

BUSHFIRE THREAT ASSESSMENT

FOR

HIGHWAY SERVICE CENTRE

AT

**600 MACLEAY VALLEY WAY,
KEMPSEY SOUTH, NSW**

Prepared for: Koby Development Consultants

December 2017



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1.0 Introduction

It is proposed that the above site be redeveloped into a Highway Service Centre type development. At the request of Koby Development Consultants (*the client*), Anderson Environment & Planning (AEP) have undertaken necessary investigations to prepare a Bushfire Threat Assessment (BTA) report addressing the proposed development.

This report is specifically intended to assess the bushfire protection measures required by the NSW Rural Fire Service's "*Planning for Bushfire Protection 2006*" (PBP), have considerations for the draft PBP 2017, and assess construction requirements of the proposed development in accordance with the provisions of the *Building Code of Australia – Volume 2, Edition 2010* and Australian Standard 3959-2009 (AS 3959) – "*Construction of buildings in bushfire-prone areas*".

While PBP lists service stations as a "Hazardous Industry" which should not be proposed on Bushfire Prone Land (BPL), RFS have clarified that, although undesirable, any application for such would be treated on its merits (RFS pers.comm). The key to gaining consent for a hazardous industry development within BPL is meeting all the aims of the draft 2017 PBP, with the following incorporated as far as possible into development design:

- Structures to be able to achieve Bushfire Attack Level (BAL) - 29 or less;
- Fuel tanks to be located as far from the hazard as possible, with preference for underground;
- Parking and other open hard stand areas to be placed as a buffer between bushfire hazard and any built structures; and
- Static water supply be available on site.

Assessment of the proposal has been made against these criteria within the report, along with other aspects of assessment as required for a standard BTA. Note that with the impending transition to application of the (now) draft PBP 2017, Asset Protection Zone and BAL rating setbacks have been calculated according to this document.

For the purposes of referencing, this document should be referred to as:

Anderson Environment & Planning (2017). *Proposed Development for Highway Service Centre at 600 Macleay Valley Way, Kempsey South, NSW*. Unpublished report for KDC, December 17.



2.0 Site Particulars

The proposed development is located at South Kempsey, NSW. Other details are as follows:

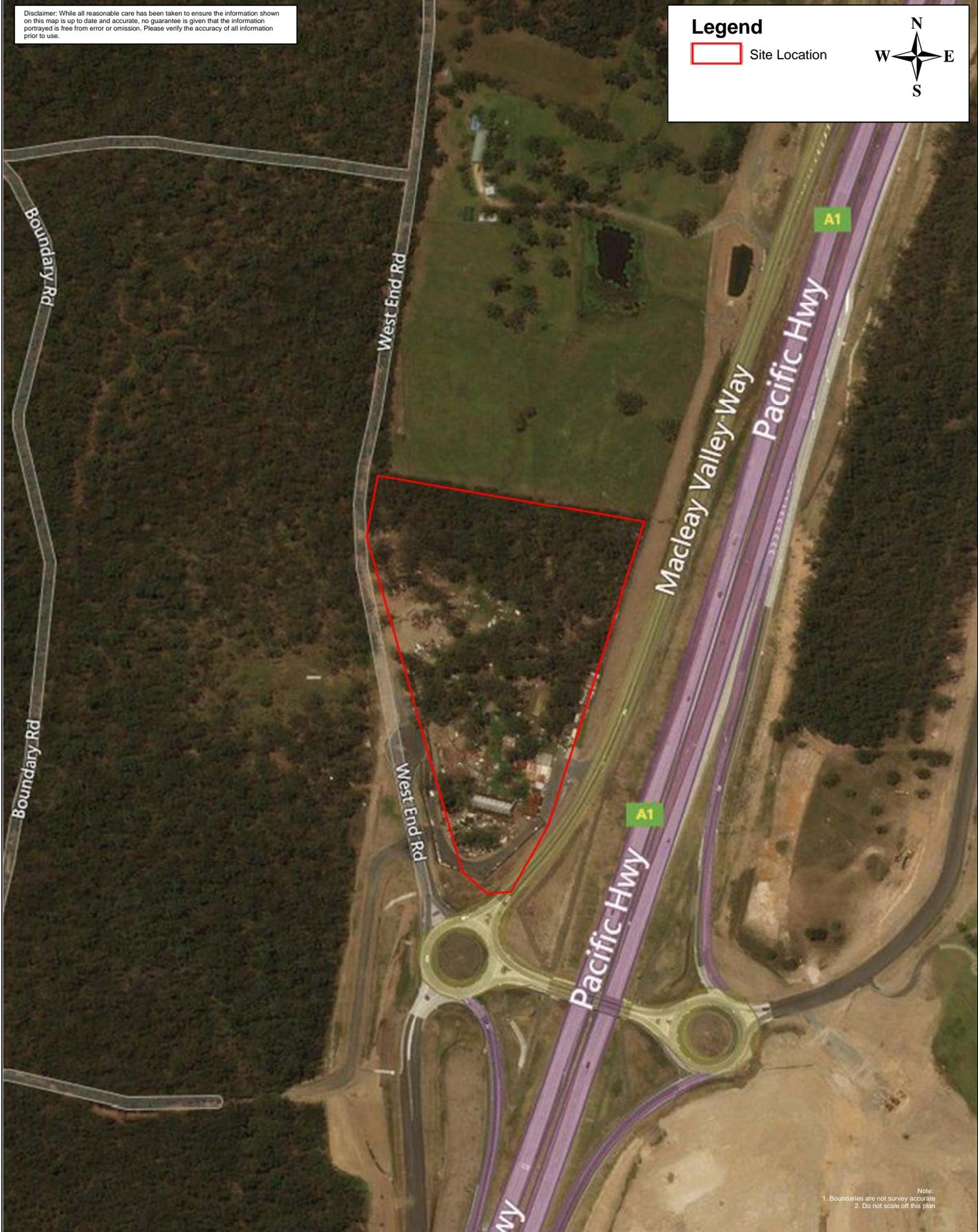
- **Address** – 600 Macleay Valley Way
- **LGA** – Kempsey.
- **Title Details** – Lot 200 DP 1177619.
- **Subject Site (Proposed Development Area)** – The proposal is for a Highway Service Centre occupying approx. 2.98ha, consisting of approx. 1.13ha of disturbed native vegetation and approx. 1.85ha of previously cleared lands.
- **Study Area** – Consists of the subject lot (approx. 3.92ha) plus the surrounding 140m (as required for proximate bushfire hazard assessment).
- **Zoning** – Under the Kempsey Local Environment Plan 2012 (the LEP), the study area is zoned RU2 – Rural Landscape.
- **Current Land Use** – A mosaic of temporary and permanent sheds, cleared areas apparently utilised for the storage of waste metal and scrap materials, and remnant native forest which has experienced various levels of disturbance.
- **Surrounding Land Use** – The site is bounded by:
 - North – cleared grazing land, a residence, farm sheds and associated buildings;
 - West and South-West - remnant native bushland 30m across West End Road;
 - South - Pacific Highway infrastructure (roundabout) and the convergence of West End Road, Macleay Valley Way and the Pacific Highway; and
 - East - Remnant native bushland approx. 130m across Pacific Highway.

Figure 1 depicts the extent of the site overlain on an aerial photograph of the locality.

Disclaimer: While all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Legend

 Site Location



Note:
1. Boundaries are not survey accurate
2. Do not scale off this plan



AEP

Title: Figure 1 - Site Location

Date: Dec 2017

Location: Kempsey, NSW

Client: KDC

Our Ref: 1635



3.0 Proposed Development

The proposal is for the construction of a Highway Service Centre, comprising service stations, retail outlets and restaurants and associated infrastructure.

Site design has been tailored to address RFS concerns regarding fuel tank and hard stand locations, among others.

A plan of the proposal is attached as **Figure 2**.

The far north of the lot consists of disturbed remnant native vegetation which will be retained under the proposal (see **Figures 2 & 3**).



A	PRELIMINARY ISSUE	TC	23-10-17
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PROJECT
**PROPOSED
HIGHWAY SERVICE CENTRE**

PROJECT ADDRESS
600 MACLEAY VALLEY WAY

**SOUTH KEMPSEY
NSW 2440**

DRAWING TITLE
CONCEPT SITE PLAN

CLIENT
SPECTRUM RETAIL GROUP

DATE	SCALE @ A1	NORTH	
OCT '17	1:500		
DRAWN	CHECKED		
HJS	AB		
ISSUE			
PRELIMINARY			
PROJECT No.	DRAWING No.	REVISION No.	SHEET
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4.0 Bushfire Hazard Assessment

4.1 Bushfire Prone Land Mapping

Examination of RFS on-line Bushfire Prone Land Mapping (2017) confirmed that the majority of the site is mapped as “Bushfire Hazard”, which triggers the need for the assessment herewith.

Appendix 3 of the PBP 2006 provides the steps required to determine the level of bushfire hazard that applies to the site. Factors influencing the hazard level include:

- The formation of vegetation surrounding the site (as defined by Keith 2004);
- The distance between vegetation and the site (or proposed buildings therein);
- The effective slope for each patch of vegetation; and
- The Fire Danger Index (FDI) of the council area within which the development occurs.

These factors together provide an indication of the level of threat posed to the development from any vegetation retained within the site and surrounding vegetation in the event of a bushfire, and the required mitigation measures to be taken in the form of APZ and building construction standards. These measures are detailed further in **Section 5** below.

4.2 Vegetation Analysis

The site and surrounds occur within the North Coast Region, with existing vegetation subsequently classified with a Fire Danger Index (FDI) of 80 as per Appendix 2 of the PBP.

Retained vegetation in the north is classified as ‘Dry Sclerophyll Forest – Shrubby and Shrub Grass’ as per Appendix 1 of the draft PBP 2017. Areas opposite West End Road to the west and the Pacific Highway to the east include similar remnant vegetation that represent the same classification of bushfire hazard assessed in this BTA and are shown in **Figure 3**.

4.3 Slope Analysis

Examination of effective slope class for proximate hazards reveal the site is relatively flat, falling to the north. Effective slope relevant to the hazards surrounding the subject site exist as:

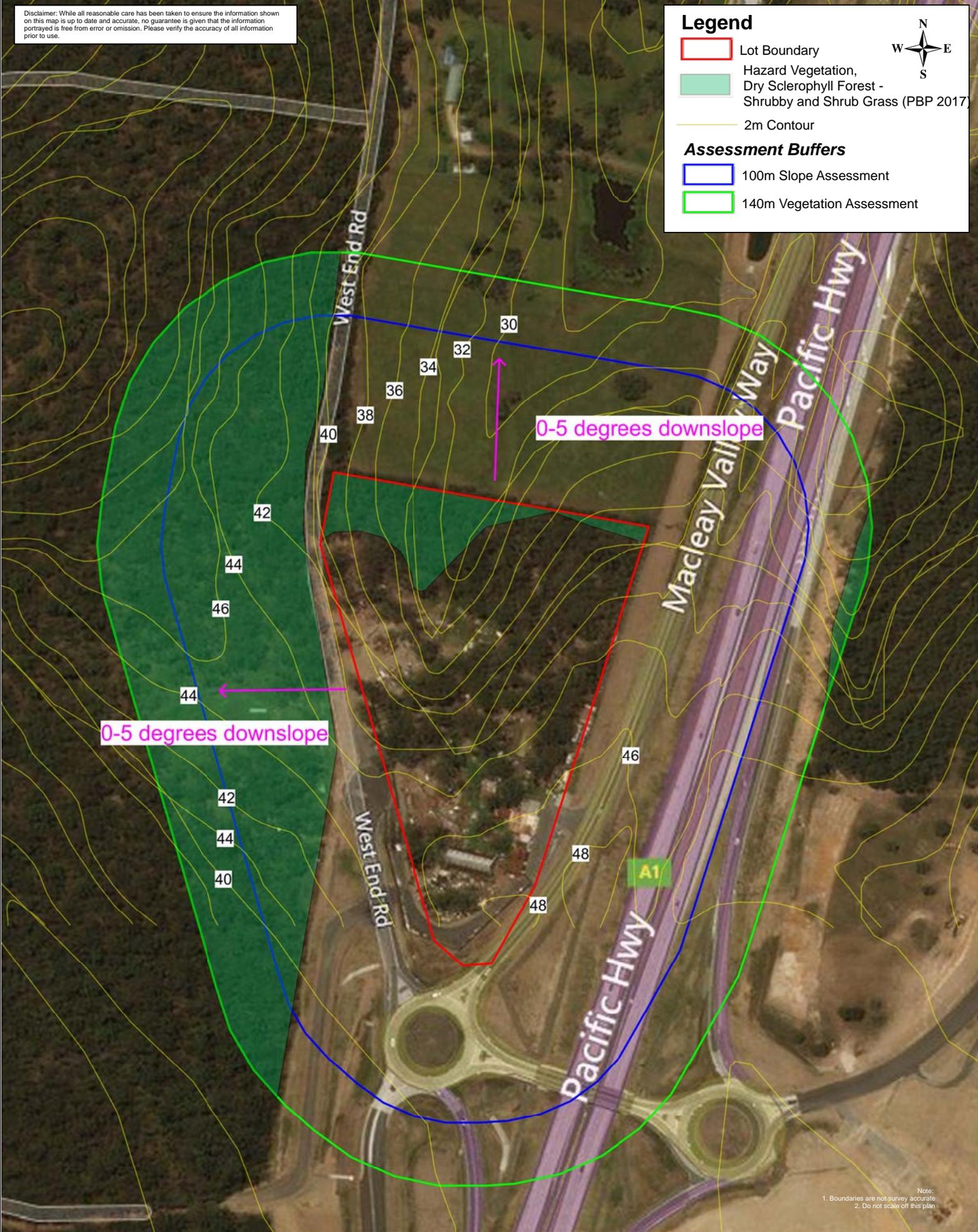
- >0-5 degrees downslope towards hazards to the north and west.
- Upslope / flat towards hazard opposite the Pacific Highway to the east

Figure 4 provides a visual representation of the vegetation and effective slope as it applies to the proposal.

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Legend

-  Lot Boundary
-  Hazard Vegetation, Dry Sclerophyll Forest - Shrubby and Shrub Grass (PBP 2017)
-  2m Contour
- Assessment Buffers**
 -  100m Slope Assessment
 -  140m Vegetation Assessment



AEP

Title: Figure 3 - Slope and Vegetation Assessment

Date: Dec 2017

Location: Kempsey, NSW

Client: KDC

Our Ref: 1635



4.4 Asset Protection Zones

Based on the information presented previously, the following derivation of applicable APZs was concluded (based on draft PBP 2017).

Fire Danger Index Rating = 80

Dry Sclerophyll Forest – Shrubby and Shrub Grass – north and west of the subject site

- Effective slope – 0 – 5 degrees downslope
- Required Minimum APZ – 24m

Dry Sclerophyll Forest – Shrubby and Shrub Grass – east of the subject site

- Effective slope – upslope / flat
- Required Minimum APZ – 20m

The required APZs as they apply to the development footprint are provided within **Figure 4**, which shows that the proposal can meet APZ requirements

4.5 Water Supply

The proposed development is expected to connect to the existing reticulated water supply system delivered in accordance with AS 2419.1–2005.

A static water supply is proposed for the site as requested by RFS.

4.6 Access and Egress

Multiple access and egress opportunities exist for the development, with West End Road to the west and Macleay Valley Way / Pacific Highway to the east providing access / egress to the north, and the continuation of the Pacific Highway providing access / egress to the south.

Emergency response times are expected to be prompt as the Kempsey NSW Fire Brigade Station is approximately 5km to the north.

5.0 Bushfire Hazard Determination

5.1 Construction Standards – AS 3959-2009

As outlined above, the identification of proximate hazards post development has resulted in the need for APZ, and hence consideration of related construction standards.

Bushfire Impact and AS-3959-2009

The Australian Standard 3959-2009 “Construction of buildings in bushfire prone areas”, details six (6) levels of construction standard that are required for buildings, depending upon the expected impact of a bushfire from adjacent areas. These Bushfire Attack Levels (BAL) are measured from the edge of the hazard and incorporate vegetation type and slopes (see Section 4 above) to determine the relevant distance for each BAL rating (and associated construction standard). The relationship between the expected impact of a bushfire and the BAL rating is provided in **Table 1** below.

Table 1 – BAL Construction Standard

Bushfire Attack Level	Maximum radiant heat impact (kW/m ²)	Level of construction standard under AS 3959-2009
Low		No special construction requirements
12.5	≤12.5	BAL – 12.5
19	12.6 to 19.0	BAL – 19
29	19.1 to 29	BAL - 29
40	29 to 40	BAL – 40
Flame Zone	≥40	BAL – FZ (Not deemed to satisfy provisions)

The applicable distances for each BAL rating as they apply to this development are:

North and West:

- <19m: BAL - Flame Zone
- 19 to <25m: BAL – 40
- 25 to <35m: BAL – 29
- 35 to <47m: BAL – 19
- 47 to <100m: BAL – 12.5



East:

- <15m: BAL - Flame Zone
- 15 to <20m: BAL - 40
- 20 to <28m: BAL - 29
- 28 to <39m: BAL - 19
- 39 to <100m: BAL - 12.5

As per RFS advice, any proposed structure should aim to be constructed to BAL - 29 construction standard at a minimum. This requires the structure to be positioned at a minimum distance from proximate hazard as provided above for BAL - 29. As is evident from **Figure 4**, the proposal can satisfy BAL - 29 construction standards as they apply to the development.

Disclaimer: While all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Legend

-  Lot Boundary
-  Development Footprint
-  Hazard Vegetation, Forest (PBP 2006)
-  Required APZ



Required BALs

-  BAL - FZ
-  BAL - 40
-  BAL - 29
-  BAL - 19
-  BAL - 12.5



Note:
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2. Do not scale off this plan



AEP

Title: Figure 4 - Required APZ and BALs

Date: Dec 2017

Location: Kempsey, NSW

Client: KDC

Our Ref: 1635



6.0 Other Considerations

The following analysis applied to the site in reference to environmental features present.

- **Riparian Corridors** – none present.
- **SEPP 14 Coastal Wetlands** – none present.
- **SEPP 26 Littoral Rainforests** – none present.
- **SEPP 44 Koala Habitat** – none present.
- **Areas of geological interest** – none present.
- **Environmental protection zones or steep lands (>18°)** – none present.
- **Land slip or flood prone areas** – none present.
- **National Parks estate or various other reserves** – none present on site.
- **Threatened species matters** – none known to be present.
- **Aboriginal Heritage** – none known to be present.



7.0 Conclusion

Investigations undertaken for this Bushfire Threat Assessment have revealed that the proposed development will be affected by bushland hazard within the north of the site and to the west and east of the site.

As a “hazardous industry” development, the key to gaining consent under PBP is meeting all the relevant aims, with the following incorporated as far as possible into development design:

- Structures to be able to achieve Bushfire Attack Level (BAL) - 29 or less;
- Fuel tanks to be located as far from the hazard as possible, with preference for underground;
- Parking and other open hard stand areas to be placed as a buffer between bushfire hazard and any built structures; and
- Static water supply be available on site.

Hazard assessment determined the applicable setbacks in the form of Asset Protection Zones (APZs) and the required BAL – 29 construction standards as they apply to the development, and determined that the proposal can meet these requirements. Site design has been tailored to address RFS concerns regarding fuel tank and hard stand locations, and a static water supply is proposed.

The site is expected to be connected to the existing reticulated water supply, and numerous access / egress opportunities are available to provide options in regards to firefighting logistics.

Despite the nature of the development, site design and setbacks from hazards are considered appropriate and sufficient to meet the aims of the PBP as they apply to the proposal.



8.0 References

NSW Rural Fire Service (2017). *Bushfire Prone Land Mapping*. State of New South Wales through the NSW Rural Fire Service, Granville, NSW.

NSW Rural Fire Service (2017). *Planning for Bush Fire Protection a Guide for Councils, Planners, Fire Authorities and Developers*. State of New South Wales through the NSW Rural Fire Service, Granville, NSW.

NSW Government (1979). *Environment and Planning & Assessment Act 1979*. NSW Government, Sydney.

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www.legislation.nsw.gov.au.

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Standards Australia (2009) AS-3959 *Construction of Buildings in Bushfire-Prone Areas*. Standards Australia, Sydney.