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Biodiversity Development Assessment Report (BDAR)

Randwick Campus Redevelopment

Integrated Acute Service Building Addition

Prince of Wales Hospital

Report prepared for NSW Health Infrastructure

August 2019

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environmental

Report:	Biodiversity Development Assessment Report
Prepared for:	NSW Health Infrastructure
Prepared by:	Narla Environmental Pty Ltd
Project no:	pwco1
Date:	August 2019
Version:	Final v1.0

Narla Environmental Pty Ltd
www.narla.com.au

Report Certification

Works for this report were undertaken by:

Staff Name	Position
Kurtis Lindsay *BSc (Hons)*	Narla Environmental Accredited Assessor & Principal Ecologist
Emily Rix *BSc (Hons)*	Narla Environmental Ecologist / Project Manager
Sarah Cardenzana *BEnvSci*	Narla Environmental Ecologist
Callum Rutherford *BSc, MConBiol*	Narla Environmental Ecologist

Document Control

Revision	Document Name	Date	Relevant Personnel
Final Data Crosscheck	VIS Plot Data Check and Crosscheck with BAMC	14/8/2019	Kurtis Lindsay
Draft v1.0	Biodiversity Development Assessment Report (BDAR) for Randwick Campus Redevelopment, Integrated Acute Service Building Addition, Prince of Wales Hospital	12/8/2019	Kurtis Lindsay
Final v1.0	Biodiversity Development Assessment Report (BDAR) for Randwick Campus Redevelopment, Integrated Acute Service Building Addition, Prince of Wales Hospital	13/8/2019	Kurtis Lindsay
GIS Shapefiles Checked and Submitted	-	14/8/2019	Kurtis Lindsay
BAMC Submitted to DPIE	-	14/8/2019	Kurtis Lindsay

Kurtis Lindsay *BSc (Hons)*
Principal Ecologist / General Manager
Accredited Biodiversity Assessor (BAAS18059)
Narla Environmental Pty Ltd

Executive Summary

NSW Health Infrastructure propose to develop an addition to the approved Acute Services Building (the proposed development) for health research use at the Prince of Wales Hospital Campus (Part Lots 6-11 DP13995 and Part Lot 1, DP870720), Hospital Road, Randwick (the Subject Land).

As the proposed development is a State Significant Development (SSD), the Secretary's Environmental Assessment Requirements (SEARs) issued for the Environmental Impact Statement (EIS) by the NSW Department of Planning, Industry and Environment (DPIE) requires a Biodiversity Development Assessment Report (BDAR) to be undertaken by an accredited assessor to assess the impacts of the proposed development.

This BDAR has been prepared by Narla Environmental Pty Ltd to identify the potential impacts of the proposed development on biodiversity values within the Subject Land. This assessment has been completed in accordance with the Biodiversity Assessment Method (BAM) and includes:

- Comprehensive literature review and desktop assessment to describe the historically recorded environment and landscape features of the Subject Land and to identify the suite of threatened biota potentially affected by the proposed development;
- Site assessment to describe the biodiversity values of the Subject Land and to determine the likelihood of threatened biota and their habitats occurring within the proposed development footprint;
- Discussion and recommendation of measures to avoid and minimise impacts to biodiversity values;
- BAM calculations using the Biodiversity Assessment Method Calculator (BAMC) 1.2.4 to quantify the level of biodiversity impacts of the proposed development following the implementation of measures to avoid and minimise impacts, and to determine the biodiversity credits that will need to be purchased and retired to offset the residual impacts of the proposed development.

The Subject Land has been significantly historically cleared and altered. The majority of the Subject Land is comprised of an existing road, driveway, footpaths and car parking spaces. Some vegetation exists in the form of scattered canopy trees and groundcovers in garden beds. The proposed development requires the removal of seven (7) native trees and three (3) exotic trees.

The proposed development is expected to result in impacts to one (1) Plant Community Type (PCT), with the planned removal of 0.03ha of PCT *1775 - Smooth-barked Apple - Old-man Banksia - Red Bloodwood open forest on pleistocene sand dunes around Sydney and the Central Coast*. This plant community does not form part of a Threatened Ecological Community under the Biodiversity Conservation Act (BC Act) 2016.

Biodiversity offset credit calculations have been performed in accordance with the BAM (OEH 2017a) and using the Biodiversity Assessment Method Calculator (BAMC) version 1.2.4 (OEH 2017b). Since the vegetation integrity score of the native vegetation proposed to be impacted is <17, no biodiversity offset credits will be required as a result of the proposed development.

In order to avoid and minimise potential impacts of the proposed development on local biodiversity values, a series of mitigation and management measures have been identified, which are to be implemented as part of any construction environmental management plan (CEMP) produced for the site.

These include measures to:

- Ensure all contractors employed to work within and around identified biodiversity values within the Subject Land are suitably qualified and experienced;

- Assign a Project Ecologist to be present during the clearing of all vegetation (both native and exotic) related to the proposed development to capture, treat and relocate any displaced fauna;
- Implement all relevant biological hygiene protocols and requirements as per NSW Government guidelines.

It is unlikely the proposed development will indirectly impact on adjacent fauna habitat or vegetation, considering the Subject Land and surrounded area is within a highly developed and modified landscape. Vegetation is only in the form of native and exotic garden beds.

Contents

Figures

Tables

Plates

Glossary

Acronym/ Term	Definition
BAM	The NSW Biodiversity Assessment Method
BAMC	The NSW Biodiversity Assessment Method Calculator
BC Act	New South Wales Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
Biodiversity credit report	The report produced by the Credit Calculator that sets out the number and class of biodiversity credits required to offset the remaining adverse impacts on biodiversity values at a development site, or on land to be biodiversity certified, or that sets out the number and class of biodiversity credits that are created at a biodiversity stewardship site.
Biodiversity Offsets	Management actions that are undertaken to achieve a gain in biodiversity values on areas of land in order to compensate for losses to biodiversity from the impacts of development.
Biodiversity values	The composition, structure and function of ecosystems, including threatened species, populations and ecological communities, and their habitats.
BOS	NSW Biodiversity Offset Scheme
DA	Development Application
Ecosystem credit	A credit that relates to a vegetation type and the threatened species that are reliably predicted by that vegetation type (as a habitat surrogate).
EEC	Endangered Ecological Community
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ha	Hectare
HTE	High Threat Exotic
km	Kilometre
LGA	Local Government Area
Locality	The area within a 10km radius of the Subject Land. The same meaning when describing a local population of a species or local occurrence of an ecological community.
m	metres
MNES	Matters of National Environmental Significance
Native Vegetation	Means any of the following types of plants native to New South Wales:(a) trees (including any sapling or shrub or any scrub), (b) understorey plants, (c) groundcover (being any type of herbaceous vegetation), (d) plants occurring in a wetland.
NSW	The State of New South Wales.
OEH	Office of Environment and Heritage.
PCT	NSW Plant Community Type.
Priority weed	Priority weed in the Greater Sydney Region as per the *Biosecurity Act 2015*
Proposal	The development, activity or action proposed.
SEPP	State Environmental Planning Policy.
Species Credit	The class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Species that require species credits are listed in the Threatened Biodiversity Data Collection.
Study Area	The area that was subject to a site survey and assessed for direct or indirect impacts arising from construction and operation of the proposal.
Subject Land	The location of the proposed development and the subject of this report, within Prince of Wales Hospital Campus (Part Lots 6-11 DP13995 and Part Lot 1, DP870720), Hospital Road, Randwick.
Threatened biota	Threatened species, populations or ecological communities listed under the BC Act and/or the EPBC Act.
Threatened species, populations and ecological communities	Species, populations and ecological communities specified in Schedules 1, 1A and 2 and '*threatened species, population or ecological community*' means a species, population or ecological community specified in any of those Schedules.
VIS Plot	Vegetation Integrity Survey Plot.

1. Introduction

1.1 Overview

Narla Environmental Pty Ltd (Narla) was commissioned by NSW Health Infrastructure ('the proponent') to prepare this Biodiversity Development Assessment Report (BDAR) for the addition to the approved Acute Services Building for health research use at the Prince of Wales Hospital Campus (Part Lots 6-11 DP13995 and Part Lot 1, DP870720), Hospital Road, Randwick (hereafter referred to as the 'Subject Property').

The Randwick Campus Redevelopment – Integrated Acute Services Building Addition Prince of Wales Hospital is a State Significant Development (SSD). Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) establishes the assessment framework for SSD's. The preparation of this BDAR is in response to Part 13 'Biodiversity Assessment' of the SEAR issued for the EIS by the NSW Department of Planning, Industry and Environment.

1.2 Site Location, Description and Proposed Development

The proposed site of the assessable development (hereafter the 'Subject Land') is situated within the suburb of Randwick within the Randwick City Council Local Government Area (LGA), covering an area of approximately 0.21 ha **(Figure 1).** The existing Prince of Wales Hospital is situated to the east of the Subject Land, and the University of New South Wales (UNSW) is located to the west. The Subject Land is predominately comprised of a road, footpaths and car parking spaces. Some vegetation exists in the form of scattered canopy trees and groundcovers in garden beds.

The additional development to the Acute Services Building being assessed under this BDAR will include the following:

- Research Governance & Collaboration Spaces
- Clinical Research Facility
- Clinical Innovation and Translation Spaces
- High tech Interventional Suite and Clinical Translational Laboratory
- Bioengineering Innovation space
- Clinical Research Spaces.

The development will require the removal of seven (7) native trees and three (3) exotic trees, as well as a mixed native/exotic ground layer.

Narla have produced this report in order to assess any potential impacts associated with the DA and recommend appropriate measures to mitigate any potential ecological impacts in line with the requirements of the Consent Authority, the Minister for Energy and the Environment.

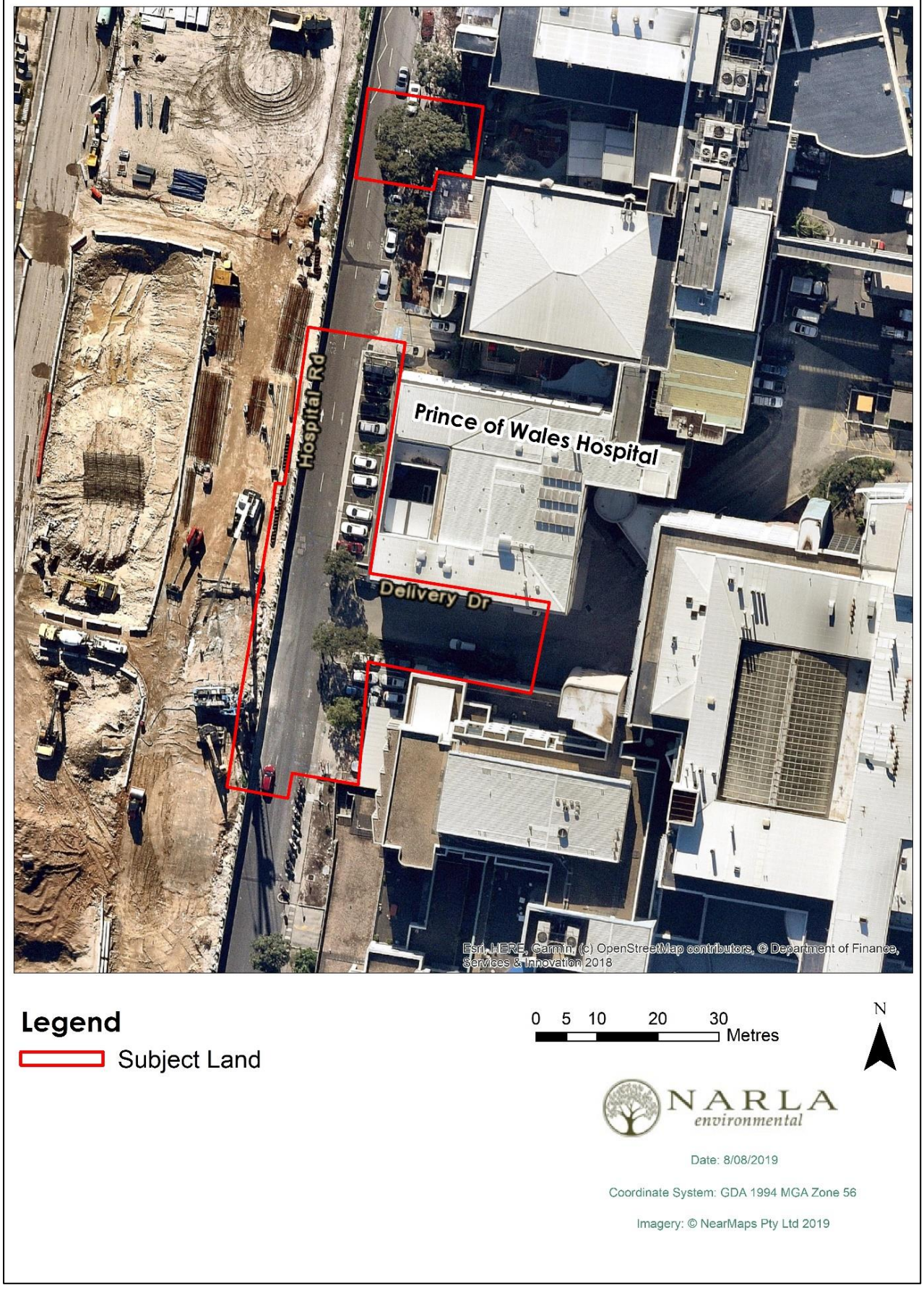


Figure 1. The location of Subject Land

1.3 Sources of Information Used

A thorough literature review was undertaken to review the ecology within the locality and the City of Randwick Local Government Area (LGA). Relevant data and literature reviewed in preparation of this report included:

- Relevant State and Commonwealth Databases:
    - Atlas of Living Australia Spatial Portal (ALA 2019)
    - NSW Bionet. The website of the Atlas of NSW Wildlife (OEH 2019c)
    - Protected Matters Search Tool (Department of the Environment and Energy 2019)
- Relevant State and Commonwealth Datasets:
    - NSW Government Spatial Services: Six Maps Clip & Ship
    - NSW State Environmental Planning Policy (Coastal Management)
    - NSW State Environmental Planning Policy No 19—Bushland in Urban Areas (SEPP 19)
    - NSW State Environmental Planning Policy No. 44 - Koala Habitat Protection (SEPP 44)
- Vegetation Mapping:
    - The Native Vegetation of the Sydney Metropolitan Area and Vegetation Information System (VIS) 3.1 (OEH 2016c)
- NSW State Guidelines:
    - Biodiversity Assessment Method Calculator (BAMC) (OEH 2017b);
    - BioNet Threatened Biodiversity Data Collection (TBDC) (OEH 2019d);
    - Threatened Species Survey and Assessment: Guidelines for developments and activities. Working Draft (DEC 2004)
    - NSW Guideline to Surveying Threatened Plants (OEH 2016b)
    - 'Species credit' threatened bats and their habitats: NSW survey guide for the Biodiversity Assessment Method (OEH 2018a)
    - Biodiversity Offsets and Agreement Management System (BOAMS)
- Commonwealth Guidelines:
    - Survey guidelines for Australia's threatened birds. Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth of Australia 2010a)
    - Survey guidelines for Australia's threatened bats. Guidelines for detecting bats listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth of Australia 2010b)
    - Survey guidelines for Australia's threatened frogs. Guidelines for detecting frogs listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth of Australia 2010c)
    - Survey guidelines for Australia's threatened mammals. Guidelines for detecting mammals listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth of Australia 2011)
    - Survey guidelines for Australia's threatened orchids. Guidelines for detecting orchids listed as 'threatened' under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth of Australia 2013)
- Council Documents:
    - Randwick Local Environmental Plan (RLEP) 2012
    - Randwick Development Control Plan (DCP) 2013
    - Weeds Declared in the Greater Sydney Region (DPI 2019)

Preparation of this BDAR also involved the review of the following accompanying project documents:

- NSW Health Infrastructure (16 May 2018) Request for the issue of Secretary's Environmental Assessment Requirements (SEARs) for a State Significant Development.
- NSW Department of Planning, Industry and Environment (June 2019) Issued SEARs – Application Number SSD-10339 – Addition to approved Acute Services Building for health research use (Date of Issue: 26/06/2019)

Online databases and literature review were utilised to gain an understanding of the natural environment and ecology of the Subject Land and its surrounds to an area of approximately 10 km². Searches utilising NSW Wildlife Atlas (Bionet) and the Commonwealth Protected Matters Search Tool were conducted to identify current threatened and migratory flora and fauna records within a 10km² search area centred on the Subject Land. This data was used to assist in establishing the presence or likelihood of any such ecological values as occurring on or adjacent to the Subject Land, and helped inform our Ecologist on what to look for during the site assessment.

Soil landscape and geological mapping was examined to gain an understanding of the environment on the Subject Land and assist in determining whether any threatened flora or ecological communities may occur there (Chapman and Murphy 1989).

1.4 Aim and Approach

This report has been prepared in accordance with the Biodiversity Assessment Methodology (BAM) (OEH 2017a) and aims to:

- Describe the biodiversity values present within the Subject Land, including the extent of native vegetation, vegetation integrity and the presence of threatened ecological communities (TECs);
- Determine the habitat suitability within the Subject Land for candidate threatened species;
- Prepare an impact assessment in regard to potential impacts of the proposed development on biodiversity values;
- Discuss and recommend efforts to avoid and minimise impacts on biodiversity values; and
- Calculate the biodiversity credits (i.e. ecosystem credits and species credits) that measure potential impacts of the development on biodiversity values. This calculation will inform the decision maker as to the number and class of offset credits required to be purchased and retired as a result of the proposed development.

2. Methodology

2.1 IBRA Bioregions and Subregions

The Subject Land occurs within the 'Sydney Basin' Interim Biogeographic Regionalisation (IBRA) 7 for Australia, specifically occurring within the 'Pittwater' IBRA 7 Subregion **(Table 1; Figure 2**).

2.2 Mitchell Landscapes

NSW Landscapes Mapping: Background and Methodology (Mitchell 2002) groups ecosystems into meso-ecosystems representing larger natural entities based on topography and geology. The naming of ecosystems and meso-ecosystems was standardised so that each name provided location information and a meaningful descriptive landscape term. The Subject Land occurs within the Sydney – Newcastle Barriers and Beaches Mitchell Landscape Ecosystem **(Table 1; Figure 3).**

Table 1. IBRA Bioregions, Subregions and NSW Mitchell Landscapes

IBRA Bioregion	IBRA Subregion	NSW Mitchell Landscape	Area on Subject Land (ha)
Sydney Basin	SYB0- Pittwater	Sydney - Newcastle Barriers and Beaches	0.21 ha

2.2.1 NSW Mitchell Landscape Ecosystem – Sydney - Newcastle Barriers and Beaches

Quaternary coastal sediments on long recurved quartz sand beaches between rocky headlands backed by sand dunes and intermittently closed and open lagoons. This includes areas of more extensive high dunes often located on top of the headlands. General elevation ranges from 0 to 30m, with local relief to 10m. Cliff top dunes may be found as high as 90m above sea level (Mitchell 2002).

There is a distinct zonation of vegetation and increasing soil development from the beach to the inland dunes. At the beach, spinifex (*Spinifex hirsutus*), spiky mat-rush (*Lomandra longifolia*), coast wattle (*Acacia longifolia ssp. sophorae*) and coast tea-tree (*Leptospermum laevigatum*) colonise the frontal dune in which there is little soil development. Coast banksia (*Banksia integrifolia*) and old man banksia (*Banksia serrata*) are found on the second dunes and these merge with more complex forest containing blackbutt (*Eucalyptus pilularis*), red bloodwood (*Corymbia gummifera*), grass trees (*Xanthorrhoea* sp.) and numerous understorey shrubs on deep sands that have an organic rich A horizon, a bleached A2 horizon and the initial development of weak iron or organic pans in the sandy subsoil. Well-developed, deep podsol profiles are present in the cliff top dunes with swampy swales indicating that these forms are probably older than the coastal dunes. Vegetation consists of *Banksia aemula* heathland and open scrub of coast banksia (*Banksia integrifolia*), coast rosemary (*Westringea fruticosa*), coast tea-tree and grass tree, with dwarfed smooth-barked apple (*Angophora costata*) and red bloodwood. Freshwater sedge swamps occur in larger areas of sand. In the lagoons, salinity varies depending on tidal flushing and they are often surrounded by broad-leaved tea-tree (*Melaleuca quinquenervia*) and swamp oak (*Casuarina glauca*). Water margins are occupied by *Juncus* sp. and common reed (*Phragmites australis*) in fresh water areas. Grey mangrove (*Avicennia marina*) may occur in some tidal inlets (Mitchell 2002).

2.3 Landscape Features

The landscape features identified within and surrounding the Subject Land are listed in **Table 2.** Further details on topography, geology, soils and hydrology are detailed below.

2.3.1 Topography, geology and soils

The Subject Land is mapped as occurring within the Tuggerah Soil Landscape (OEH 2019b). This is typically characterised by gently undulating to rolling coastal dunefields. The largest example is the extensive dune system of the Botany Lowlands. This includes the local government areas of Botany, Randwick and South Sydney. Other examples are found along the coast at Palm Beach, Narrabeen, Collaroy, Rose Bay, Bondi, Coogee, Kyeemagh, Brighton-le-Sands, Monterey, Ramsgate and Dolls Point. The underlying geology of this soil landscape is Quaternary (Holocene and Pleistocene) wind-blown, fine to medium grained, well sorted marine quartz sand. Soils are deep (>200cm) Podzols on dune and Podzols/Humus Podzol integrades on swales.

2.3.2 Hydrology

No existing watercourses, wetlands, swales or soaks have been mapped, nor were observed within the Subject Land by the Narla Ecologist during site assessment. A first order watercourse has been identified over 1km from the Subject Land (NSW Government Spatial Services 2019). No watercourses or riparian corridors occur within the Subject Land. No soaks or drainage lines were observed within the Subject Land by the Narla Ecologist during site assessment.

Table 2. Landscape features identified within the Subject Land and surrounding 1500m buffer

Landscape Feature	Identification of Landscape Feature on Site
Native vegetation extent in 1500m buffer area	The circular 1500m buffer zone covers an area of 707ha. Within this circle native vegetation covers approximately 74ha. This area of native vegetation represents 10.5% of the 1500m buffer zone. The native vegetation cover observed results in the assessment area being assigned to the >10-30% cover class **(Figure 5).**
Cleared area within 1500m buffer	The total area of cleared land within the assessment area surrounding the Subject Land is approximately 633ha**.** This area of cleared land accounts for approximately 89.5% of the land within the 1500m buffer zone **(Figure 5).**
Rivers and Streams (classified according to stream order)	No mapped watercourses occur within the Subject Land **(Figure 3).** One (1) mapped watercourses occur within the 1500m buffer of the Subject Land. This watercourse is a 1st order stream, but does not appear to be part of any major tributaries.
Wetlands (within, adjacent to and downstream of site)	The Subject Land nor the immediate surrounds (within the 1500m buffer) do not contain any areas of native vegetation identified as 'Coastal Wetlands' as per the State Environmental Planning Policy (Coastal Management) 2018 **(Figure 4).**
Connectivity features	The identified area of habitat connectivity between the Subject Land and native vegetation within the 1500m buffer zone has the potential to provide habitat for a number of threatened species, endangered populations and migratory species. There is the potential that 'flyways' used by a suite of both terrestrial and migratory avian species encompass the Subject Land as well as a land within the 1500m buffer zone.
Areas of geological significance and soil hazard features	No areas of geological significance (karsts, caves, crevices or cliffs) were identified within the Subject Land. This was determined as a result of a comprehensive site-based assessment. The Subject Land or immediate surrounds (within the 1500m buffer) is not mapped as occurring on Acid Sulphate soils nor is mapped as having risk/probability of exhibiting occurrence of Acid Sulphate Soils. This risk is therefore not applicable to the proposed development.

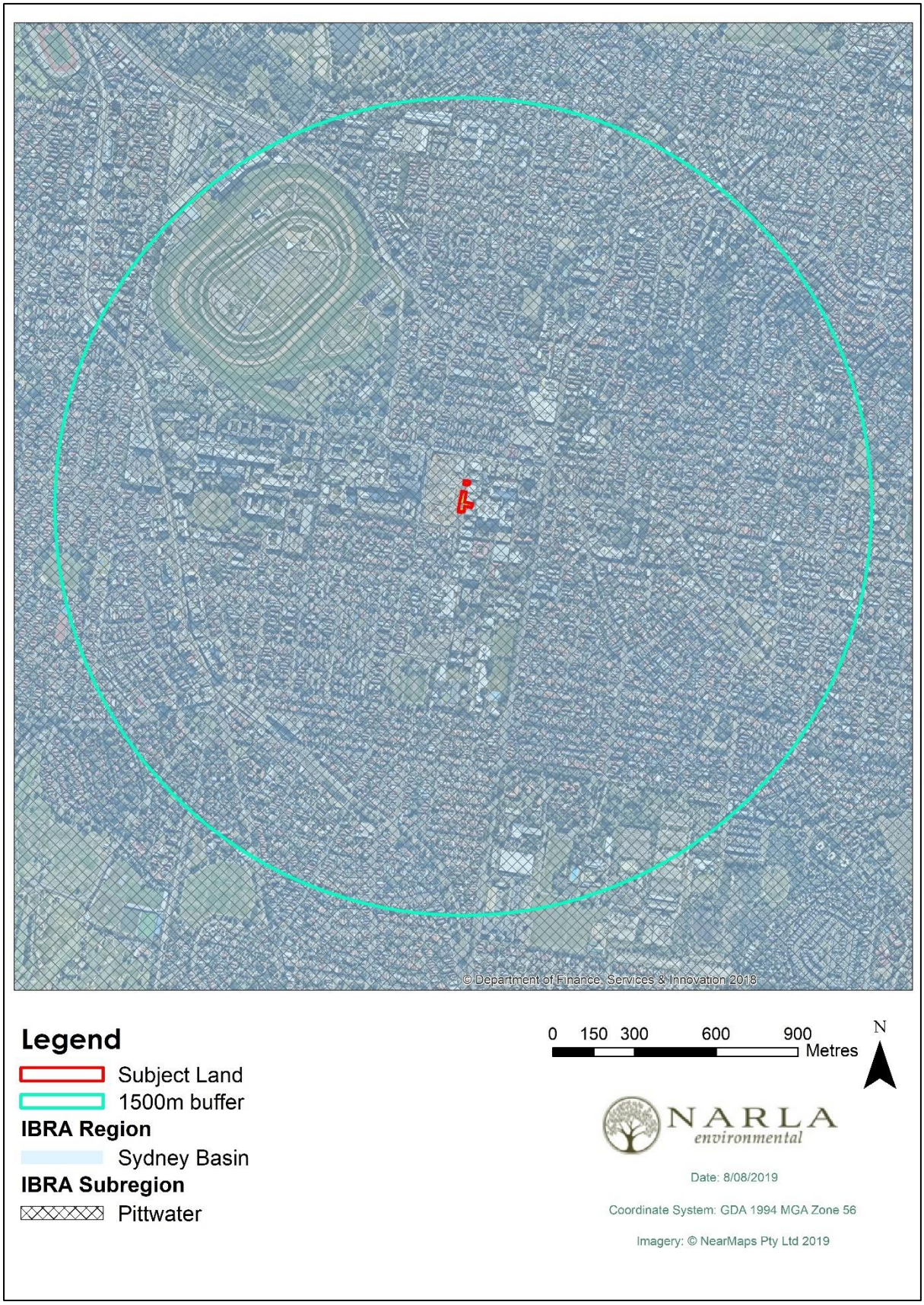


Figure 2. IBRA Bioregion and Subregion of the Subject Property and within a 1500m buffer

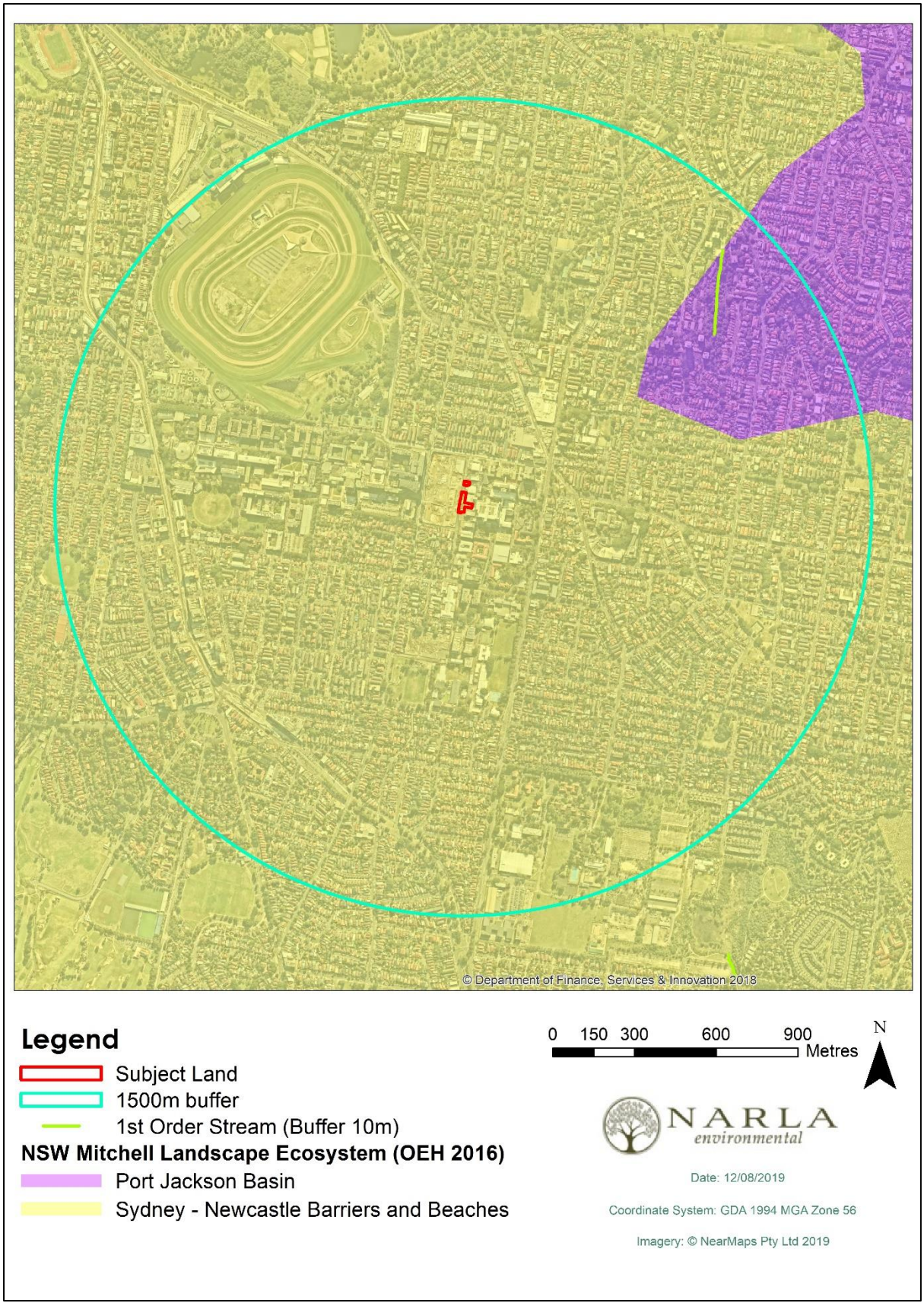


Figure 3. NSW Mitchell Landscape Ecosystem of the Subject Property and within a 1500m buffer; first-order stream within 1500m buffer.

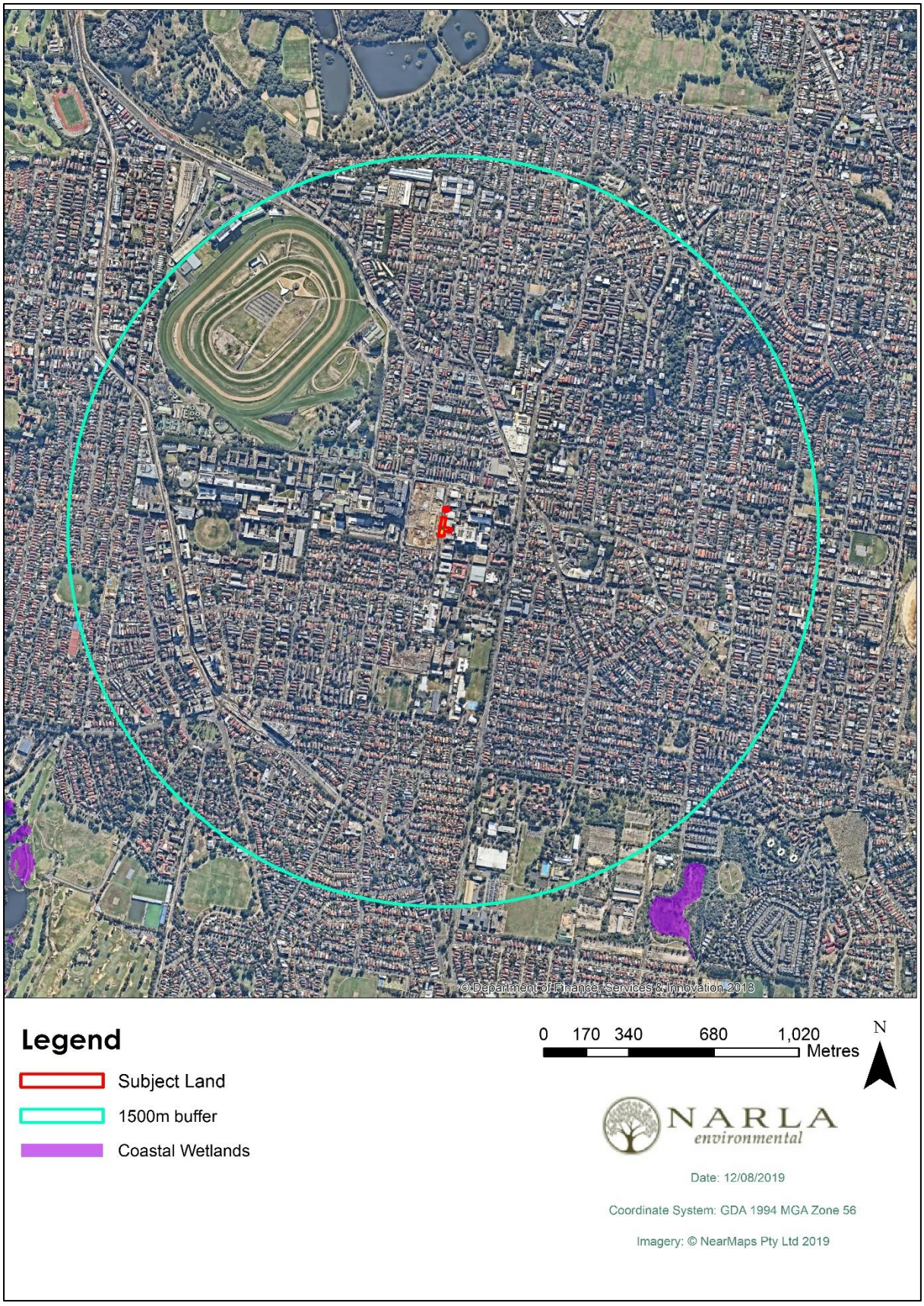


Figure 4. Coastal wetlands surrounding the 1500m buffer of the Subject Land.

3. Native Vegetation

3.1 Assessing Native Vegetation Cover

Native vegetation cover and patch size have been assessed in accordance with Section 4.3 of the Biodiversity Assessment Methodology (BAM) (OEH 2017a). Components of the site context will be used in order to assess the suitability of habitat for threatened species within the Subject Land.

A buffer area of 1500m surrounding the outside edge of the boundary of the Subject Land was prepared in order to determine the extent of native vegetation within the surrounding locality of the Subject Land. Native vegetation was considered to cover approximately 74 ha within the buffer circle and was assigned the >10-30% class **(Figure 5).**

3.2 Assessing Patch Size

Patch size as defined by the BAM as 'an area of native vegetation that:

- occurs on the development site or biodiversity stewardship site, and
- includes native vegetation that has a gap of less than 100m from the next area of moderate to good condition native vegetation (or ≤30m for non-woody ecosystems).

Patch size may extend onto adjoining land that is not part of the development site or biodiversity stewardship site' (OEH 2017a).

Patch size was calculated according to the above guidelines, and equated to 0.03ha **(Figure 5).**

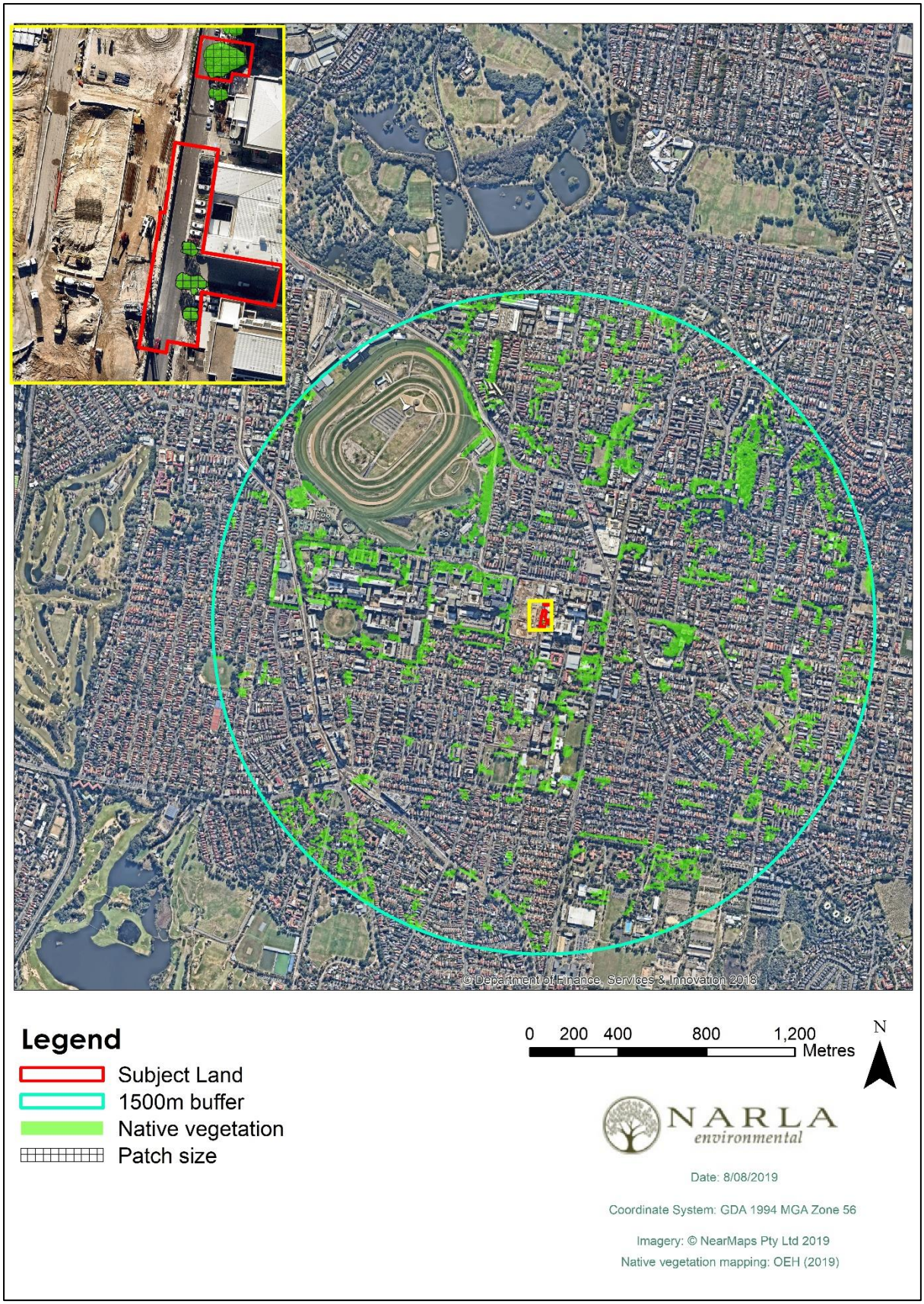


Figure 5. The extent of native vegetation and patch size occurring within and surrounding the 1500m buffer.

3.3 Historically Mapped Vegetation Communities

The Office of Environment and Heritage NSW (OEH 2016c) 'Native Vegetation of the Sydney Metropolitan Area' mapping indicates that no vegetation communities exist within or adjacent to the Subject Land.

3.4 Plant Community Types (PCT) Identified within Subject Land

3.4.1 PCT Selection Process

The Subject Land contained two (2) locally indigenous, native species: *Angophora costata* and *Dianella caerula*, which have both been historically planted. As the landscape within the Subject Land is highly altered, and remnant vegetation surrounding the Subject Land is lacking, it is problematic in defining a specific PCT, particularly considering the lack of floristics within the Subject Land. Nonetheless, as the vegetation is native vegetation, a PCT must be assigned.

PCT selection was undertaken using information and databases provided in the BioNet Vegetation Classification System (OEH 2019a). The steps taken to identify each PCT confirmed within the site is provided, along with evidence of selection, in **Table 3**.

Table 3. PCT Selection Criteria

Steps Involved in Identification of Chosen PCT	
IBRA Bioregion	Sydney Basin
IBRA Subregion	Pittwater
County	Randwick
Dominant Upper Stratum Species	*Angophora costata*
Shortlisted PCT's	**Justification**
664 - Banksia heath on aeolian sands of eastern Sydney suburbs, Sydney Basin Bioregion	This PCT is an open to closed heath found on shallow to moderately deep sand mantles that are perched above some of Sydney's major sandstone headlands. However, the Tuggerah soil landscape with which the Subject Land occurs is not associated with heath vegetation communities. Furthermore, this vegetation community is situated on headlands at North Head, Malabar, La Perouse and the Kurnell Peninsula. The Subject Land is not located on a headland. Therefore, this PCT was not assigned to the vegetation within the Subject Land.
1793 - Smooth-barked Apple - Bangalay / Tuckeroo - Cheese Tree open forest on coastal sands of the Sydney basin	This PCT is found on flat, low-lying coastal marine sand deposits of the coastal zones. Where this forest is found elevations rarely exceed 10 metres above sea level. As the Subject Land occurs at a higher elevation of approximately 55m, it was deemed that this PCT would not have historically occurred within the Subject Land and therefore this PCT was not assigned to the vegetation within the Subject Land.
Selected PCT	
1775 - Smooth-barked Apple - Old-man Banksia - Red Bloodwood open forest on pleistocene sand dunes around Sydney and the Central Coast	**Narla have assigned this PCT to the vegetation on the Subject Land. The Subject Land is situated on the Tuggerah soil profile, which is typically characterised by a gently undulating to rolling coastal dunefield, with the largest example being the extensive dune system of the Botany Lowlands. The Tuggerah soil landscape is also associated with dry sclerophyll eucalypt and apple woodland. PCT 1775, a Coastal Dune Dry Sclerophyll Forest, is one of several vegetation communities found on the large sand dunes associated with the prominent headlands of the Sydney coastline. The massive dune systems that once covered the Botany-Randwick area would have once supported a network of this vegetation community (OEH 2016c). Although historically planted, this correlates to the vegetation structure of *Angophora costata* and *Dianella caerulea* within the Subject Land, which are positive diagnostic species for this vegetation community. It was therefore concluded that the vegetation within the Subject Land is more likely part of PCT 1775.**

3.4.2 Final PCT Selection

Field surveys conducted by Narla confirmed that one (1) native vegetation community was located within the Subject Land. The native vegetation community was classified to the following Plant Community Type (PCT) that most represented the floristics and typical geology/landscape position of the community:

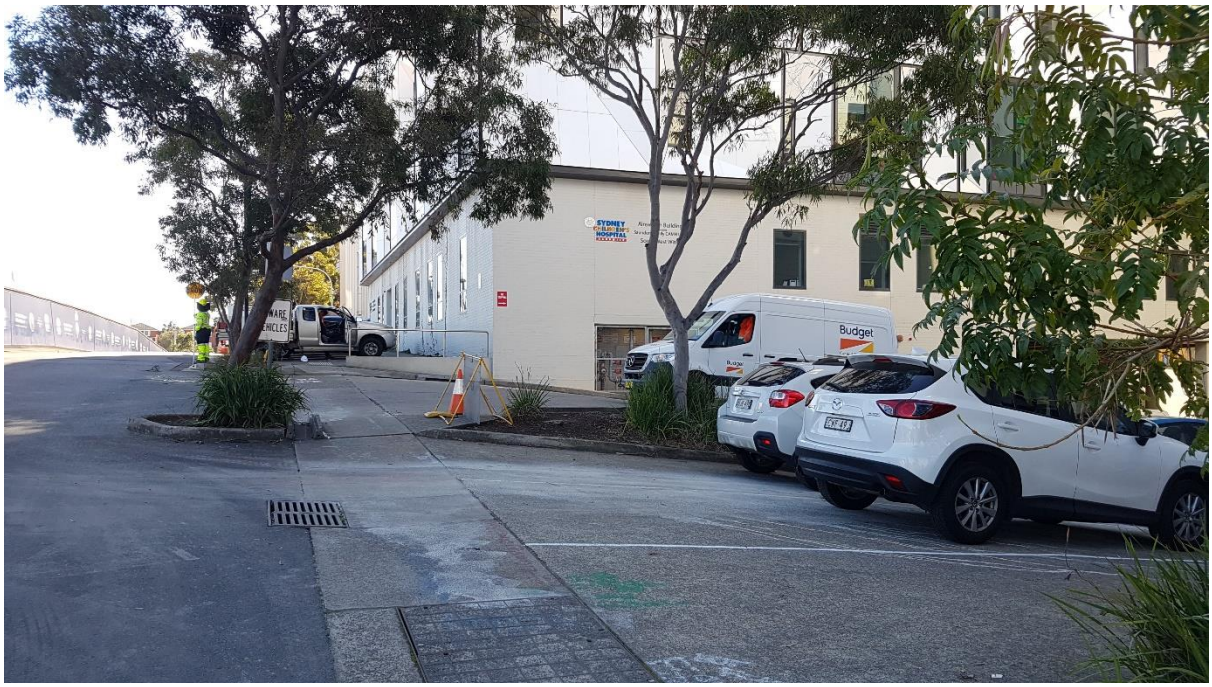
- PCT 1775 – *Smooth-barked Apple - Old-man Banksia - Red Bloodwood open forest on pleistocene sand dunes around Sydney and the Central Coast*

One (1) vegetation zone was identified within the Subject Land:

- Vegetation Zone 1 - PCT 1775

This vegetation zone is detailed in **Table 4** and displayed in **Figure 6.**

Table 4. Vegetation identified within the proposed development site

PCT 1775 – *Smooth-barked Apple - Old-man Banksia - Red Bloodwood open forest on pleistocene sand dunes around Sydney and the Central Coast*	
	
Vegetation formation / Keith Class	Coastal Dune Dry Sclerophyll Forests
Description in VIS	
Coastal Sand Apple-Bloodwood Forest is one of several vegetation communities found on the large sand dunes associated with the prominent headlands of the Sydney coastline. The forest is of low to moderate height and is characterised by an open cover of dry shrub and heath plants. Typically, the canopy comprises smooth-barked apple (*Angophora costata*), old-man banksia (*Banksia serrata*) and red bloodwood (*Corymbia gummifera*), though may also include broad-leaved scribbly gum (*Eucalyptus haemastoma*) and less frequently bangalay (*Eucalyptus botryoides*). The surface soil is generally deeply podsolised, inferring that the dune systems upon which this forest grows have been stable for a long time. These impoverished soils, in combination with the exposed wind-blown situations, support a heath understorey of tea-trees, banksias, broom heath and grass trees above a ferny ground cover. These forests are found on the larger headland systems at Jibbon Head near Bundeena, Kurnell and La Perouse. The massive dune systems that once covered the Botany-Randwick area would have once supported a network of these low-growing forests amongst the treeless sandplain heaths. Some examples are on thin sand mantles above sandstone rock plates. Beyond the Sydney metropolis, the community is found on low elevation dunes of the Central Coast	

PCT 1775 – *Smooth-barked Apple - Old-man Banksia - Red Bloodwood open forest on pleistocene sand dunes around Sydney and the Central Coast*	
Condition class on Subject Land	This vegetation community contains native species that have been historically planted in garden beds surrounding roads, footpaths and parking bays. One (1) canopy species, *Angophora costata,* and one (1) ground layer species, *Dianella caerulea*, are representative of PCT 1775. The majority of the ground layer is exotic species.
Extent within Subject Land (approximate)	0.03 ha
Survey effort	One (1) BAM plot was established. Floristics encompassed an area of 30m x 13m and a transect of 60m was utilised. Note that a standard sized BAM plot (20m x 50m) could not be created as the Subject Land was present adjacent to a road and buildings, and vegetation only occurred within sporadic garden beds. An alternate BAM plot was therefore established. This comprised a 30m x 13m full floristics plot and a 60m transect for a vegetation integrity plot.
Description of the Vegetation on Subject Land	
This vegetation community contained little floristic diversity. Scattered *Angophora costata* existed within this zone, as well as a small patch of *Dianella caerulea*. However, the ground layer was predominately exotic species, including high threat exotic weeds such as *Araujia sericifera* and *Ehrharta erecta*.	
Structure of Vegetation	
Within the 30m x 13m plot, native canopy vegetation was relatively sparse at 15% cover. There was no native shrub layer within the plot. The ground layer was sparsely covered, with covers of 0.5% native forb.	
Scientific Reference from VIS (OEH 2019)	OEH (2013) The Native Vegetation of the Sydney Metropolitan Area Version 2.0 NSW Office of Environment and Heritage Sydney
TEC Status (Biodiversity Conservation Act 2016)	This PCT does not form part of a Threatened Ecological Community under the BC Act 2016.
Estimate of percent cleared value of PCT in the major catchment area	58.00 %

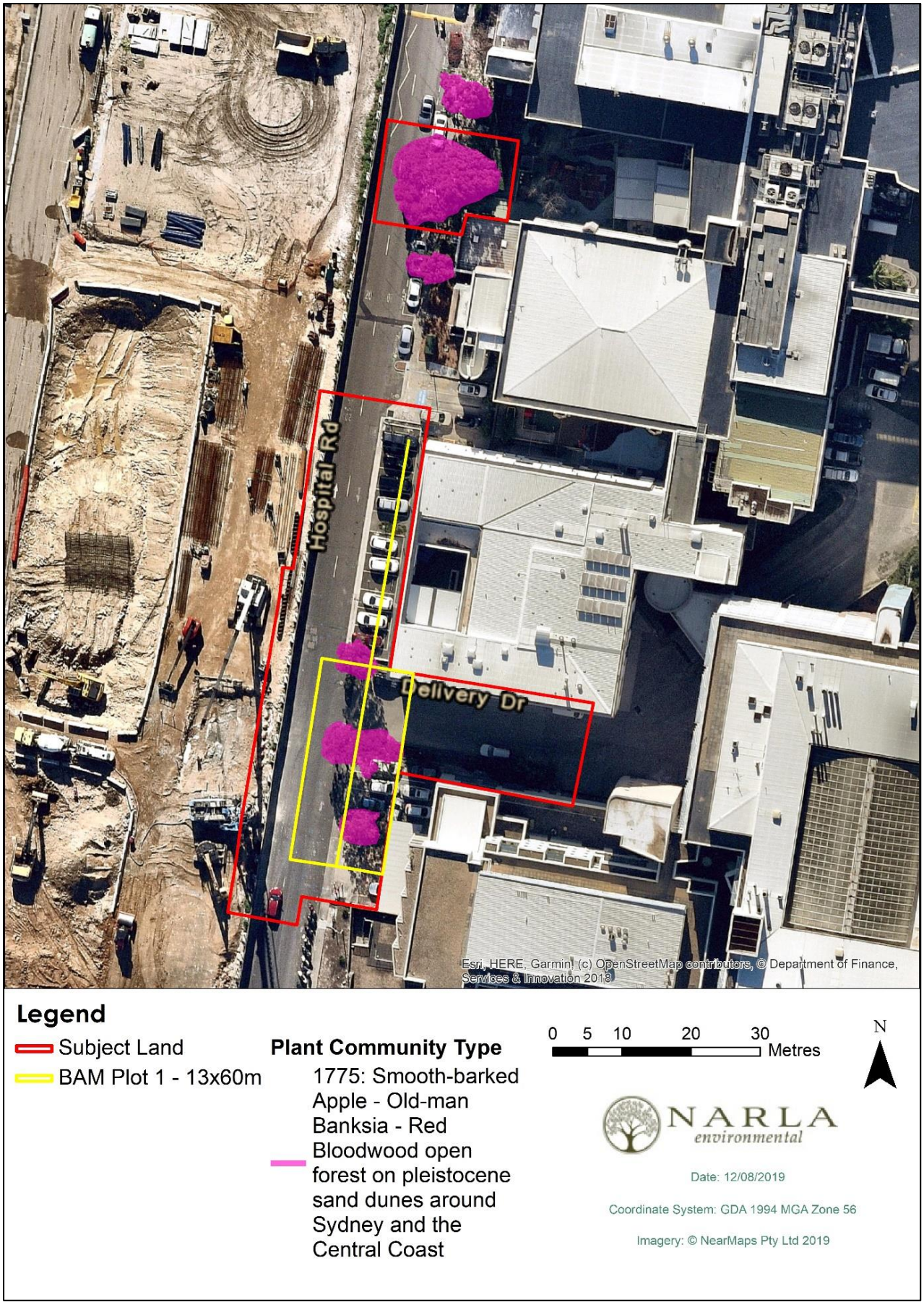


Figure 6. Narla field validated vegetation mapping and locations of BAM plots within the Subject Land.

3.4.3 Vegetation Integrity Survey (VIS) Plots

One (1) Biodiversity Assessment Method (BAM) Vegetation Integrity Survey (VIS) Plots was undertaken within the Subject Land.

Plot data gathered for each attribute used to assess the function of the Subject Land vegetation is detailed in **Appendix C.**

Vegetation Integrity Scores (VIS) represented by existing vegetation within each vegetation zone is detailed in **Table 5.**

Table 5. Vegetation integrity scores for each identified zone

Vegetation Zone	Plant Community Type	Area (ha)	Survey Effort	Composition Condition Score	Structure Condition Score	Function Condition Score	Vegetation Integrity Score	Future Vegetation Integrity Score	Hollow Bearing Trees
Vegetation Zone 1	PCT 1775 – *Smooth-barked Apple - Old-man Banksia - Red Bloodwood open forest on pleistocene sand dunes around Sydney and the Central Coast*	0.03	One 780m^2 (13m x 60m) Vegetation Integrity Survey Plot	2.2	9.5	10.8	6	0	0

4. Threatened Species

4.1 Candidate Ecosystem Credit Species

Ecosystem credit species associated with the Subject Land are listed below in **Table 6.** No species predicted by the BAM calculator as potential ecosystem credits were excluded from the results displayed.

Table 6. Candidate ecosystem credits predicted to occur within the Subject Land

Scientific Name	BC Act Status	Excluded from Assessment
Anthochaera phrygia Regent Honeyeater (Foraging)	Critically Endangered	No
Daphoenositta chrysoptera Varied Sittella	Vulnerable	No
Dasyurus maculatus Spotted-tailed Quoll	Vulnerable	No
Glossopsitta pusilla Little Lorikeet	Vulnerable	No
Haliaeetus leucogaster White-bellied Sea-Eagle (Foraging)	Vulnerable	No
Hieraaetus morphnoides Little Eagle (Foraging)	Vulnerable	No
Lathamus discolour Swift Parrot (Foraging)	Endangered	No
Miniopterus orianae oceanensis Large Bent-winged bat (Foraging)	Vulnerable	No
Mormopterus norfolkensis Eastern Freetail-bat	Vulnerable	No
Ninox strenua Powerful Owl (Foraging)	Vulnerable	No
Pteropus poliocephalus Grey-headed Flying-fox (Foraging)	Vulnerable	No
Saccolaimus flaviventris Yellow-bellied Sheathtail-bat	Vulnerable	No
Tyto novaehollandiae Masked Owl (Foraging)	Vulnerable	No

4.1 Candidate Species Credit Species Summary

This section provides a summary of the candidate Species Credit flora and fauna species for the Subject Land derived from BAMC (OEH 2017b) and a 10km BioNet Atlas Search (OEH 2019c). A summary of the targeted survey effort applied to each species is provided along with the results of the survey effort, specifically whether or not the Species Credit needs to be offset through retiring of Biodiversity Offset Credits **(Table 7; Table 8).**

Table 7. Candidate Fauna Credit Species predicted to occur within the Subject Land

Scientific Name	BC Act listing status	Included in Assessment?	Targeted Survey Conducted?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
Aepyprymnus rufescens Rufous Bettong	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species typically inhabits a variety of forests with a dense cover of tall native grasses. Such habitat does not occur on the Subject Land.	High - 2	No
Anthochaera phrygia Regent Honeyeater (Breeding)	Critically Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. In addition, the Subject Land is not included on the map of important areas for Regent Honeyeater.	Very High – 3	No
Burhinus grallarius Bush Stone-curlew	Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species inhabits open forests and woodlands. Such habitat does not occur on the Subject Land.	High - 2	No
Calidris alba Sanderling (Breeding)	Vulnerable	No	No - this species does not breed in Australia. It migrates to Australia for the non-breeding period.	High - 2	No
Calidris ferruginea Curlew Sandpiper (Breeding)	Endangered	No	No – this species does not breed in Australia. It migrates to Australia for the non-breeding period.	Very High – 3	No
Calidris tenuirostris Great Knot (Breeding)	Vulnerable	No	No - this species does not breed in Australia. It migrates to Australia for the non-breeding period.	Very High – 3	No
Callocephalon fimbriatum Gang-gang Cockatoo (Breeding)	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species requires eucalypt trees with	High - 2	No

Scientific Name	BC Act listing status	Included in Assessment?	Targeted Survey Conducted?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
			hollows >9cm for breeding. Such habitat does not occur on the Subject Land.		
Calyptorhynchus lathami Glossy Black- Cockatoo (Breeding)	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species requires living or dead trees with hollows greater than 15cm diameter and greater than 5m above ground for breeding. This species also requires the presence of *Allocasuarina* and *Casuarina* species for foraging. Such habitat does not occur on the Subject Land.	High - 2	No
Caretta caretta Loggerhead Turtle	Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species requires elevated sand dune above the watertable and high tide. Such habitat does not occur on the Subject Land.	Very High – 3	No
Cercartetus nanus Eastern Pygmy-possum	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species prefers woodlands and heath, and feeds largely on nectar and pollen from banksias, eucalypts and bottlebrushes. Such habitat does not occur on the Subject Land.	High - 2	No
Charadrius leschenaultii Greater Sand-plover (Breeding)	Vulnerable	No	No - this species does not breed in Australia. It migrates to Australia for the non-breeding period.	High - 2	No
Charadrius mongolus Lesser Sand-plover (Breeding)	Vulnerable	No	No - this species does not breed in Australia. It migrates to Australia for the non-breeding period.	High - 2	No
Chelonia mydas Green Turtle	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species requires elevated sand dunes above the watertable and high tide. Such habitat does not occur on the Subject Land.	High - 2	No

Scientific Name	BC Act listing status	Included in Assessment?	Targeted Survey Conducted?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
Epthianura albifrons – endangered population White -fronted Chat population in the Sydney Metropolitan Catchment Management Area	Endangered Population	No	No – this species is found predominantly in saltmarsh vegetation along the coastline but also in open grasslands and sometimes in low shrubs bordering wetland areas. An isolated population of White-fronted Chats exists in Towra Point Nature Reserve in Botany Bay. This is approximately 12km from the Subject Land and is separated by Botany Bay and urbanised land. After carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. No individuals were observed within the Subject Land during the site assessment, which coincides with the survey time for this species.	High - 2	No
Haematopus longirostris Pied Oystercatcher	Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species inhabits intertidal flats of inlets and bays, open beaches and sandbanks. Such habitat does not occur on the Subject Land.	High - 2	No
Haliaeetus leucogaster White-bellied Sea-Eagle (Breeding)	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. The breeding habitat of this species consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Such habitat does not occur on the Subject Land.	High - 2	No
Hieraaetus morphnoides Little Eagle (Breeding)	Vulnerable	Yes	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species nests in tall living trees within a remnant patch. Such habitat does not occur on the Subject Land.	Moderate - 1.5	No
Lathamus discolour Swift Parrot (Breeding)	Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. Furthermore, this species only breeds in Tasmania.	Very High - 3	No
Limosa limosa Black-tailed Godwit (Breeding)	Vulnerable	No	No – this species does not breed in Australia. It migrates to Australia for the non-breeding period.	High – 2	No

Scientific Name	BC Act listing status	Included in Assessment?	Targeted Survey Conducted?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
Litoria aurea Green and Golden Bell Frog	Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species requires marshes, dams and stream-sides, particularly those containing bulrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.). Such habitat does not occur on the Subject Land.	High - 2	No
Miniopterus orianae oceanensis Large Bent-winged Bat (Breeding)	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species typically breeds in caves, but can also use derelict mines and storm-water tunnels. Such habitat does not occur on the Subject Land.	Very High - 3	Yes
Myotis macropus (Southern Myotis)	Vulnerable	Yes	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species requires hollow bearing trees within 200 m of a riparian zone or water body, Such habitat does not occur on the Subject Land.	High – 2	Yes
Ninox strenua Powerful Owl (Breeding)	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species requires living or dead trees with hollows greater than 20 cm diameter for breeding. Such habitat does not occur on the Subject Land.	High - 2	No
Pandion cristatus Eastern Osprey (Breeding)	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species requires living and dead trees (>15m) or artificial structures within 100m of a floodplain for nesting. Such habitat does not occur on the Subject Land.	Moderate - 1.5	No
Pezoporus wallicus wallicus Eastern Ground Parrot	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species occurs in high rainfall coastal and near coastal low heathlands and sedgelands. Such habitat does not occur on the Subject Land.	High - 2	No
Phascolarctos cinereus Koala (Breeding)	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to	High - 2	No

Scientific Name	BC Act listing status	Included in Assessment?	Targeted Survey Conducted?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
			utilise the Subject Land. This species inhabits eucalypt woodlands and forests. Such habitat does not occur on the Subject Land		
Pteropus poliocephalus Grey-headed Flying-fox (Breeding)	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. There was no active breeding colony located on the Subject Land.	High – 2	No
Sternula albifrons Little Tern (Breeding)	Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species requires low dunes or sandy beaches for breeding. Such habitat does not occur on the Subject Land.	High – 2	No
Tyto novaehollandiae Masked Owl (Breeding)	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species requires living or dead trees with hollows greater than 20 cm diameter for breeding. Such habitat does not occur on the Subject Land.	High - 2	No
Xenus cinereus Terek Sandpiper (Breeding)	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species typically inhabits mudbanks and sandbanks located near mangroves. Such habitat does not occur on the Subject Land.	High – 2	No

Table 8. Candidate Flora Credit Species predicted to occur within the Subject Land

Scientific Name	NSW BC Act (2016) listing status	Included in Assessment?	Targeted Survey Conducted?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
Acacia terminalis subsp. terminalis Sunshine Wattle	Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species occurs in coastal scrub and dry sclerophyll woodland on sandy soils. Such habitat does not occur on the Subject Land.	High - 2	No
Chamaesyce psammogeton Sand Spurge	Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species grows on fore-dunes, pebbly strandlines and exposed headlands. Such habitat does not occur on the Subject Land.	High - 2	No
Dichanthium setosum Bluegrass	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species is associated with heavy basaltic black soils and red-brown loams with clay subsoil. Such habitat does not occur on the Subject Land.	High - 2	No
Diuris arenaria Sand Doubletail	Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species occurs in coastal heath and dry grassy eucalypt forest on sandy flats. Such habitat does not occur on the Subject Land.	Very High – 3	No
Doryanthes palmeri Giant Spear Lily	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species occurs on exposed rocky outcrops on infertile soils or on bare rock. Such habitat does not occur on the Subject Land.	High - 2	No
Eucalyptus fracta Broken Back Ironbark	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. Furthermore, the Subject Land is not within the natural distribution of this species.	Very High – 3	No
Eucalyptus nicholii Narrow-leaved Black Peppermint	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. Furthermore, the Subject Land is not within the natural distribution of this species	High - 2	No

Scientific Name	NSW BC Act (2016) listing status	Included in Assessment?	Targeted Survey Conducted?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
Eucalyptus pulverulenta Silver-leaved Gum	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. Furthermore, the Subject Land is not within the natural distribution of this species	High - 2	No
Eucalyptus scoparia Wallangarra White Gum	Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. Furthermore, the Subject Land is not within the natural distribution of this species	Very High – 3	No
Hibbertia puberula	Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species occupies dry sclerophyll woodland and heath. Such habitat does not occur on the Subject Land.	High - 2	No
Melaleuca deanei	Vulnerable	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. Furthermore, this species occurs mostly in ridgetop woodland. This habitat does not occur on the Subject Land.	High - 2	No
Persoonia hirsuta Hairy Geebung	Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species occupies dry sclerophyll open forest, woodland and heath on sandstone. Such habitat does not occur on the Subject Land.	High - 2	No
Prostanthera marifolia Seaforth Mintbush	Critically Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species occurs in localised patches in or in close proximity to the endangered Duffys Forest ecological community. Such habitat does not occur on the Subject Land.	Very High – 3	No
Senecio spathulatus Coast Groundsel	Endangered	No	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. Furthermore, this species occurs on frontal dunes. Such habitat does not occur on the Subject Land.	High - 2	No

Scientific Name	NSW BC Act (2016) listing status	Included in Assessment?	Targeted Survey Conducted?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
Syzygium paniculatum Magenta Lilly Pilly	Endangered	Yes	No - after carrying out a field assessment of the habitat constraints or microhabitats on the Subject Land, it was determined that the habitat is substantially degraded such that the species is unlikely to utilise the Subject Land. This species occurs in littoral (coastal) rainforests and riverside gallery rainforests. Such habitat does not occur on the Subject Land.	High - 2	No

4.2 Targeted Species Credit Surveys

4.2.1 Flora Species Credit Survey

A total of fifteen (15) threatened flora species were identified within the BAMC (OEH 2017d) and historical records (OEH 2019c) as having the potential to occur within the Subject Land.

All fifteen (15) of these species were not surveyed for as the habitat within the Subject Land was considered to be 'substantially degraded such that the species is unlikely to utilise the Subject Land' in accordance with Section 6.4.1.17(a) of the BAM (OEH 2017a).

The species excluded from the survey were:

- *Acacia terminalis subsp. terminalis* (Sunshine Wattle)
- *Chamaesyce psammogeton* (Sand Spurge)
- *Dichanthium setosum* (Bluegrass)
- *Diuris arenaria* (Sand Doubletail)
- *Doryanthes palmeri* (Giant Spear Lily)
- *Eucalyptus fracta* (Broken Back Ironbark)
- *Eucalyptus nicholii* (Narrow-leaved Black Peppermint)
- *Eucalyptus pulverulenta* (Silver-leaved Gum)
- *Eucalyptus scoparia* (Wallangarra White Gum)
- *Hibbertia puberula*
- *Melaleuca deanei*
- *Persoonia hirsuta* (Hairy Geebung)
- *Prostanthera marifolia* (Seaforth Mintbush)
- *Senecio spathulatus* (Coast Groundsel)
- *Syzygium paniculatum* (Magenta Lilly Pilly)

No targeted surveys were therefore conducted for threatened flora species. As per Section 6.4.1.18 of the BAM, 'A candidate species credit species that is not considered to have suitable habitat on the Subject Land (or specific vegetation zones) in accordance with Paragraph 6.4.1.17 does not require further assessment on the Subject Land (or specific vegetation zones)' (OEH 2017a). Justification for determining that certain predicted species credit species were unlikely to have suitable habitat on the Subject Land (or specific vegetation zones) are provided earlier in **Table 8.**

4.2.2 Fauna Species Credit Survey

A total of thirty (30) threatened fauna species were identified within the BAMC (OEH 2017b) and historical records (OEH 2019c) as having the potential to occur within the Subject Land. Targeted fauna surveys were not undertaken on the Subject Land for all thirty (30) candidate species credit species as the habitat within the Subject Land was considered to be 'substantially degraded such that the species is unlikely to utilise the Subject Land' in accordance with Section 6.4.1.17(a) of the BAM (OEH 2017a).

As per Section 6.4.1.18 of the BAM, 'A candidate species credit species that is not considered to have suitable habitat on the Subject Land (or specific vegetation zones) in accordance with Paragraph 6.4.1.17 does not require further assessment on the Subject Land (or specific vegetation zones)' (OEH 2017a). Justification for determining that certain predicted species credit species were unlikely to have suitable habitat on the Subject Land (or specific vegetation zones) are provided earlier in **Table 7.**

4.3 Species Polygons

Where a Species Credit species is assumed to be present within the Subject Land, the assessor must assign a species polygon that encompasses the entire vegetation zone(s) within which the candidate species is predicted to occur based on the correct application of the BAMC (OEH 2017a; OEH 2018b).

No Species Credit species were assumed to be present within the Subject Land. Therefore, no species polygons were assigned.

5. Avoid and Minimise Impacts

5.1 Impact Mitigation and Minimisation Measures

This section details the measures to be implemented before, during and post construction to avoid and minimise the impacts of the project **(Table 9).**

Table 9. Table of measures to be implemented before, during and after construction to avoid and minimise the impacts of the project

Action	Outcome	Timing	Responsibility
Avoid and Minimise Impact - Project Location, Design and Planning	As the proposed development is an addition to the already approved Acute Services Building, there is minimal scope for alternative locations and design to minimise impacts to biodiversity. Nonetheless, the proposed development is already located in a highly urbanised area that contains minimal biodiversity. The removal of the vegetation will not impact on habitat for threatened species in the wider area.	Pre-construction phase	▪ Proponent
Assigning a Project Ecologist	Prior to construction, the applicant should commission the services of a qualified and experienced Ecologist Consultant (minimum 3 years' experience) with a minimum tertiary degree in Science, Conservation, Biology, Ecology, Natural Resource Management, Environmental Science or Environmental Management. The Ecologist must be licensed with a current Department of Primary Industries Animal Research Authority permit and New South Wales Scientific License issued under the BC Act. The Ecologist will be commissioned to: ▪ Undertake an extensive pre-clearing survey; delineating habitat-bearing trees and shrubs to be retained/removed; and ▪ Supervise the clearance of trees and shrubs (native and exotic) in order to capture, treat and/or relocate any displaced fauna.	Prior to vegetation clearance works	▪ Proponent
Preparation of a Construction Environmental Management Plan (CEMP)	A Construction Environmental Management Plan (CEMP) will be required for the construction phase of the project, and will be prepared prior to issue of the Construction Certificate. The CEMP would include, as a minimum, industry-standard measures for the management of soil, surface water, weeds and pollutants, as well as site-specific measures, including the procedures outlined below. The proposed mitigation measures would include environmental safeguards for protection of neighbouring properties and nearby waterways in accordance with relevant policy documentation and Government guidelines. In order to address the potential impacts of the proposed development on biodiversity, the mitigation and management measures outlined within this table would be implemented as part of the CEMP for the site.	Pre-construction phase	▪ Proponent ▪ Project Ecologist ▪ Construction Contractor

Action	Outcome	Timing	Responsibility
Tree Protections	Australian Standard 4970 (2009) Protection of Trees on Development Sites (AS-4970) outlines that a Tree Protection Zone (TPZ) is the principal means of protecting trees on construction sites. It is an area isolated from construction disturbance so that the tree remains viable. Ideally, works should be avoided within the TPZ. A Minor Encroachment is less than 10% of the TPZ and is outside the SRZ. A Minor Encroachment is considered acceptable by AS-4970 when it is compensated for elsewhere and contiguous within the TPZ. A Major Encroachment is greater than 10% of the TPZ or inside the SRZ. Major Encroachments generally require root investigations undertaken by non-destructive methods or the use of tree sensitive construction methods.	Pre-construction phase	▪ Proponent ▪ Arborist
Clearing of vegetation/ fauna habitat	In preparation for the authorised clearing of native vegetation, the following conditions should be adhered to in order to minimise all potential impacts to native biodiversity values within the Subject Land: ▪ Before any vegetation is damaged or removed, a qualified Ecologist with flora identification experience should be assigned to undertake a pre-clearing survey to delineate areas permitted to be cleared, from areas that must be retained. Brightly coloured bunting or strong flagging tape should be used. ▪ Prior to vegetation being damaged or removed, a qualified Ecologist with fauna identification experience should determine the presence of any suitable habitat for roosting microbats, nesting birds or other fauna in the area of the Subject Land due to be cleared. ▪ All trees (including dead trees) should be felled by qualified Arborists using chainsaw and pulleys only. No heavy machinery is permitted for removal of any tree. ▪ A qualified Project Ecologist with experience in handling wildlife should be present on the Project Site during all vegetation clearing in order to supervise clearing and capture and relocate any displaced, healthy animals, or care for / rehabilitate any injured or orphaned animals.	Prior to vegetation clearance works	▪ Proponent ▪ Project Ecologist ▪ Arboricultural Professional
Rehabilitation of native vegetation and habitat	Where landscaping is proposed, landscape plantings should consist entirely of locally-indigenous species that conform to PCT 1775 – *Smooth-barked Apple - Old-man Banksia - Red Bloodwood open forest on pleistocene sand dunes around Sydney and the Central Coast.* The provision of native plantings in landscaping will minimise the impact of native vegetation loss on local fauna that may utilise it for foraging and shelter.	Post-construction phase	▪ Proponent ▪ Project Ecologist
Erosion and Sedimentation	Appropriate erosion and sediment control must be erected and maintained at all times during construction in order to avoid the potential of incurring indirect impacts on biodiversity values. As a minimum, such measures should comply with the relevant industry guidelines such as 'the Blue Book' (Landcom 2004).	Construction phase	▪ Proponent ▪ Construction Contractor

Action	Outcome	Timing	Responsibility
Erection of temporary fencing	Temporary fencing should be erected around retained native vegetation that may incur indirect impacts on biodiversity values due to the construction works.	Construction phase	▪ Proponent ▪ Construction Contractor
Storage and Stockpiling (Soil and Materials)	Allocate all storage, stockpile and laydown sites away from any native vegetation that is planned to be retained. Avoid importing any soil from outside the site as this can introduce weeds and pathogens to the site in order to avoid the potential of incurring indirect impacts on biodiversity values.	Construction phase	▪ Construction Contractors
Stormwater	Potential impacts relating to stormwater and runoff will be managed during construction and operation phases. The Construction Environmental Management Plan (CEMP) will guide stormwater management during the construction phase of development.	Post-construction phase	▪ Proponent ▪ Construction Contractors/ Architect

6. Impact Summary

6.1 Impacts on Biodiversity Values

6.1.1 Native Vegetation Clearance Requiring Offsetting

The following native vegetation within the Subject Land is proposed to be impacted as a result of the proposed development.

- 0.03 ha of native vegetation representative of PCT 1775 – *Smooth-barked Apple - Old-man Banksia - Red Bloodwood open forest on pleistocene sand dunes around Sydney and the Central Coast*

The assessor has determined that the vegetation integrity score of the proposed action is 6. In accordance with section 3.1.1.3 of the BAM, a vegetation zone has a vegetation integrity score <17 where the PCT is associated with threatened species habitat (as represented by ecosystem credits), or is representative of a vulnerable ecological community, requires no further assessment of native vegetation beyond Section 5.4 of the BAM, and an assessment of threatened species habitat according to Section 6.2 and Paragraph 6.2.1.4 is not required.

No Biodiversity Offset Credits will be required **(Figure 7)**.

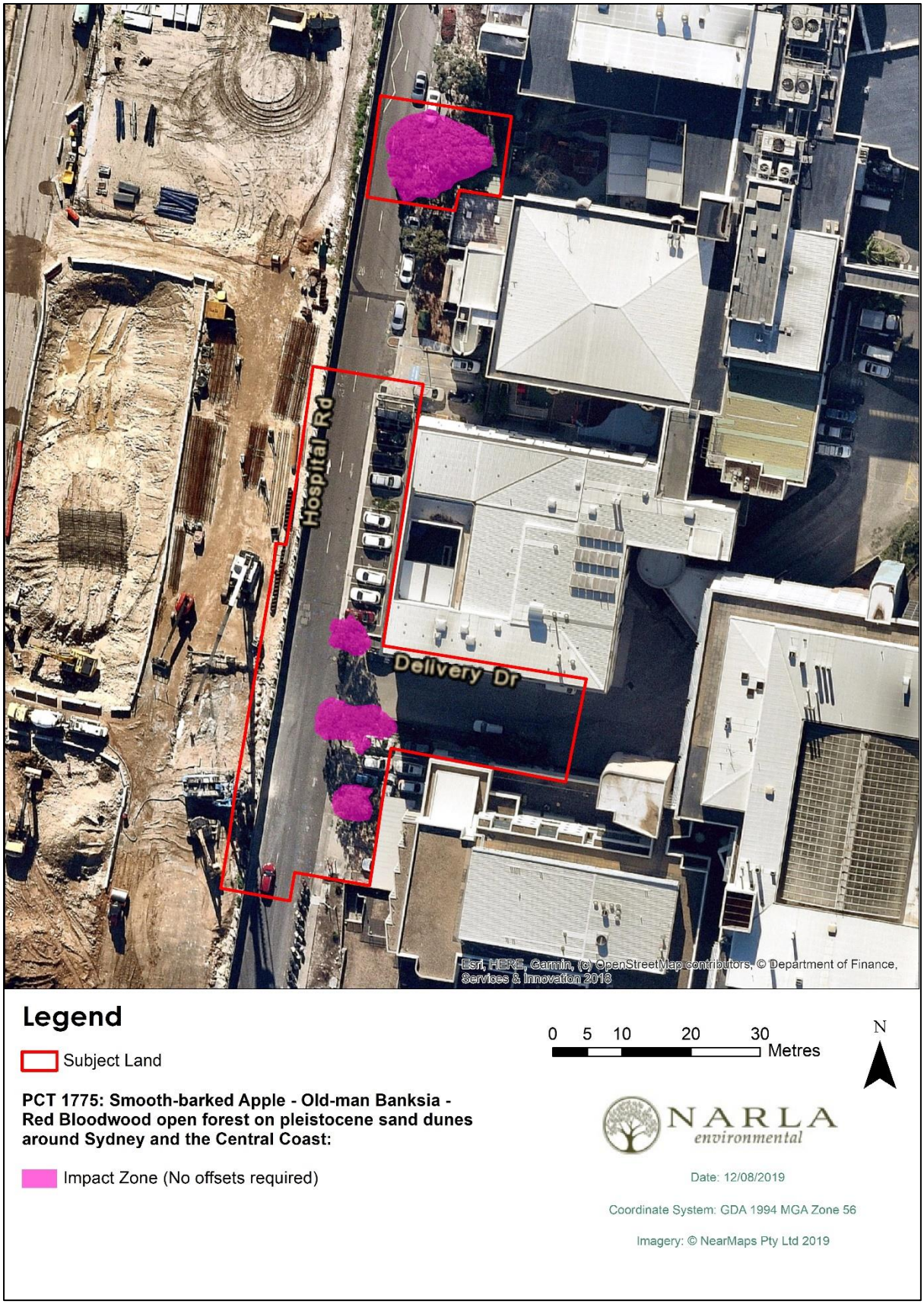


Figure 7. Impact zones and offset requirements

6.2 Other Impacts

6.2.1 Indirect Impacts

Indirect impacts occur when the proposal or activities relating to the construction or operation of the proposal affect native vegetation, threatened ecological communities and threatened species habitat beyond the Subject Land. Impacts may also result from changes to land-use patterns, such as an increase in vehicular access and human activity on native vegetation, threatened ecological communities and threatened species habitat. The indirect impacts of this proposed development are outlined in **Table 10**.

Table 10. Indirect Impacts

Indirect Impact	Extent and duration	Threatened species, threatened ecological communities and their habitats likely to be affected.	Consequences of the impacts for the bioregional persistence of the threatened species, threatened ecological communities and their habitats.
(a) inadvertent impacts on adjacent habitat or vegetation	It is unlikely that the proposed development will impact adjacent habitat or vegetation considering the Subject Land and surrounding area is highly developed and modified. Vegetation is only present in the form of native and exotic garden beds surrounded by roads and tall buildings.	N/A	N/A
(b) reduced viability of adjacent habitat due to edge effects	It is unlikely the proposed development will reduce viability of adjacent habitat due to edge effects, as the adjacent vegetation is only in the form of native and exotic garden beds in a highly developed and modified area.	N/A	N/A
(c) reduced viability of adjacent habitat due to noise, dust or light spill	Construction works may increase noise and dust exposure to adjacent habitat. However, given the vegetation is located in a heavily urbanised and disturbed area, such issues are already present within and surrounding the Subject Land. It is therefore unlikely the proposed works will significantly exacerbate any of these issues.	N/A	N/A
(d) transport of weeds and pathogens from the site to adjacent vegetation	It is unlikely the proposed development will increase weeds and pathogens into adjacent vegetation, considering such vegetation is heavily degraded and already exposed to such issues.	N/A	N/A
(e) increased risk of starvation, exposure and loss of shade or shelter	It is unlikely that any threatened fauna relies on habitat within the Subject Land, such that the proposed impacts will lead to increased risks from starvation, exposure, shade and shelter. Canopy trees that provide habitat resources	N/A	N/A

Indirect Impact	Extent and duration	Threatened species, threatened ecological communities and their habitats likely to be affected.	Consequences of the impacts for the bioregional persistence of the threatened species, threatened ecological communities and their habitats.
	within the wider area will continue to be retained.		
(f) loss of breeding habitats	The proposed development will not remove any important breeding habitats as the site is already highly disturbed and developed.	N/A	N/A
(g) trampling of threatened flora species	No threatened flora species were identified within the Subject Land. It is therefore not expected that the trampling of threatened flora species will occur.	N/A	N/A
(h) inhibition of nitrogen fixation and increased soil salinity	It is unlikely that these issues affect the Subject Land.	N/A	N/A
(i) fertiliser drift	This issue is not likely to affect the vegetation on the Subject Land.	N/A	N/A
(j) rubbish dumping	This issue was not observed within the Subject Land and is not expected to be exacerbated as a result of the proposed development.	N/A	N/A
(k) wood collection	This issue is not likely to affect the vegetation on the Subject Land.	N/A	N/A
(l) bush rock removal and disturbance	This issue is not relevant to the Subject Land as there is no bush rock.	N/A	N/A
(m) increase in predatory species populations	It is unlikely that the proposed works will influence or alter predatory species populations.	N/A	N/A
(n) increase in pest animal populations	It is unlikely that the proposed works will influence or alter predatory species populations.	N/A	N/A
(o) increased risk of fire	The proposed development is not situated in bushfire prone land and has been assessed as being low risk.	N/A	N/A
(p) disturbance to specialist breeding and foraging habitat, e.g. beach nesting for shorebirds.	The proposed development will not result in the removal of any important breeding or foraging habitat for threatened species.	N/A	N/A

6.2.2 Prescribed and Uncertain Impacts

This list of impacts includes all of those impacts on biodiversity values not caused by direct vegetation clearing or development that have been prescribed by the Biodiversity Conservation Regulation 2017.

Prescribed biodiversity impacts require an assessment of the impacts of development on the habitat of threatened species or ecological communities associated with karst, caves, crevices, cliffs and other features of geological significance. This is discussed in **Table 11** below.

Table 11. Prescribed and Uncertain Impacts

Will there be impacts on any of the following	Yes/No	If Yes, Address all of the assessment questions from section 9.2.1 of the BAM
Species or ecological communities associated with karst, caves, crevices, cliffs and other features of geological significance	No	There is no karst, caves, crevices, cliffs and other features of geological significance on or near the Subject Land.
Habitat of threatened species or ecological communities associated with rocks	No	No threatened species or ecological communities associated with rocks were situated on the Subject Land.
Habitat of threatened species or ecological communities associated with human made structures	No	There are no threatened species or ecological communities located within the Subject Land that are associated with human made structures.
Habitat of threatened species or ecological communities associated with non-native vegetation	No	Ornamental gardens surrounding the Subject Land may provide intermittent, temporary foraging habitat for Grey-headed Flying-fox when trees flower or fruit, however, this habitat is not important for the survival of this mobile species.
Connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range	No	It is unlikely the removal of native vegetation on the Subject Land will interrupt connectivity for any threatened fauna or flora species. The Subject Land is situated in an already highly fragmented landscape. The vegetation proposed for removal is also low-quality habitat for threatened species.
Movement of threatened species that maintains their life cycle	No	It is unlikely that threatened species would utilise the Subject Land considering its location in a heavily urbanised and altered landscape. The vegetation proposed for removal is also low-quality habitat for threatened species.
Water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities (including subsidence or upsidence resulting from underground mining or other development)	No	There are no threatened species and ecological communities within the Subject Land that are sustained by water bodies and hydrological processes.
Wind turbine strikes on protected animals	No	There are no wind turbines proposed on the Subject Land.
Vehicle strikes on threatened species of animals or on animals that are part of a TEC	No	There is no potential habitat within the Subject Land that supports threatened species as outlined in this report, therefore it is unlikely that vehicle strikes will be an issue.

6.3 Other relevant Legislation or Planning Policies Requiring Address

6.3.1 Commonwealth Environment Protection and Biodiversity Conservation Act 1999

No EPBC Act threatened species or ecological communities were located within the Subject Land.

6.3.2 Groundwater Dependent Ecosystems

The Commonwealth Groundwater Dependent Ecosystem (GDE) Policy defines GDEs as ecosystems, which have their species composition, and their natural ecological processes determined by groundwater (DLWC 2002). The Policy defines groundwater as the water beneath the earth's surface that has filtered down to the zone where the earth or rocks are fully saturated (DLWC 2002). Ecosystems vary dramatically in the degree of dependency of groundwater, from having no apparent dependence through to being entirely dependent on it (DLWC 2002). The Australian Government Atlas of Groundwater Dependent Ecosystems (BOM 2019a) was used to identify any previously mapped GDEs that occur in or near the Subject Land. This atlas identifies GDEs reliant on surface groundwater (rivers, springs and wetlands) and subsurface groundwater (vegetation).

The Atlas was reviewed and it was identified that the Subject Land does not contain a GDE. During on-ground surveys no GDE were evident.

6.3.3 State Environmental Planning Policy No. 44 – Koala Habitat Protection

SEPP 44 - Koala Habitat Protection only applies to land which:

- (i) has an area of more than 1 hectare; or
- (ii) has, together with any adjoining land in the same ownership, an area of more than 1 hectare whether or not the development application applies to the whole, or only part, of the land.

The State Environmental Planning Policy No. 44 – Koala Habitat Protection (SEPP 44) applies to all local government areas (LGAs) listed on Schedule 1 of the policy, except land dedicated under the *National Parks and Wildlife Act 1974* or the *Forestry Act 1916*. The identification of an area of land as SEPP 44 Potential Koala Habitat is determined by the presence of Koala feed tree species listed within Schedule 2 of the policy. The Subject Land is situated within Randwick LGA, which is not listed on Schedule 1 of the policy. As such, SEPP 44 does not apply to this proposed development.

6.3.4 State Environmental Planning Policy No 19—Bushland in Urban Areas

Clause 9 of SEPP 19 – Bushland in Urban Areas, applies to land which adjoins bushland zoned or reserved for public open space purposes. As the Subject Land is not situated adjacent to a council reserve, SEPP 19 does not apply.

6.4 Biodiversity Offset Credit Requirements

The preferred approach to offset the residual impacts of the proposed development is to purchase and retire the appropriate species credits from registered Biodiversity Stewardship Sites that comply with the trading rules of the NSW Biodiversity Offsets Scheme (BOS) in accordance with the 'like for like' report generated by the BAM calculator. If such credits are unavailable, credits would be sourced in accordance with the 'variation report' generated by the BAMC. A payment to the Biodiversity Conservation Trust would be considered as a contingency option if a suitable number and type of biodiversity credits cannot be secured.

The assessor has determined that the vegetation integrity score of the proposed action is 6. In accordance with section 3.1.1.3 of the BAM, a vegetation zone that has a vegetation integrity score <17 where the PCT is associated with threatened species habitat (as represented by ecosystem credits), or is representative of a vulnerable ecological community, requires no further assessment of native vegetation beyond Section 5.4 of the BAM, and an assessment of threatened species habitat according to Section 6.2 and Paragraph 6.2.1.4 is not required.

The proposed impact will result in no ecosystem credits and no species credits are required to offset the biodiversity impacts of the proposed development.

7. Conclusion

NSW Health Infrastructure propose to develop an addition to the approved Acute Services Building for health research use at the Prince of Wales Hospital Campus (Part Lots 6-11 DP13995 and Part Lot 1, DP870720), Hospital Road, Randwick. As the proposed development is a State Significant Development (SSD), the Secretary's Environmental Assessment Requirements (SEARs) issued for the Environmental Impact Statement (EIS) requires a Biodiversity Development Assessment Report (BDAR) to be undertaken. This BDAR has been prepared by Narla Environmental Pty Ltd to identify the potential impacts of the proposed development on biodiversity values within the Subject Land. This has been completed in accordance with the Biodiversity Assessment Method (BAM) and includes:

- Comprehensive literature review and desktop assessment to describe the historically recorded environment and landscape features of the Subject Land and to identify the suite of threatened biota potentially affected by the proposed development;
- Site assessment to describe the biodiversity values of the Subject Land and to determine the likelihood of threatened biota and their habitats occurring within the proposed development footprint;
- Discussion and recommendation of measures to avoid and minimise impacts to biodiversity values; and
- BAM calculations using the Biodiversity Assessment Method Calculator (BAMC) 1.2.4 to quantify the level of biodiversity impacts of the proposed development following the implementation of measures to avoid and minimise impacts, and to determine the biodiversity credits that will need to be purchased and retired to offset the residual impacts of the proposed development.

The proposed development is located in a highly urbanised area that contains minimal biodiversity. The removal of vegetation will not impact on habitat for threatened species in the wider area.

The proposed development is expected to result in impacts to one (1) Plant Community Type (PCT), with the planned removal of 0.03ha of PCT *1775 - Smooth-barked Apple - Old-man Banksia - Red Bloodwood open forest on pleistocene sand dunes around Sydney and the Central Coast*. This vegetation was of considerably poor structure and composition, and contained minimal floristic diversity.

A biodiversity assessment and credit calculation has been performed in accordance with the BAM (OEH 2017a) and using credit calculator version 1.2.4. No biodiversity offset credits will be required as a result of the proposed development.

A suite of mitigation and management measures have been proposed in order to avoid and minimise potential impacts of the proposed development on local biodiversity values, including assigning a Project Ecologist to be present during the clearing of all vegetation in relation to the proposed development.

Considering the location of the proposed development in a highly urbanised and degraded area, there are unlikely to be any notable indirect impacts on biodiversity values arising from the proposed development.

8. References

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9. Appendices

Appendix A - Flora recorded within the Subject Land

Appendix B – Fauna recorded during survey of Subject Land

Appendix C – BAM Site - Field Survey Forma (copied directly from Electronic Data Sheet)

Appendix D – BAMC Generated Biodiversity Credit Report

Appendix A. Flora recorded within the Subject Land

Scientific Name	Exotic	Canopy	Midstory	Groundcover	Status
Angophora costata		X			
Araujia sericifera	X			X	HTE
Bromus catharticus	X			X	
Conyza bonariensis	X			X	
Cyclospermum leptophyllum	X			X	
Dianella caerulea				X	
Dietes grandiflora	X			X	
Ehrharta erecta	X			X	HTE
Lomandra longifolia 'Tanika'				X	
Sonchus oleraceus	X			X	
Tecoma stans	X		X		

Appendix B. Fauna recorded during survey of Subject Land

Class	Scientific Name	Common Name	Status
Aves	*Acridotheres tristis*	Common Myna	Introduced
	Manorina melanocephala	Noisy Miner	Protected – BC Act
	Strepera graculina	Pied Currawong	Protected – BC Act
	Trichoglossus moluccanus	Rainbow Lorikeet	Protected – BC Act

Appendix C. BAM Site - Field Survey Forma (copied directly from Electronic Data Sheet)

BAM Site – Field Survey Form					
Date:	7th August 2019	**Plot ID:**	Plot 1	**Photo #:**	-
Zone:	56	**Plot Dimensions:**	20 x 50m	**Easting:**	337092.38 E
Datum:	GDA94	**Middle bearing from 0m:**	349°	**Northing:**	6245473.60 S
PCT:	1775 - Smooth-barked Apple - Old-man Banksia - Red Bloodwood open forest on pleistocene sand dunes around Sydney and the Central Coast				

Growth Form	Scientific Name	Cover	Abundance
Tree (TG)	*Angophora costata*	15	N/A
#N/A	*Dietes grandiflora*	7	N/A
#N/A	*Tecoma stans*	5	1
HTE	*Araujia sericifera*	0.1	2
#N/A	*Bromus catharticus*	0.1	5
Forb (FG)	*Dianella caerulea*	0.5	10
#N/A	*Sonchus oleraceus*	0.1	5
HTE	*Ehrharta erecta*	0.1	5
#N/A	*Cyclospermum leptophyllum*	0.1	2
#N/A	*Conyza bonariensis*	0.1	5
#N/A	*Lomandra longifolia 'Tanika'*	0.2	10

DBH	# Tree Stems Count	# Hollow Bearing Trees
80+cm	0	0
50-79cm	0	0
30-49cm	0	0
20-29cm	3	0
10-19cm	1	0
5-9cm	0	0
<5cm	0	0

Length of Logs (m)	0

BAM Attribute (1x1m)	Litter Cover (%)
1 (5m)	70
2 (15m)	1
3 (25m)	0
4 (35m)	0
5 (45m)	0
Average	**14.2**

BAM Site – Field Survey Form		
Growth Form	**Composition Data (count of native cover)**	**Structure Data (sum of cover)**
Tree	1	15
Shrub	0	0
Grass	0	0
Forb	1	0.5
Fern	0	0
Other	0	0
Hight Threat Exotics	2	0.2

Appendix D. Site Photos

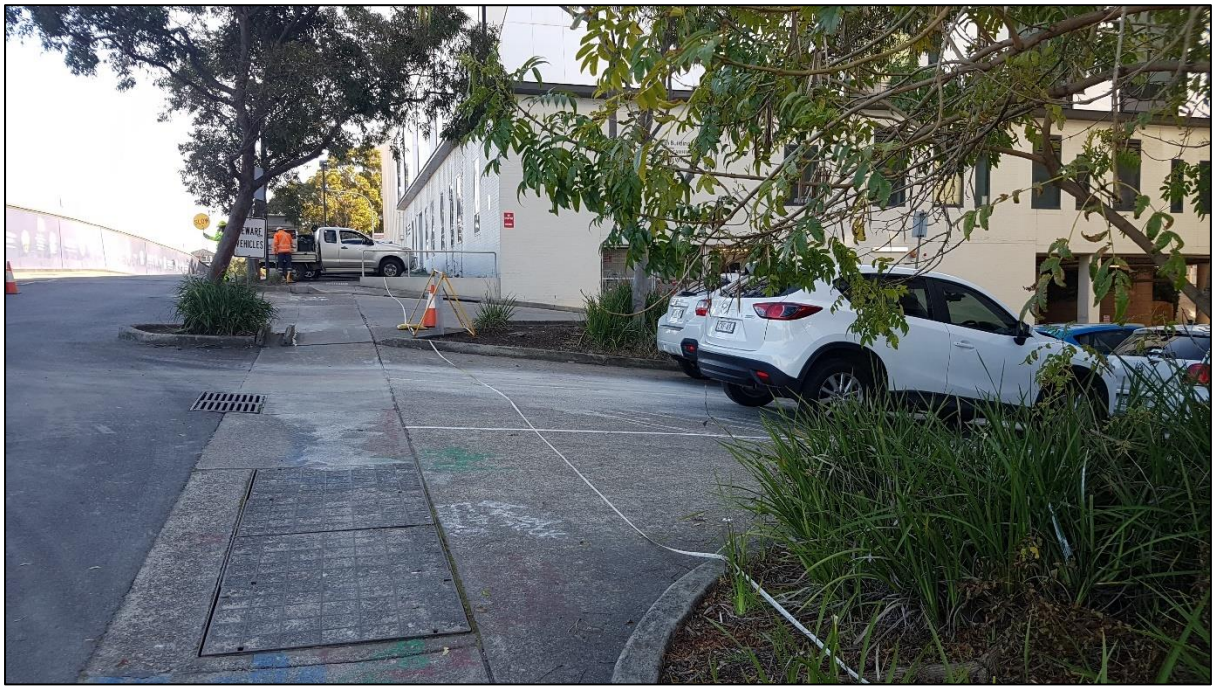


Plate 1. Facing north along Hospital Road at the start of the 60m transect

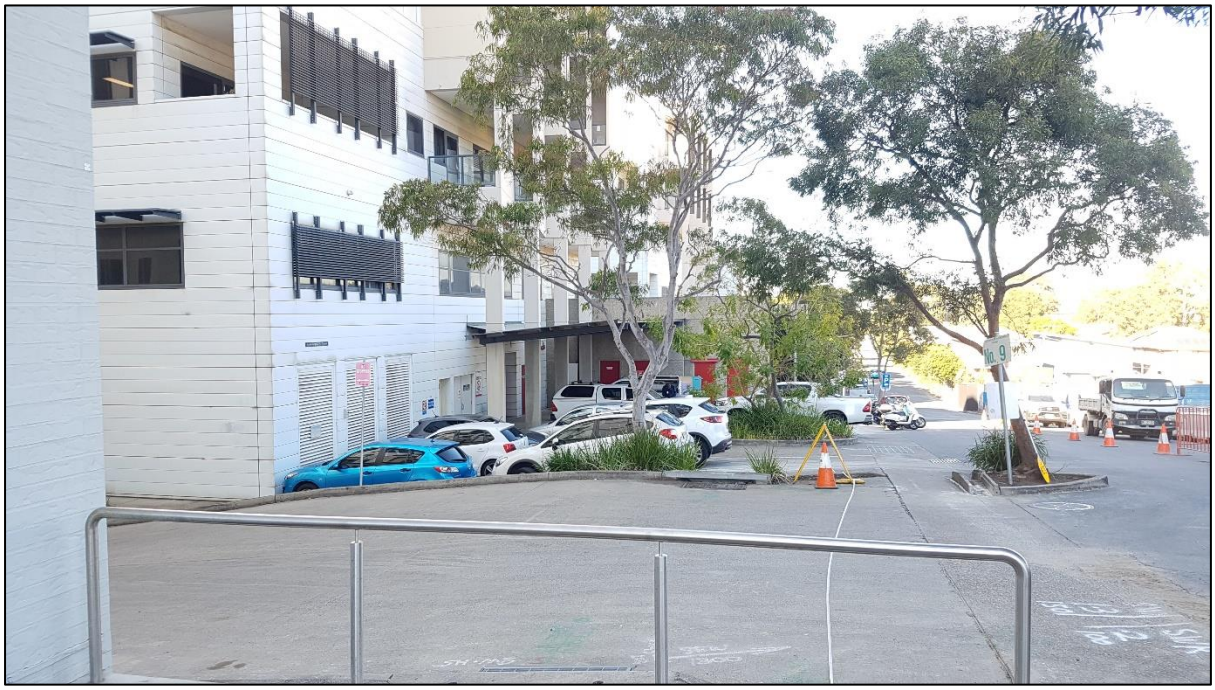
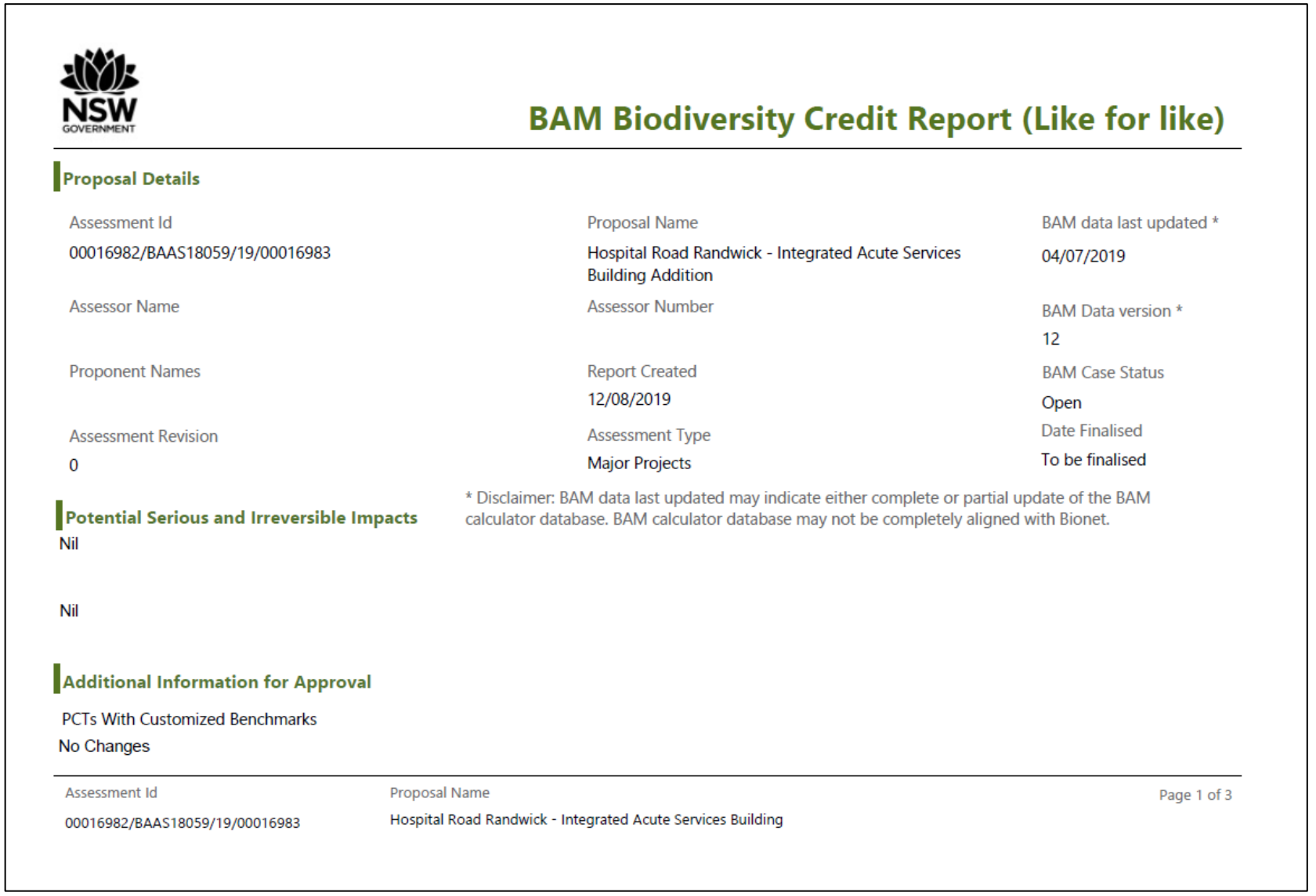


Plate 2. Facing south along Hospital Road, at the northern end of the 30m x 13m quadrat

Plate 3. Facing south along Hospital Road, at the end of the 60m transect.

Plate 4. The four garden beds that were assessed within the BAM 30m x 13m floristics plot. The plot was located in a heavily urbanised and trafficked area.

Appendix D. BAMC Generated Biodiversity Credit Report



NSW GOVERNMENT

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id 00016982/BAAS18059/19/00016983	Proposal Name Hospital Road Randwick - Integrated Acute Services Building Addition	BAM data last updated * 04/07/2019
Assessor Name	Assessor Number	BAM Data version * 12
Proponent Names	Report Created 12/08/2019	BAM Case Status Open
Assessment Revision 0	Assessment Type Major Projects	Date Finalised To be finalised

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Nil

Nil

Additional Information for Approval

PCTs With Customized Benchmarks

No Changes

BAM Biodiversity Credit Report (Like for like)

Predicted Threatened Species Not On Site

No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	Number of credits to be retired
1775-Smooth-barked Apple - Old-man Banksia - Red Bloodwood open forest on pleistocene sand dunes around Sydney and the Central Coast	Not a TEC	0.0	0.00

1775-Smooth-barked Apple - Old-man Banksia - Red Bloodwood open forest on pleistocene sand dunes around Sydney and the Central Coast

Like-for-like credit retirement options

Class	Trading group	HBT	IBRA region
Coastal Dune Dry Sclerophyll Forests This includes PCT's: 1618, 1648, 1775	Coastal Dune Dry Sclerophyll Forests - ≥ 50% - < 70% cleared group (including Tier 6 or higher).	No	Pittwater, Cumberland, Sydney Cataract, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Assessment Id

00016982/BAAS18059/19/00016983

Proposal Name

Hospital Road Randwick - Integrated Acute Services Building

Page 2 of 3

BAM Biodiversity Credit Report (Like for like)

Species Credit Summary

No Species Credit Data

Assessment Id	Proposal Name	Page 3 of 3
00016982/BAAS18059/19/00016983	Hospital Road Randwick - Integrated Acute Services Building	

NARLA

environmental

Eastern Sydney Office
2/26-30 Tepko Road
Terrey Hills
NSW 2084

Western Sydney Office
7 Twentyfifth Avenue
West Hoxton
NSW 2171

Hunter Valley Office
10/103 Glenwood Drive
Thornton
NSW 2322

www.narla.com.au
Ph: 02 9986 1295