



**BUSHFIRE THREAT ASSESSMENT**

**PROPOSED BIORESOURCES FACILITY**

**UNIVERSITY OF NEWCASTLE**

**CALLAGHAN, NSW**

**Prepared for: DE WITT CONSULTING**

**Revision 2 – August 2018**

**AEP Ref: 1620**



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## 1.0 Introduction

It is proposed that a new development being a Bioresources Facility be undertaken within Lot 1 DP 1188100, Shortland Precinct, the University of Newcastle, Callaghan, NSW (the site).

At the request of de Witt Consulting (*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) 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*".

The proposal is for a proposed Bioresources Facility to be built with the abovementioned site. The type of building is defined as a "State Significant Development" (PBP 2017) and is defined as a Class 8-9 building (BCA), therefore the proposed development is exempt from requiring a bush fire safety authority (BFSA).

*"Applications under the now-repealed Part 3A of the EP&A Act and state significant projects are exempt from requiring a bush fire safety authority (BFSA). Given their scale however, the requirements of this document should still be applied, and consultation with the NSW RFS is encouraged. Even where comments are sought at the strategic planning stage, further development applications may need to be referred to the NSW RFS."*

The proposed development is a "State Significant Development", and as such it is assessed under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). When such development can be shown to comply with the deemed-to-satisfy provisions of the Building Code of Australia (BCA), then the certifying authority can determine compliance and issue the relevant construction certificate without referral to the RFS. This BTA letter addresses the required heads of consideration relevant to obtaining approval.

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

Anderson Environment & Planning (2018). *Bushfire Threat Assessment for Proposed Bioresources Facility Shortland Precinct, the University of Newcastle, Callaghan, NSW*. Unpublished report for de Witt Consulting, August 18.



## 2.0 Site Particulars





The proposed development is located at The University of Newcastle, Callaghan, NSW (the study area). Other details are as follows:

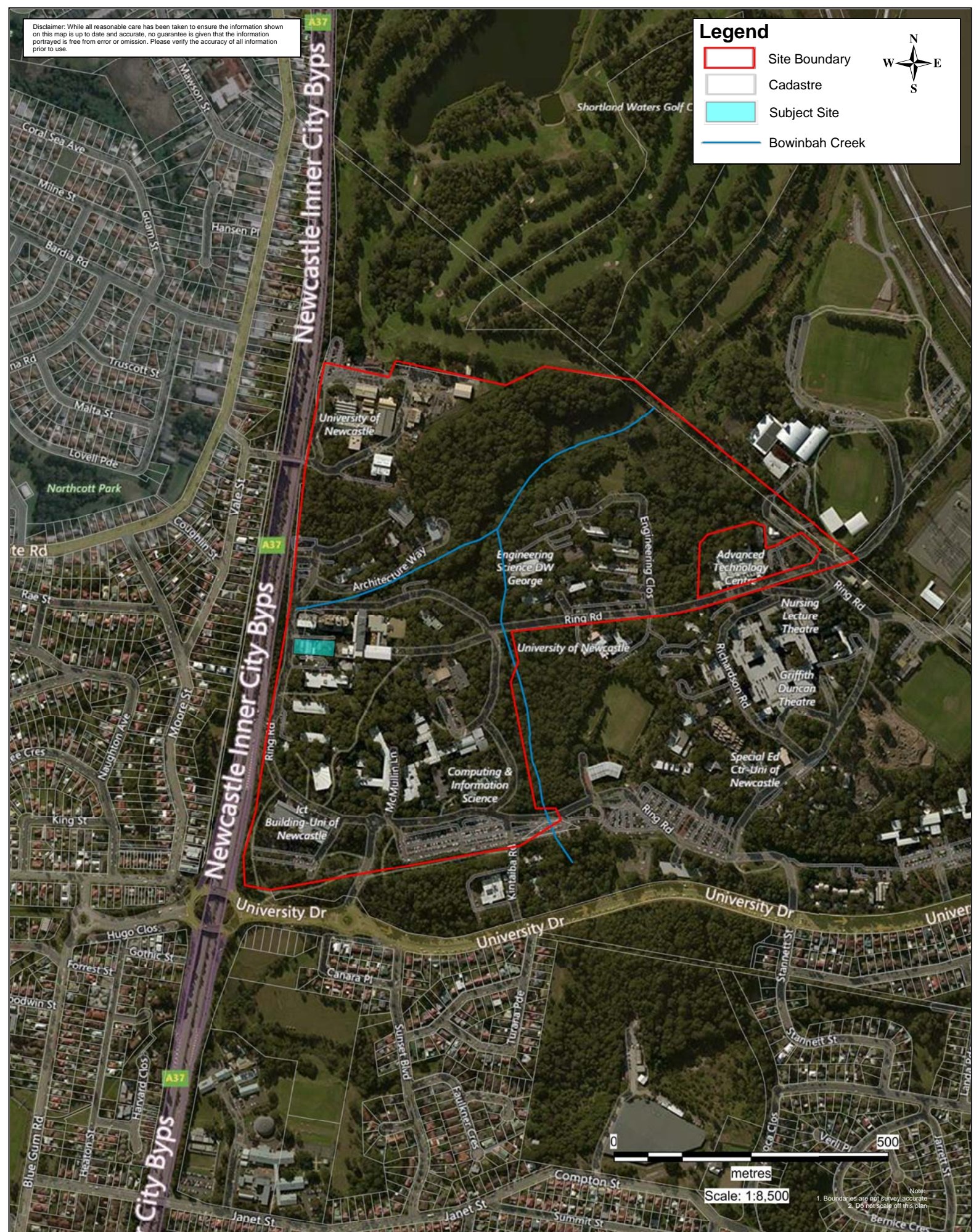
- **Address** – Shortland Precinct, the University of Newcastle, Callaghan, NSW.
- **LGA** – Newcastle.
- **Title Details** – Lot 1 DP 1188100.
- **Subject Site** – The Subject Site consists of an area of 0.35ha and immediate surrounds within the abovementioned lot.
- **Zoning** – Under the Newcastle Local Environment Plan 2014 (the LEP), the study area is zoned SP2 – Educational Establishment.
- **Subject Site (Proposed Development Area)** – The proposal is for a Bioresources Facility development within the abovementioned site.
- **Current Land Use** – The subject site consists of existing Biology Glasshouses and 450m<sup>2</sup> of remnant Coastal Foothills Spotted Gum Ironbark Forest (CFSGIBF) with disturbed understory. Buildings border the site to the north, east and south, with approx. 700m<sup>2</sup> CFSGIBF on the western border present in a 30m wide strip.
- **Surrounding Land Use** – To the north and east and south the site is bounded by The University of Newcastle Campus buildings and infrastructure including roads, carparks and managed remnant CFSGIF with landscaped understory. The area to the west is a narrow remnant CHFSGIF and the Newcastle Link Road beyond.
- **UON Bushfire Risk Management Plan** – The site falls under Bushfire Prone & Evacuation Priority Area and is located in Emergency Precinct 1.

**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 Boundary
-  Cadastre
-  Subject Site
-  Bowinbah Creek



Scale: 1:8,500

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



Title: Figure 1 - Site Location  
 Location: Callaghan  
 Client: deWitt Consulting

Date: Dec 2017  
 Our Ref: 1620






### 3.0 Proposed Development

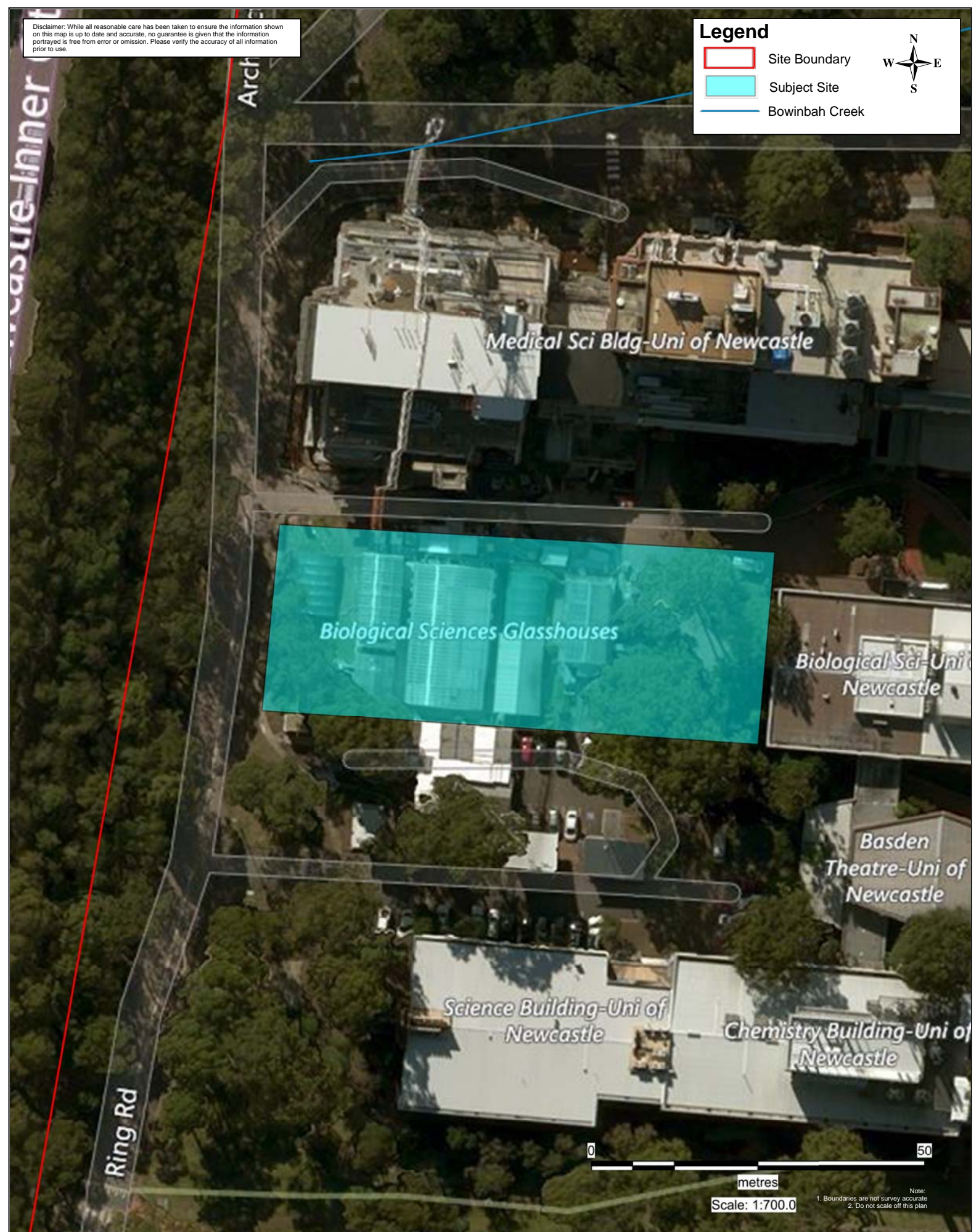
The proposed development is for a Bioresources Facility to be built within the subject site.

**Figure 2** is a concept plan of the proposed development footprint.

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 Boundary
-  Subject Site
-  Bowinbah Creek



# AEP

Title: Figure 2 - Development Footprint

Date: Dec 2017

Location: Callaghan

Client: deWitt Consulting

Our Ref: 1620





## 4.0 Bushfire Hazard Assessment

### 4.1 Bushfire Prone Land Mapping

Examination of the Newcastle City Council Bushfire Prone Land Mapping (2018) confirmed that the site is mapped as “Bushfire Vegetation Buffer”, adjacent to “Bushfire Prone Land – Vegetation Category 1”. This designation has triggered the need for the assessment herewith.

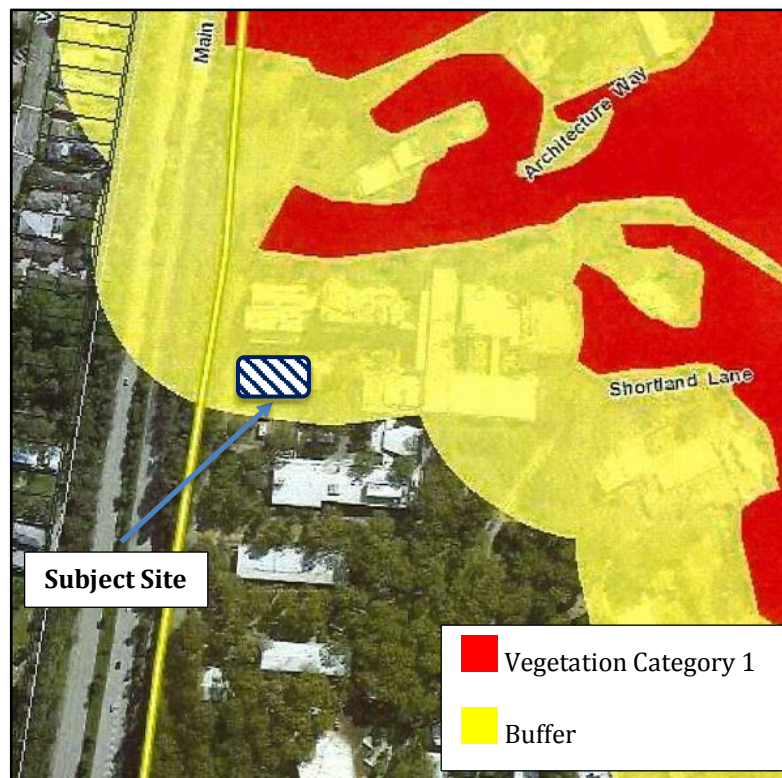


Figure 3 – Extract from Newcastle City Council Bushfire Prone Land Mapping (2018).



Appendix 3 of the PBP 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 site and surrounds occur 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.

AEP understands that the proposal includes the removal of all vegetation within the subject site therefore off-site vegetation is considered within this BTA. Off-site hazard vegetation is considered to constitute “Forest” under the PBP (see **Figure 4**) and consists of fragmented or heavily managed areas of bushland directly adjacent to the subject site to the west, and vegetation for consideration to the north, south and east buffered by existing buildings.

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**Legend**

- Site Boundary
- Subject Site
- Hazard Vegetation, Forest (PBP 2006)
- 2m Contour



**Assessment Buffers**

- 100m Slope Assessment
- 140m Vegetation Assessment



**AEP**

Title: Figure 4 - Slope and Vegetation Assessment

Date: Dec 2017

Location: Callaghan

Client: deWitt Consulting

Our Ref: 1620



### 4.3 Slope Analysis

The site itself gently slopes from south to north however, the surrounds vary in slope.

Vegetation to the south slopes up from the subject site as does vegetation to the west and east, resulting in a 'Flat/ upslope' slope class determination. Vegetation to the north slopes downslope away from the subject site resulting in a '0-5 degree downslope' determination.

Examination of slope class to relevant hazard areas reveals:

- North - >0-5° downslope towards Forest Vegetation;
- West - >Flat/ upslope towards Forest Vegetation; and
- South & East - > Flat/ upslope towards contiguous, managed Forest Vegetation.

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

### 4.4 Required Asset Protection Zones

Based on the nature of the proposal, Asset Protection Zones (APZ's) are not applicable to the development as acceptable solutions are to be achieved by meeting the aims and objectives of the PBP in relation to emergency planning, access and water supply.

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

Consideration of APZ's relates to the identified offsite hazards.

Fire Danger Index Rating = 100

#### ***West, South and East***

- Predominant Vegetation – Forest
- Effective slope – Flat/ upslope
- Applicable Minimum APZ – 20m



#### ***North***

- Predominant Vegetation – Forest
- Effective slope – >0-5° downslope
- Applicable Minimum APZ – 25m

Applicable APZs are shown in Figure 5 below.

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### Legend

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



Ring Rd

Medical Sci Bldg-Uni of Newcastle

Biological Sciences Glasshouses

Biolo

Ring Rd

Basde

University of Newcastle

Science Building-Uni of Newcastle

Chemistry Build



Title: Figure 5 - Required APZ

Date: Dec 2017

Location: Callaghan

Client: deWitt Consulting

Our Ref: 1620



## 4.5 Construction Standards

The BCA does not provide for any bush fire specific performance requirements for buildings of Class 5 to 8 and 10 within which this development falls, general fire safety construction provisions are an acceptable solution.



## 5.0 Bush Fire Hazard Assessment

### 5.1 Emergency and Evacuation Planning

To ensure a prompt and coordinated response to the threat of bushfire, the site will be included with the UoN *Emergency Management Plan* dated February 2014. Details regarding the evacuation procedures are to be clearly signposted and placed strategically around the building. Review of the UON Bushfire Risk Management Plan indicates that the site falls under Bushfire Prone & Evacuation Priority Area and is located in Emergency Precinct 1.

### 5.2 Access and Egress

The proposed development will have direct access to Ring Road to the West, flowing onto University Drive.

Emergency response times would be expected to be prompt as the Lambton Fire and Rescue Station is NSW Fire Brigade Station on Young Road, Lambton is approximately 2.5km away.

### 5.3 Water Supply

It is expected that the development will be serviced by a reticulated water supply system extended from existing University of Newcastle services.

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



## 6.0 Other Considerations

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

- **Riparian Corridors** – Bowinbah Creek is present approx. 80m to the north and flows northwest into Shortland and Kooragang Wetlands (RAMSAR listed). No disturbance is proposed.
- **SEPP 14 Coastal Wetlands** – SEPP 14 wetlands 850, 850a and 851 are located north of the site.
- **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** – No Aboriginal Heritage Conservation Zone is present.





## 7.0 Conclusion

Investigations undertaken for this Bushfire Threat Assessment have revealed that the proposed development will be affected by bushland hazard adjoining the site to the west.

To achieve the aims and objectives of the PBP, the building will be incorporated into the UoN *Emergency Management Plan* dated February 2014 produced to mitigate the risks associated with bushfire threat at the site. Review of the UoN Bushfire Risk Management Plan indicates that the site falls under Bushfire Prone & Evacuation Priority Area and is located in Emergency Precinct 1.

Suitable access and egress to the site will be provided via Ring Road and University Drive. As such, it is considered that the proposed access and egress arrangements are considered to be compliant with Chapter 4 of the PBP, and no issues have been identified with evacuation, safe haven zones, or firefighting logistics.

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

The Ring Road provides a defensible space between the hazard and the proposed development

It is considered that the development complies with the relevant requirements of Planning for Bushfire Protection, and proposed protection measures, principally the detailed emergency evacuation planning, and appropriate access and egress which will simultaneously provide adequate protection to life within the proposed development. When applied, these measures should provide adequate protection in the event of a bushfire occurring in the immediate locality. However, it can never be guaranteed that the site and workers and property therein will not at some stage be affected by a bushfire event.



## 8.0 References

Newcastle City Council (2018). *Bushfire Prone Land Map*.

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

NSW Government (2008). *Rural Fires Regulation 2008*. NSW Government, Sydney.

NSW Government (2013). *Rural Fires Act 1997*. NSW Government, Sydney.

NSW Government (2017) *Planning for Bush Fire Protection (PBP)* NSW Government, Sydney. (draft)

NSW Office of Environment and Heritage (OEH) (2006). *Planning for Bushfire Protection*. NSW Rural Fire Service / NSW Department of Planning, Sydney.

OEH (2017). *Threatened Species, Populations and Ecological Communities*.  
[www.threatenedspecies.environment.nsw.gov.au/tsprofile](http://www.threatenedspecies.environment.nsw.gov.au/tsprofile).

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