



BUSHFIRE THREAT ASSESSMENT

FOR

PROPOSED RESIDENTIAL SUBDIVISION

AT

2 BRANTER ROAD
NORDS WHARF
NSW

Prepared for: NORDS WHARF DEVELOPMENT GROUP

17 March 2017



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1.0 Introduction

It is proposed that a residential subdivision be undertaken within land known as 2 Branter Road, Nords Wharf, NSW (the site).

At the request of the Nords Wharf Development Company (*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 “Planning for Bushfire Protection 2006” (PBP) and the 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*”.

As the proposed development is a residential subdivision, it is classed as ‘Integrated Development’ under Section 91 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). In combination with Section 100B of the *Rural Fires Act 1997* (RF Act), a Bushfire Safety Authority (BSA) is required from the Rural Fire Service (RFS) to enable the development to proceed. This report addresses the required heads of consideration relevant to obtaining a BSA.

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

Anderson Environment & Planning (2017). *Bushfire Threat Assessment for Proposed Residential Subdivision off 2 Branter Road, Nords Wharf, NSW*. Unpublished report for Nords Wharf Development Company, March, 2017.



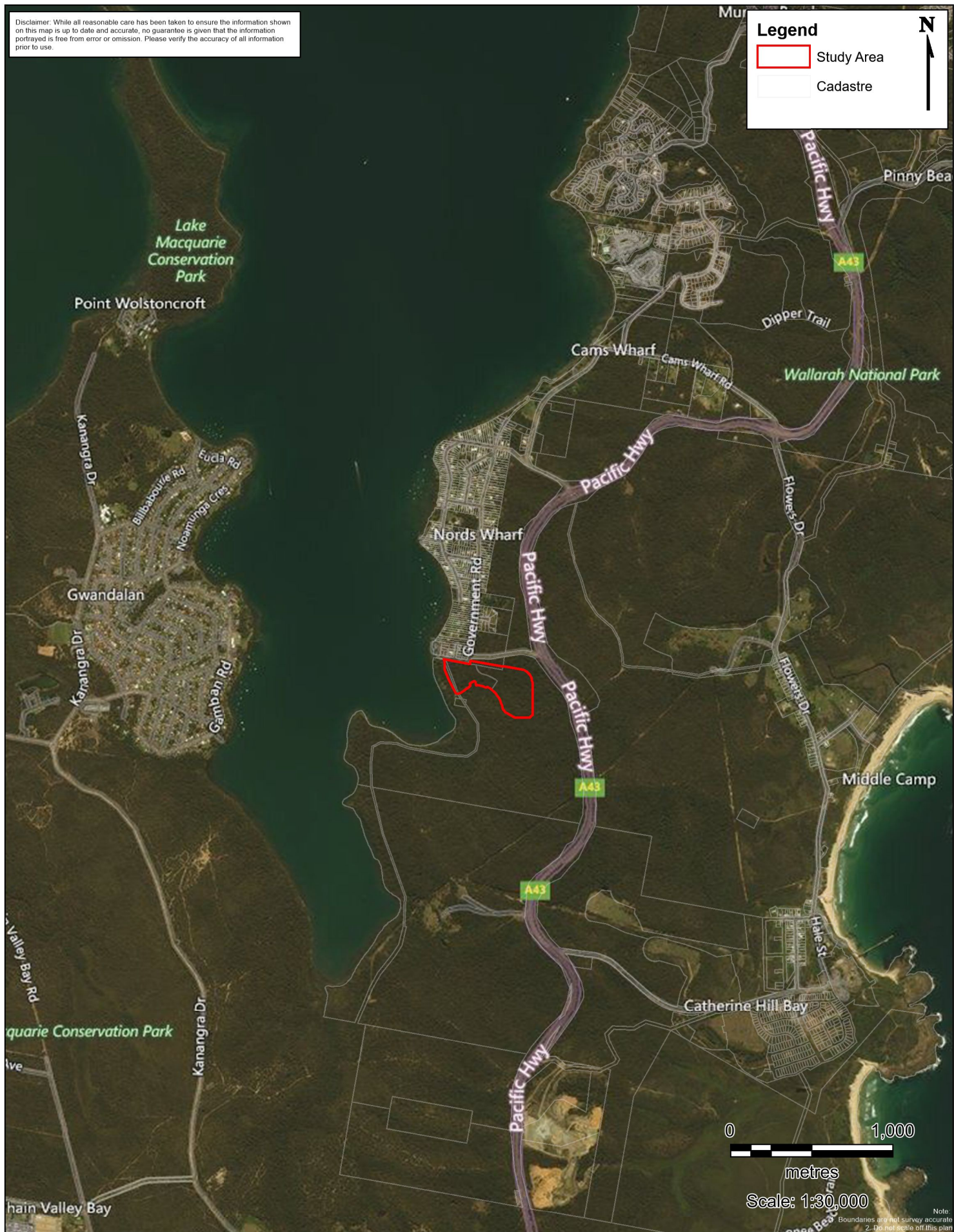
2.0 Site Particulars

The proposed development is located at 2 Branter Road, Nords Wharf, NSW (the site). It consists of various parcels of land, identified as:

- **Address** – 2 and 12 Branter Road, Nords Wharf, NSW.
- **LGA** – Lake Macquarie City Council (LMCC).
- **Title Details** – Lots 1 and 2 DP 1180292.
- **Study Area** – Lots 1 and 2 DP 1180292 comprise approx. 10.83ha.
- **Zoning** – As per LMCC LEP 2014, the study area is predominantly zoned R2 – Low Density Residential, with a small area zoned RE1 – Public Recreation in the north.
- **Current Land Use** – A small portion of the subject site is currently utilised as a Scout Camp with the remaining vacant native vegetation.
- **Surrounding Land Use** – The site is bounded by Branter Road to the north, with residential housing beyond. Bushland zoned E1 in the form of the Lake Macquarie State Conservation Area fringes the study area to the east, south and west.
- **Topography** – The subject site is surrounded by low undulating hills, with the land draining south-south-west into Lake Macquarie.

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.



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Title: Figure 1 - Site Location

Date: 16.3.17

Location: Nords Wharf

Client: Nords Wharf Development Group

Our Ref: 1522

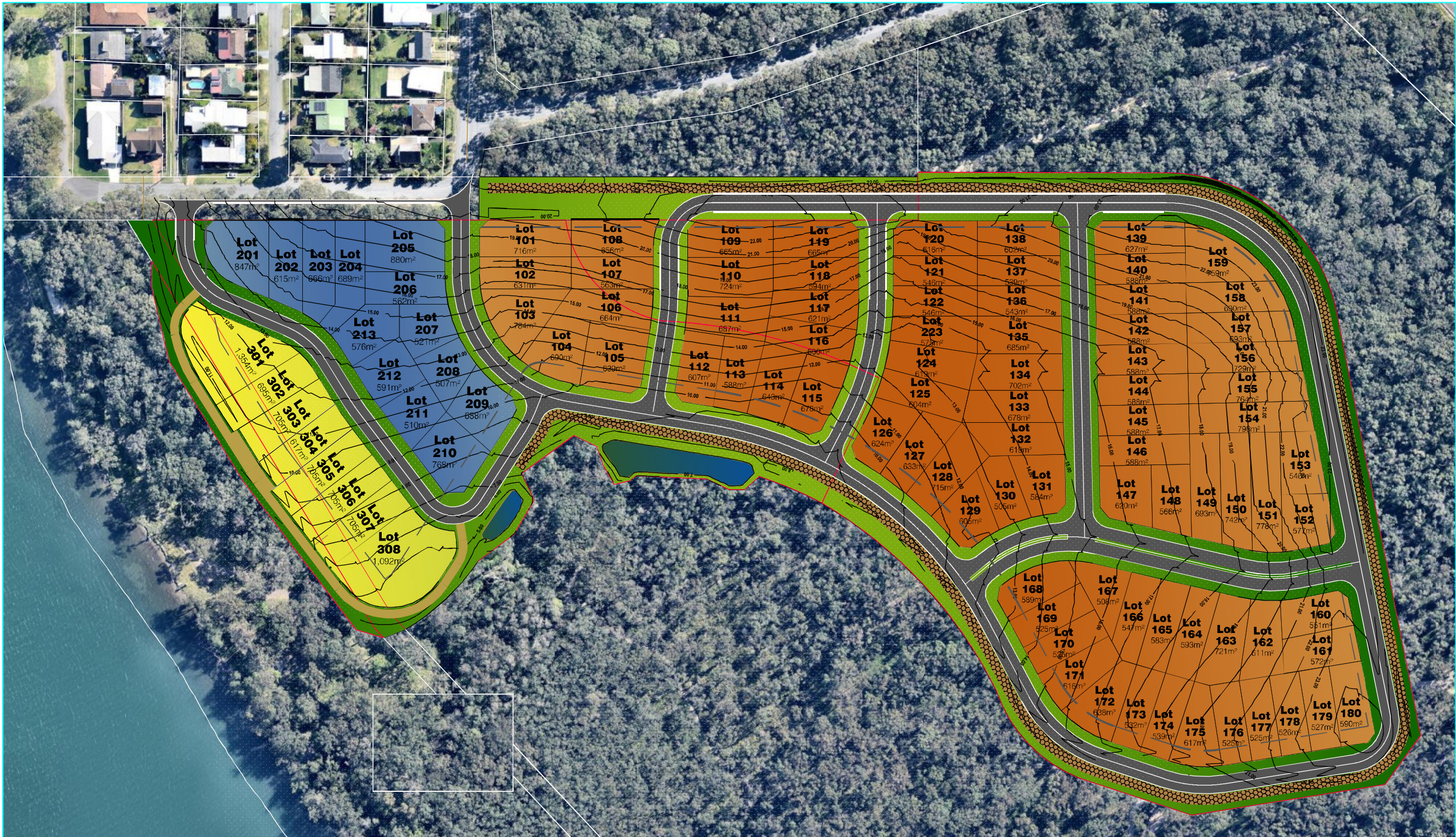
3.0 Proposed Development

It is proposed to subdivide the site in accordance with its residential zoning with a preliminary estimate to yield 101 residential lots. The proposed subdivision will include internal roads and other ancillary infrastructure.

The majority of the subdivision will be undertaken as Torrens Title development.

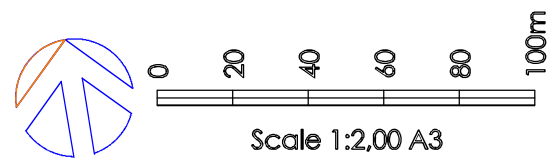
For lots in the west fronting lake Macquarie (i.e. Lots 301 – 308), a Community Title arrangement will be utilised to ensure that required Asset Protection Zone and Fire Trail maintenance can be encompassed therein.

Figure 2 depicts the plan of proposed development within the study area.



Stage 1 - 13 Lots
Stage 3 - 8 lots
Total - 101 Lots

Draft



Project No 025/2016
Suburb Nords Wharf
Street Branfer Road
Lot & DP 1 & 2
Site area ha

Dwg Title Residential Subdivision
Sheet Title Plan of subdivision
Number of Sheets 1
Sheet Number 1
Issued 13/3/2017

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4.0 Bushfire Hazard Assessment

4.1 Bushfire Prone Land Mapping

Examination of the LMCC Bushfire Prone Land (BPL) Mapping (2011) confirms that the majority of the site is mapped as “Bushfire Prone Land – Vegetation Category 1” and “Buffer”. This designation has triggered the need for the assessment herewith.



Figure 3 – Extract from Lake Macquarie Council Bushfire Prone Land Map (2011)

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 Asset Protection Zones (APZs) and building construction standards. These measures are detailed further in Section 5 below.

4.2 Vegetation Analysis

The study area occurs within the Greater Hunter region, with existing vegetation subsequently classified with a Fire Danger Index (FDI) of 100 as per Appendix 2 of the PBP.

Vegetation identified surrounding most of the site (aside from the Nords Wharf village interface) poses a bushfire hazard to the development. Survey showed the vegetation constitutes intact native vegetation and is classified as “Forest” under the PBP (see **Figure 4**).

4.3 Slope Analysis

From the plan presented in **Figure 4**, it is apparent that the study area slopes generally south and west towards Lake Macquarie.

Examination of effective slope class for the relevant hazard areas reveals the study area slopes down to the south-and west towards Lake Macquarie. Site slope detail is presented in **Figure 4**. There are two key slope classes identified:

1. 0 to <5 degrees downslope towards forest vegetation to the south and west of the study area.
2. Flat / upslope towards forest vegetation to the north and east of the study area.

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Legend

Study Area

Vegetation Assessment

140m Assessment Buffer

Forest (PBP)

Slope Assessment

100m Assessment Buffer

2m Contour

flat / upslope

0-5 deg. downslope





4.4 Required Asset Protection Zones

Based on the information presented previously, the following derivation of required Asset Protection Zones (APZ's) was concluded.

Fire Danger Index Rating = 100

North

- Predominant Vegetation – Forest (plus developed village area).
- Effective slope – Upslope / Flat.
- Required Minimum APZ – 20m (to Forest areas).

East

- Predominant Vegetation – Forest.
- Effective slope – Upslope / Flat.
- Required Minimum APZ – 20m.

South

- Predominant Vegetation – Forest.
- Effective slope - >0 -5 degrees downslope.
- Required Minimum APZ – 25m.

West

- Predominant Vegetation – Forest.
- Effective slope – >0 -5 degrees downslope.
- Required Minimum APZ – 25m.

Note that the derived APZ setbacks are based upon the need to conform to Level 3 construction as per AS 3959 for a building of Class 1 or 2 under the BCA. Construction standard options are discussed further in the report.



4.5 Water Supply

It is expected that the development will be serviced by a reticulated water supply system extended from existing and proposed residential areas.

The reticulated water supply and street hydrant access will need to be delivered in accordance with AS 2419.1-2005.

4.6 Access and Egress

The proposed development will be serviced via Branter Road and Awabakal Drive to Pacific Highway to the north-east, with secondary access via Branter Road and Government Road through Nords Wharf to the north. Two access points are proposed to Branter Road.

Roads proposed within the site are in compliance with Section 4.1.3 of the PBP 2006. A perimeter road between proposed lots and vegetation in the north, east and south will provide the required defendable space between development and existing hazards.

In the west for Lots 301 – 308, a Fire Trail will circle the lots on the hazard side, connecting at either end back to the public road network. The Fire Trail will be maintained under a Community Title arrangement covering Lots 301-308. The Fire Trail will need to be created and maintained to meet the Performance Criteria outlined in Section 4 - Access (3) – Fire Trails.

If such occurs, it is considered that the proposed access and egress arrangements are suitable.

Emergency response times would be expected to be prompt with a NSW Rural Fire Brigade station in Nords Wharf Road, approx. 1.5km away.



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's, and hence consideration of related construction standards.

Bushfire Impact and AS-3959

The Australian Standard 3959-2009 Construction of buildings in bushfire prone areas, details six (6) levels of construction standards that are required for buildings, depending upon the expected impact of a bushfire from adjacent areas. These Bushfire Attack Levels (BALs) 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)

Figure 5 depicts the BAL construction standards applicable for the proposed development. Specifically, these BALs are:

North

- <19m: BAL - Flame Zone
- 19 to <25m: BAL – 40
- 25 to <35m: BAL – 29
- 35 to <48m: BAL – 19
- 48 to <100m: BAL – 12.5



East

- <19m: BAL - Flame Zone
- 19 to <25m: BAL – 40
- 25 to <35m: BAL – 29
- 35 to <48m: BAL – 19
- 48 to <100m: BAL – 12.5

South

- <24m: BAL - Flame Zone
- 24 to <32m: BAL – 40
- 32 to <43m: BAL – 29
- 43 to <57m: BAL – 19
- 57 to <100m: BAL – 12.5

West

- <24m: BAL - Flame Zone
- 24 to <32m: BAL – 40
- 32 to <43m: BAL – 29
- 43 to <57m: BAL – 19
- 57 to <100m: BAL – 12.5

These BALs are to be adopted as the minimum requirement for each specific zone. Any lessening of these requirements would require reassessment to ensure increased APZ's are provided, or other acceptable mitigation measures are in place.

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Legend

Study Area

Proposed Lot Layout

Forest (PBP)

Required APZ

BALs

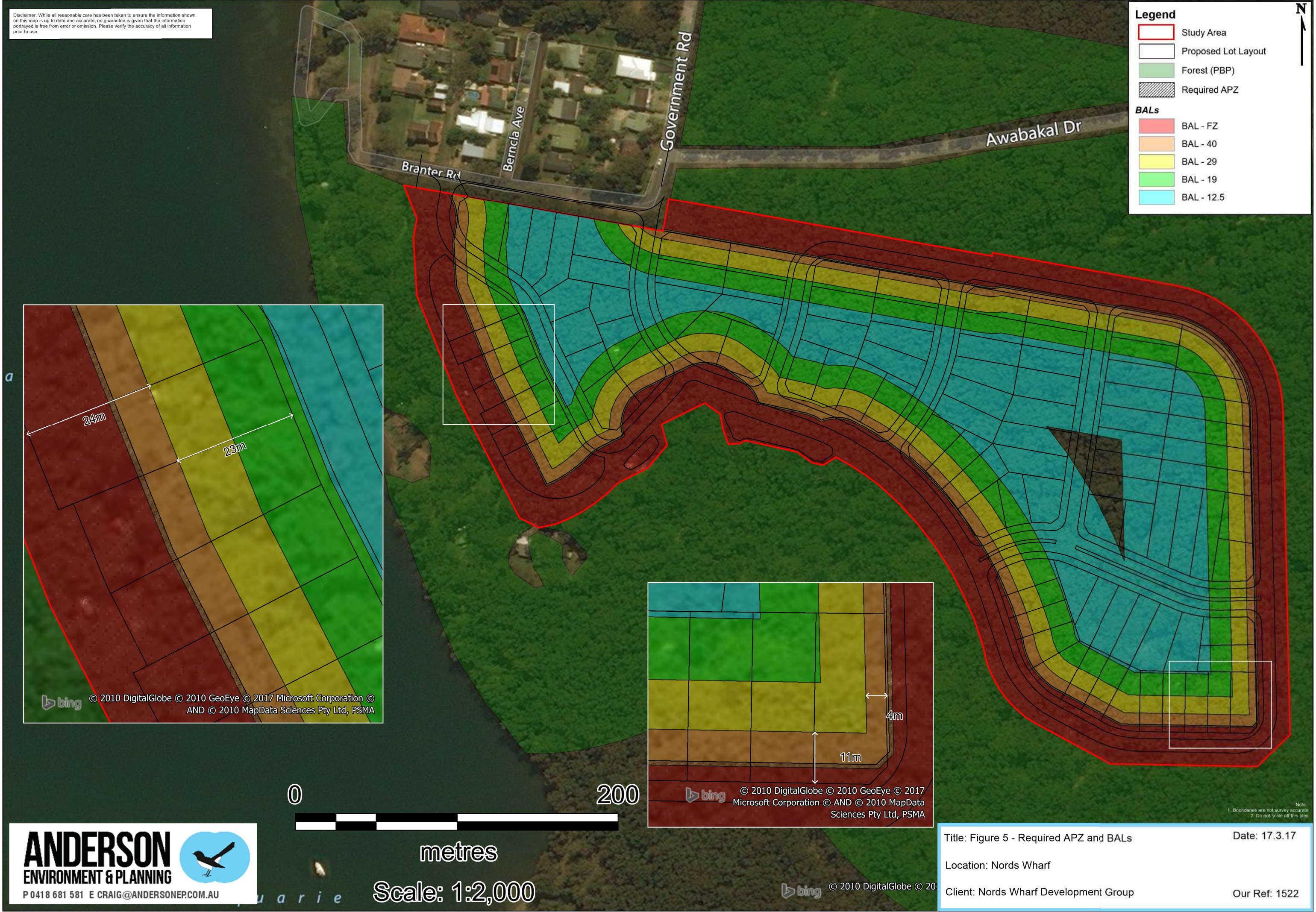
BAL - FZ

BAL - 40

BAL - 29

BAL - 19

BAL - 12.5



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Title: Figure 5 - Required APZ and BALs

Date: 17.3.17

Location: Nords Wharf

Client: Nords Wharf Development Group

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6.0 Other Considerations

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

- **Riparian Corridors** – several ephemeral drainage lines traverse the development area. These will be developed and drainage handled by appropriate civil works.
- **SEPP 14 Coastal Wetlands** – none present.
- **SEPP 26 Littoral Rainforests** – none present.
- **SEPP 44 Koala Habitat** – The site was determined to be Potential Koala Habitat under SEPP 44 but was not determined to constitute Core Koala Habitat and as such no further provisions of SEPP 44 apply to the proposed development.
- **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** – the site is surrounded on three sides by National Park estate. None of the development or the required APZ lands etc are within the National Park.
- **Threatened species matters** – the site has approvals relating to an offset land swap creating adjacent National Park areas.
- **Aboriginal Heritage** – none known to be present.



7.0 Conclusion

Investigations undertaken for this Bushfire Threat Assessment report have revealed that the proposed development will be affected by bushland hazard adjoining the site in all directions.

The proximate Forest hazard has necessitated the need for application of APZ setbacks for the development interface, and also the application of building construction levels for proximate dwellings. All Asset Protection Zones (APZs) have been fully incorporated into the subdivision design and are wholly located within the development site such that there is no direct impact on any neighbouring lands.

Suitable access / egress will be provided via a perimeter road system and two connections to Branter Road and the established village of Nords Wharf to the north. Roads proposed within the site are in compliance with Section 4.1.3 of the PBP 2006. A perimeter road between proposed lots and vegetation in the north, east and south will provide the required defensible space between development and existing hazards.

In the west for Lots 301 – 308, a Fire Trail will circle the lots on the hazard side, connecting at either end back to the public road network. The Fire Trail will be maintained under a Community Title arrangement covering Lots 301-308. The Fire Trail will need to be created and maintained to meet the Performance Criteria outlined in Section 4 - Access (3) – Fire Trails.

An expansion of the existing reticulated water supply system for the existing dwelling is expected to service the site, and street hydrant access is to be delivered in accordance with AS2419.1 – 2005.

It is considered that the proposed protection measures, principally APZ's and relevant construction standards, comply with the relevant requirements of Planning for Bushfire Protection and AS-3959. When applied, these measures should provide adequate protection to life and property within the proposed development in the event of a bushfire occurring in the immediate locality.

However, it can never be guaranteed that the site and residents and property therein will not at some stage be affected by a bushfire event.

8.0 References

- Environment al Planning & Assessment Act 1979*. NSW Government.
- Keith D (2004). *Ocean Shores to Desert Dunes*. DEC, Sydney.
- Lake Macquarie Council (2011). *Bushfire Prone Land Map*. 2011.
- NSW Rural Fire Service (2006). *Planning for Bushfire Protection*. NSW RFS / DoP, December 2006.
- OEH (2017). *Threatened Species, Populations and Ecological Communities* website.
(<http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/>)
- Rural Fires Act 1997*. NSW Government.
- Rural Fires Act Regulation 2008*. NSW Government.
- Standards Australia (2009) AS-3959 Construction of Buildings in Bushfire-Prone Areas.



APPENDIX A

SITE PHOTOGRAPHS



Views west through Forest vegetation towards Lake Macquarie.





View south into Forest (above) and to the east (below).

