Hazard Structure
Scribbly Gum / Red Bloodwood / Angophora inopina heathy woodland on lowlands of the Central Coast	Forest
Smooth-barked Apple / Red Mahogany / Swamp Mahogany / Melaleuca sieberi heathy swamp woodland of coastal lowlands	Forest
Swamp Mahogany / Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Forested Wetland

The remaining vegetation within the vicinity of the subject site consists of land that is cleared and managed from other rural / industrial uses.

2.4 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 subject site where the vegetation was found (measuring the worst-case scenario). This assessment was made with 2 m contours and applicable slope classes are listed in **Table 3** and shown in **Figure 3**.

The land slopes gently down in the majority of directions, with a small area of effective upslope are situated to the north of the subject site, adjacent to the Motorway Link road. There is some localised variation in slopes across the site and within the bushfire hazard, but the effective slope generally falls within the range >0-5 degrees downslope, as shown in **Figure 3**.

Table 3: PBP slope classes

Upslope or Downslope	PBP Slope Class
Upslope / Flat Land	Flat land and all upslope land leading away from the development
Downslope	>0-5 degrees downslope leading away from the development

3 Asset protection zones

3.1 APZ Assessment

Table A2.4 of PBP has been used to indicate the required APZ dimensions for future industrial development within the subject site using the vegetation and slope data identified in **Section 2**. The APZ calculation is tabulated below and shown in **Figure 3**.

It is currently considered best practice to provide an APZ dimension that achieves a building construction standard under *AS 3959-2009 Construction of buildings in bushfire-prone areas* (Standards Australia 2009) of Bushfire Attack Level (BAL)-29 at the maximum.

All commercial / industrial development is required to be assessed in accordance with the aims and objectives of PBP – with lesser APZ requirements permitted (10m) provided that safe operational access in place around the buildings (minimum defendable space), and that the construction proposed is non-combustible - in accordance with the provisions of the BCA for constructing buildings in bushfire prone areas.

Table 4 lists the current minimum APZ (defendable space) and best practice APZ related to BAL-29 (refer to **Section 4** for more information on AS 3959-2009).

It is important to note that the APZ calculations quoted in this assessment are indicative only and have been determined at a landscape scale. This level of detail is suitable for a rezoning assessment where the aim is to demonstrate whether a parcel of land can accommodate the bushfire hazard, the expected APZ and future development. The final APZ dimensions for any future subdivision or development depends on the accuracy of a site-specific assessment. The APZ dimensions quoted in this assessment should not be relied on to approve a future subdivision; they may be used as a guide only.

Table 4: Threat assessment, APZ and category of bushfire attack

Direction from envelope	Slope[1]	Vegetation[2]	PBP required APZ[3]	BAL-29 APZ (AS 3959-2009) [4]	Comments
Various	Flat / Upslope	Forest	10 m (Defendable Space)	25 m	Provided within property boundaries and adjoining managed road reserve
Various	>0-5^0 downslope	Forest	10 m (Defendable Space)	32 m	Provided within property boundaries and adjoining managed road reserve
South west corner / interface	>0-5^0 downslope	Forested Wetland	10 m (Defendable Space)	32 m	Provided within property boundaries
All other directions	Managed land				

[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

[4] Assessment according to Table 2.4.2 of AS 3959-2009

3.2 APZ maintenance plan

The following fuel management specifications will need to be considered in the provision of APZ within the subject site:

- No tree or tree canopy is to occur within 2 m of the building 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.

3.3 Staging of development for APZ

Staging of future development should give consideration to the provision of an APZ to manage any potential bushfire hazard within adjoining future development areas to ensure that future buildings are not impacted by unnecessary construction standards. This could occur through the provision of temporary APZ for earlier stages which will be automatically extinguished once the land where the APZ operates is developed and the hazard is permanently removed.

3.4 Perimeter access within APZ

An APZ may require a perimeter road depending on the significance of the bushfire threat. The assessment of perimeter access is provided in the following **Section 5.4**.

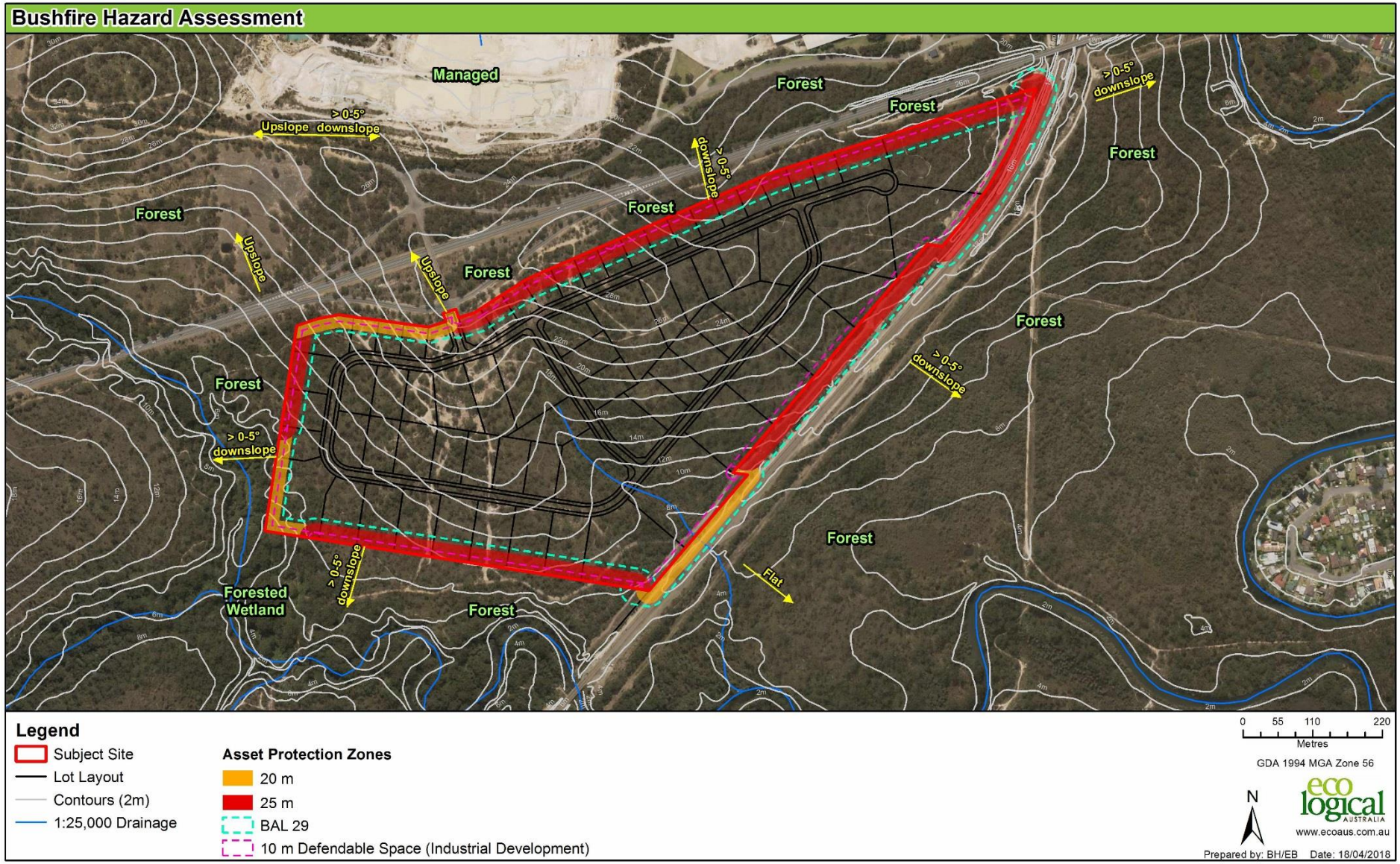

Figure 3: Bushfire Hazard Assessment & Asset Protection Zones (APZ)

4 Construction standard

The application of building construction standards for bushfire protection under *AS 3959-2009 Construction of buildings in bushfire-prone areas* (Standards Australia 2009) is to be considered at the development application stage for individual buildings. An assessment under AS 3959-2009 is not required at the rezoning or subdivision stages. The following is a brief introduction on AS 3959-2009.

AS 3959-2009 contains six Bushfire Attack Levels (BAL), each with a prescribed suite of design and construction specifications aimed at preventing ignition during the passing of a bushfire front. The BAL are outlined below:

- **BAL-Low**: The threat does not warrant application of construction standards. Developments with BAL-Low are generally not within bushfire prone land (greater than 100 m from bushland);
- **BAL-12.5**: Addresses background radiant heat at lower levels and ember attack;
- **BAL-19**: Addresses mid-range radiant heat and ember attack;
- **BAL-29**: Addresses high range radiant heat and ember attack;
- **BAL-40**: Addresses extreme range of radiant heat and potential flame contact and ember attack; and
- **BAL-FZ**: Addresses construction within the flame zone. New subdivided lots are not permitted within the flame zone in NSW.

NSW has a minor variation to AS 3959-2009 which requires consideration in future development applications. The variation is contained within the document *PBP 2006* – addendum Appendix 3.

5 Utilities and access

5.1 Water supply

Future lots will likely be serviced by reticulated water infrastructure suitable for fire fighting purposes. The furthest point from any future buildings to a hydrant is to be less than 90 m (with a tanker parked in-line) in accordance with *Australian Standard 2419.1 – 2005 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 use a ring main system for areas with perimeter roads;
- Fire hydrant spacing, sizing and pressures comply with AS 2419.1 – 2005;
- 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 Electricity services

Electricity supply to / within the subject site should be located underground, as per Section 4.1.3 of PBP.

Where it is necessary for the electricity supply to / within the subject site to be located aboveground, the proposed overhead electrical transmission lines shall be compliant with Section 4.1.3 of PBP, subject to the following specifications:

- Lines with short pole spacing (30 metres) are required, unless crossing gullies, gorges or riparian areas; and
- No part of a tree is closer to a power line than the distance set out in accordance with the specifications in *'Guide for the Management of Vegetation in the Vicinity of Electricity Supply Infrastructure*' issued by the Industry Safety Steering Committee 3 (ISSC3 2016).

5.3 Gas services

Gas services (reticulated or bottle gas) shall be 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.

5.4 Access

All bushfire prone areas should have an alternate access or egress option. This is usually achieved by providing more than one public road into and out of a precinct. The need for an alternative road and its location depends on the bushfire risk, the density of the development, and the chances of the road being cut by fire. All precincts within the subject site should allow for an alternative public access road.

The proposed access arrangements within the subject site are in accordance with the intent and principles of PBP regarding the provision of safe access and egress for both residents and fire fighters.

5.4.1 Safe access and egress

All bushfire prone areas should have an alternate access or egress option. An internal road system supporting future development is to comply with Section 4.1.3 of PBP.

5.4.2 Road design and construction

Depending on the bushfire risk, all bushland interface areas containing an APZ for a significant bushfire hazard should feature a perimeter public road within the APZ. It is acceptable for some areas not to have a perimeter road or have a perimeter fire trail instead. These include areas of lower bushfire risk (such as grassland or low hazard remnants or areas where it may not be feasible to provide a continuous road due to the shape of the interface or the terrain. These areas should have some other access strategy such as regular access points and good access to a hydrant network.

Provision of a simple layout with perimeter roads and frequent direct access to the internal road system will provide sufficient access/egress in the case of an emergency. Public roads should provide safe

operational access to structures and water supply. Perimeter roads will be required at APZ bushland interface locations where a significant bushfire hazard exists. However, minor drainage corridors present a lower risk scenario and, therefore, may not require implementation of perimeter roads. Property access roads will also need to provide safe access for emergency services and provide protection to properties and occupants during a bushfire

The design details (PBP acceptable solutions) of public roads are shown in **Table 5**.

Table 5: Performance criteria for proposed public roads

Intent may be achieved where:	Acceptable solutions
• 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 • 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
• 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
• 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

Intent may be achieved where:	Acceptable solutions
• 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
• 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

6 Recommendations and conclusion

6.1 Recommendations

Bushfire hazard has been assessed across the subject site and found to be acceptable based on the ability to provide compliant Asset Protection Zones within the subject site. On the basis of this assessment, indicative APZ requirements have been mapped across the proposed rezoning area.

A number of strategies have been provided in the form of planning controls such that the risk from bushfire can be minimised and future rezoning or development approval processes can be streamlined. Further, it has been found that development of the anticipated land uses within the subject site, from a bushfire planning perspective, are considered suitable.

A number of strategies have been provided in this report such that the risk from bushfire can be mitigated. The main strategies suggested include:

- Ensure adequate setback from bushfire prone vegetation (APZs);
- Integrate non-combustible infrastructure within APZs such as roads, easements and parking areas. The majority of APZs should be contained within perimeter roads and front yard setbacks;
- Ensure adequate access and egress from the subject site through a well-designed road system;
- Consider the adequacy of water supply and the delivery of other services (gas and electricity);
- Provide temporary APZs during any staged development;
- Provide for effective and ongoing management of APZ; and
- Consider construction standards (AS 3959-2009) implications for future developments (25-32 metre APZ).

In relation to the furthering of the planning processes as they relate to the future uses of the subject site, it is considered appropriate that more detailed assessment and consideration of the relevant bushfire protection strategies should be undertaken at the Development Application stage. This further assessment should include a more comprehensive review of the road and lot layout and subsequent planning controls, to ensure they are well designed in terms of bushfire protection outcomes.

6.2 Statement of capability

This bushfire assessment demonstrates that the subject site is capable of accommodating future development and associated land use with the appropriate bushfire protection measures and bushfire planning requirements prescribed by s.117 (2) Direction 4.4 – '*Planning for Bush Fire Protection*' and PBP.

If further information is required, please contact the undersigned on 4302 1220.

Daniel Copland

Senior Bushfire Consultant

FPAA BPAD Level 3 Certified Practitioner No. BPD-L3-28853

References

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

Wyong Bush Fire Management Committee (WBFMC). 2011. *Bush Fire Risk Management Plan*. 18 July 2011. NSW.

ecological AUSTRALIA

ISO 14001 Environmental Management

AS/NZS 4801:2001 Occupational Health and Safety Management

ISO 9001 Quality Management

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

MELBOURNE
Level 1, 436 Johnston St
Abbotsford, VIC 3076
T 1300 646 131

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

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

MUDGEE
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

1300 646 131
www.ecoaus.com.au