

THE FOREST HIGH SCHOOL

Allambie Road, Allambie NSW
Proposed New School
Biodiversity Development Assessment Report

Prepared for:
NSW Department of Education
GPO Box 33
SYDNEY NSW 2001

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PREPARED BY

SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
10 Kings Road
New Lambton NSW 2305 Australia
(PO Box 447 New Lambton NSW 2305)
T: +61 2 4037 3200
E: newcastleau@slrconsulting.com www.slrconsulting.com

BASIS OF REPORT


This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with NSW Department of Education (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

BAM CERTIFICATION

This BDAR has been prepared by Fiona Iolini, accredited BAM Assessor (#BAAS19042), who certifies that the report has been prepared on the basis of the requirements of (and information provided under) the biodiversity assessment method (BAM) as at 01 November 2022.



FIONA IOLINI
ASSOCIATE ECOLOGIST

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
630.30197-R01-v3.0	1 November 2022	Fiona Iolini	Jeremy Pepper	Jeremy Pepper
630.30197-R01-v2.0	26 August 2022	Fiona Iolini	Jeremy Pepper	Jeremy Pepper
630.30197-R01-v1.0	10 February 2022	Fiona Iolini	Jeremy Pepper	Jeremy Pepper

EXECUTIVE SUMMARY

SLR Consulting has been engaged to prepare a Biodiversity Development Assessment Report in accordance with the NSW Biodiversity Assessment Method for a proposed new school at Allambie Road, Allambie Heights, NSW. This project is deemed to be state significant development and therefore the project will be determined under Section 4.12(8) of the NSW Environmental Planning and Assessment Act 1979 and Schedule 2 of the Environmental Planning and Assessment Regulation 2000.

One native plant community Sydney Ironstone Bloodwood-Silvertop Ash forest (PCT 1786) has been recorded in the west of the site, including a 0.35 hectare patch in moderate-good condition and two patches in low condition, totalling 0.41 hectares. The remaining parts of the site comprise built up areas (buildings, driveways, car parks), managed grassland and exotic vegetation.

The 0.35 ha patch of forest (PCT 1786) in the southwestern corner of the site is in moderate to good condition and constitutes the Duffys Forest Ecological Community in the Sydney Basin Bioregion ('Duffys Forest'), which is listed as an 'endangered ecological community' under the NSW Biodiversity Conservation Act 2016. Duffys Forest has recently been included as a Serious and Irreversible Impact entity. There is no equivalent nationally listed endangered ecological community for Duffys Forest.

The site has been mapped as containing two vegetation zones: 'PCT 1786_Mod-good' and 'PCT 1786_Low'. Two vegetation survey plots were used to sample the vegetation zones in accordance with the Biodiversity Assessment Methodology. Based on plot data collected on site, the vegetation integrity score for the 'PCT 1786_Mod-good' vegetation zone is 57 and the vegetation integrity score for the 'PCT 1786_Low' vegetation zone is 12.4.

The assessment reveals that the proposed development will require removal of 0.28 hectares of 'PCT 1786_Mod-good' and 0.15 hectares of 'PCT 1786_Low'. This impact has been assessed in accordance with the Biodiversity Assessment Methodology, resulting in an offset requirement of eight ecosystem credits for PCT 1786.

The site does not provide any potential breeding habitat for threatened species and no species credits are required to be offset.

The proposed development will remove 0.28 ha of native vegetation, which represents the Duffys Forest threatened ecological community. Mitigation measures have been presented to reduce the potential for indirect impacts on biodiversity values within the remainder of the subject land or downstream of the site.

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- Appendix A Proposed Subdivision Plans
- Appendix B Flora Data
- Appendix C BAM Field Data Sheets
- Appendix D Weather Data
- Appendix E Fauna Data
- Appendix F Biodiversity Credit Report

ABBREVIATIONS

Abbreviation	Description
AOBV	Area of Outstanding Biodiversity Value
BAM	Biodiversity Assessment Method
BC Act	Biodiversity Conservation Act 2016 (NSW)
BDAR	Biodiversity Development Assessment Report
CEEC	Critically Endangered Ecological Community
DAWE	Department of Agriculture, Water and the Environment (Commonwealth)
DPIE	Department of Planning, Industry and Environment (NSW)
EEC	Endangered Ecological Community
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
GIS	Geographical Information System
ha	Hectare(s)
IBRA	Interim Biogeographical Regionalisation for Australia
km	Kilometre(s)
LGA	Local Government Area
m	Metre(s)
Microbat(s)	Microchiropteran Bat
NSW	New South Wales
OEH	Office of Environment and Heritage (NSW)
PCT(s)	Plant Community Type
SAII	Serious and Irreversible Impact
SLR	SLR Consulting Australia Pty Ltd
TEC(s)	Threatened Ecological Communities
VI	Vegetation Integrity

1 INTRODUCTION

1.1 The Proposal

A State Significant Development Application is being submitted for the construction of a new school on the subject land at Allambie Heights, NSW. The proposed development is presented in Appendix A and consists of school buildings and a playing field in the east of the site and games courts in the west. Most of the subject land forms the operational footprint, with the construction footprint encompassed within this area, including stormwater infrastructure and stockpiles.

1.2 The Subject Land

The 'subject land' is located at Allambie Road, Allambie Heights, NSW (see Figure 1). It is approximately 4.3 hectares (ha) in area and includes lots as identified in Table 1.

Table 1 Lot and DP Summary

Lot & DP prior to transfer and registration of Title	Lot & DP after transfer and registration of Title	Current Lot & DP as at 27 October 2022
Lot 750 DP 1271174	Lot 4 DP 1280781	Lot 750 DP 1271174
Lot 751 DP 1271174	Lot 5 DP 1280781	Lot 751 DP 1271174
Lot 13 DP 1112906	Lot 6 DP 1280781	Lot 6 DP 1280781
Part Lot 11 DP 1194177	Lot 7 DP 1280781	Lot 7 DP 1280781

The subject land is located within the Northern Beaches Council Local Government Area (LGA), approximately 12 kilometres (km) north from the Sydney central business district. The subject land is currently occupied by an abandoned building, carparks, driveways and mature landscaping in the eastern parts. The western parts of the subject land contain weedy vegetation and a transmission line in the north (see Photo 1), an area of open exotic grassland in the centre and a band of regrowth native vegetation which has been previously identified as Duffys Forest endangered ecological community (EEC) in the south. The detailed site investigations (Tetra Tech Coffey, 2021) found that ground extractive and infilling activities occurred in the west of the site between 1943 and 1951, representing potential landfill. Further, historic studies show that the west of the site was cleared in 1976 (see GML 2022).

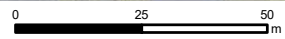
The subject land is bound by Allambie Road to the northeast, Aquatic Drive to north and an un-named road to the west. The subject land and surrounding properties that sit to the southwest of the junction of Allambie Road and Aquatic Drive are zoned 'SP1 Special Activities - Health Services Facilities' under Warringah Local Environmental Plan 2011. The abandoned building in the east of the subject land operated as a children's disability hostel, later known as the McLeod House, from 1957 to 2007. Disability health facilities remain to the south, including Arranoundai School (a disability pre-school), and the head offices of NSW Cerebral Palsy Alliance and the Sunnyfield Disability Services. This area is largely cleared with scattered planted and remnant trees.

Land to the west is zoned 'E2 Environmental Conservation', with some smaller blocks of 'R2 Low Density Residential' along Madison Road. Land further to the west and south is generally connected to large areas of 'RE1 Public Recreation' zoning which contain Warringah Aquatic Centre, Aquatic Reserve and Manly Dam Reserve. There are large areas of native vegetation and habitats within these areas, and these are generally connected to the western parts of the subject land via the adjoining parcel of E2 zoned land.



LEGEND

- Subject land (4.21ha)
- 2m Contour
- Property Boundaries
- Development Footprint**
- Operational Footprint
- Construction Footprint



Scale: 1:1,500 at A4
 Coordinate System: GDA 1994 MGA Zone 56

Date Drawn: 31-Oct-2022
 Project Number: 630.30197.00200



Data Source: NSW SS, September 2022
 Aerial imagery supplied by Nearmap (July, 2022)

SITE MAP

FIGURE 1

Land to the north is zoned 'B7 Business Park' and directly to the north is the Warringah Sub-transmission Station, which is where the transmission line that crosses the northwest of the subject land starts. Remaining areas surrounding the site (to the east/southeast) comprise residential areas of Allambie Heights.

Photo 1 Typical Nature of Subject Land (30 June 2021)



1.3 Site Particulars, Terminology and Definitions

The site particulars, terminology and definitions used in respect to the subject land are identified in Table 2.

Table 2 Site Particulars, Terminology and Definitions

Term	Definition
Subject Land	See Table 1
Address of Subject Land	Allambie Road, Allambie Heights, NSW
Subject Land Area	4.3 hectares (ha)
Development Footprint	The footprint of the works proposed
Operational Footprint	The operational footprint of the school including all buildings, carparks, driveways, play areas, asset protection zones and landscaped areas
Construction Footprint	The construction footprint is mostly encompassed within the operational footprint and includes stormwater pipes and erosion and sediment control features
Local Government Area	Northern Beaches Council
Land Zoning	SP1 Special Purposes

1.4 Information Sources

Existing information on the flora and fauna of the subject land and the locality, including relevant threatened biota, was obtained from the following resources:

- The NSW BioNet (DPIE 2021a) and Protected Matters Search Tool (DAWE 2021a) for previous records of threatened species, populations and ecological communities within a 10 km radius centred on the centre of the subject land.
- The NSW BioNet 'Threatened Biodiversity Data Collection' (DPIE 2021a), Final Determinations (TSC 2021) and Species Profile and Threats Database (DAWE 2021b) for information on threatened species, populations and ecological communities.
- The Native Vegetation of the Sydney Metropolitan Area (OEH 2016) and BioNet Vegetation Classification (DPIE 2021b) for information on the Plant Community Type (PCT).

1.5 Licenses and Permits

The SLR ecology team operates under a Scientific Licence (licence number SL100176, issued under the BC Act), which authorises field staff to trap, capture, harm, hold and release plants and animals protected under the BC Act and National Parks and Wildlife Act 1974, as well as Animal Research Authority (issued by the Secretary of the NSW Animal Care and Ethics Committee of DPIE), which allows trapping of animals in NSW for the purposes of 'animal research'.

1.6 Personnel

The roles and qualifications of all staff responsible for preparation of this BDAR are listed in Table 3 .

Table 3 Staff Roles and Qualifications

Staff Name & Title	Qualifications and Training	Role
Jeremy Pepper Technical Director	Bachelor of Science (Hons Class 1) University of NSW 1996 Cert II Bushland Regeneration, TAFE NSW Cert III Horticulture (Arboriculture), TAFE NSW BAM accredited assessor (#BAAS17104)	BDAR technical review
Fiona Iolini Associate Ecologist	Bachelor of Environmental Science and Management, University of Newcastle 2007 Cert III Conservation and Land Management, TAFE NSW 2015 BAM accredited assessor (#BAAS19042)	Project management, field assessment, BAM calculations, BDAR preparation
Sarah Hart Senior Ecologist	Bachelor of Science (Majoring in Zoology), James Cook University 2013 Master of Science (Majoring in Zoology and Ecology), James Cook University 2015 Graduate Diploma of Environmental Management, University of Queensland 2018 BAM Training 2021 (accreditation pending)	Field assessment

Staff Name & Title	Qualifications and Training	Role
Jarrid Beeton Project Ecologist	Bachelor of Environmental Science and Management, University of Newcastle 2018 Dip. Conservation and Land Management, TAFE NSW Cert III Horticulture, TAFE NSW	Field assessment
Ashleigh Pritchard Senior GIS Analyst	Diploma of Spatial Information Services (GIS), TAFE NSW 2009 ESRI Certified ArcGIS Desktop Associate 10.5, 2018	GIS data management, calculations, and figure preparation

2 LANDSCAPE CONTEXT

2.1 Topography and Hydrological Setting

The subject land is a roughly rectangular parcel of land with a south-southwestern aspect and heights ranging from 156 m AHD in the northeast corner to 142 m AHD in the southwest corner (see Figure 1).

There is a small drainage feature (see Photo 2) that passes through the area of native vegetation along the southwestern boundary of the site. There is a more significant drainage feature in dense weedy vegetation in the northwest portion of the site. These are artificially constructed or modified drains and there is no mapped permanent or natural watercourse within the subject land. These drainage features form small upper catchments to Manly Creek which feeds to Manly Dam, situated approximately 2 km to the south of the site.

Photo 2 Drainage Features in Southwest of Subject Land (30 June 2021)



2.2 Geology and Soils

The soil landscape in the north of the subject land is Disturbed Terrain (9130xx) and in the south is Lambert (9130la) (OEH 2020). Soil landscapes mapped as Disturbed Terrain have typically been heavily disturbed by human activity, including complete disturbance, removal or burial of soil and removal of original vegetation. The Lambert soil landscape is composed of undulating to rolling rises and low hills on Hawkesbury Sandstone with rock outcropping, areas of poor drainage and high erosion potential. Soils are generally loose stony sandy loams and sandy clay loams over shallow bedrock. Regional geology mapping also maps the site within a shale and laminite lens (Rhs) within the larger Hawksbury Sandstone (Rh) formation (Geological Survey of NSW, 1983).

Geotechnical investigations of the subject land found the site to contain variable thickness of topsoil, fill and pavement materials, underlain by residual soil (clay, sandy clay, and clayey sand) to depths of up to 11.2 m below ground level (Tetra Tech Coffey, 2021). Underlying bedrock was identified to comprise fine to coarse grained sandstone with some interbedded siltstone. Three hand auger soil samples were taken within the areas of native vegetation detecting some areas of fill and suggesting that soils may have been reworked at these locations.

2.3 Native Vegetation Cover

Review of aerial imagery (Nearmap 2021) and native vegetation mapping resources (OEH 2016) within the subject land and in the 1500 m buffer indicates that vegetation clearing has occurred historically within the subject land and across a portion of the surrounding locality. Native vegetation in the locality consists mainly of remnant bushland within the Manly Warringah War Memorial Park (Manly Dam) and Garigal National Park.

An assessment of native vegetation cover within the subject land and 1,500 m buffer is presented in Figure 2 and Table 4.

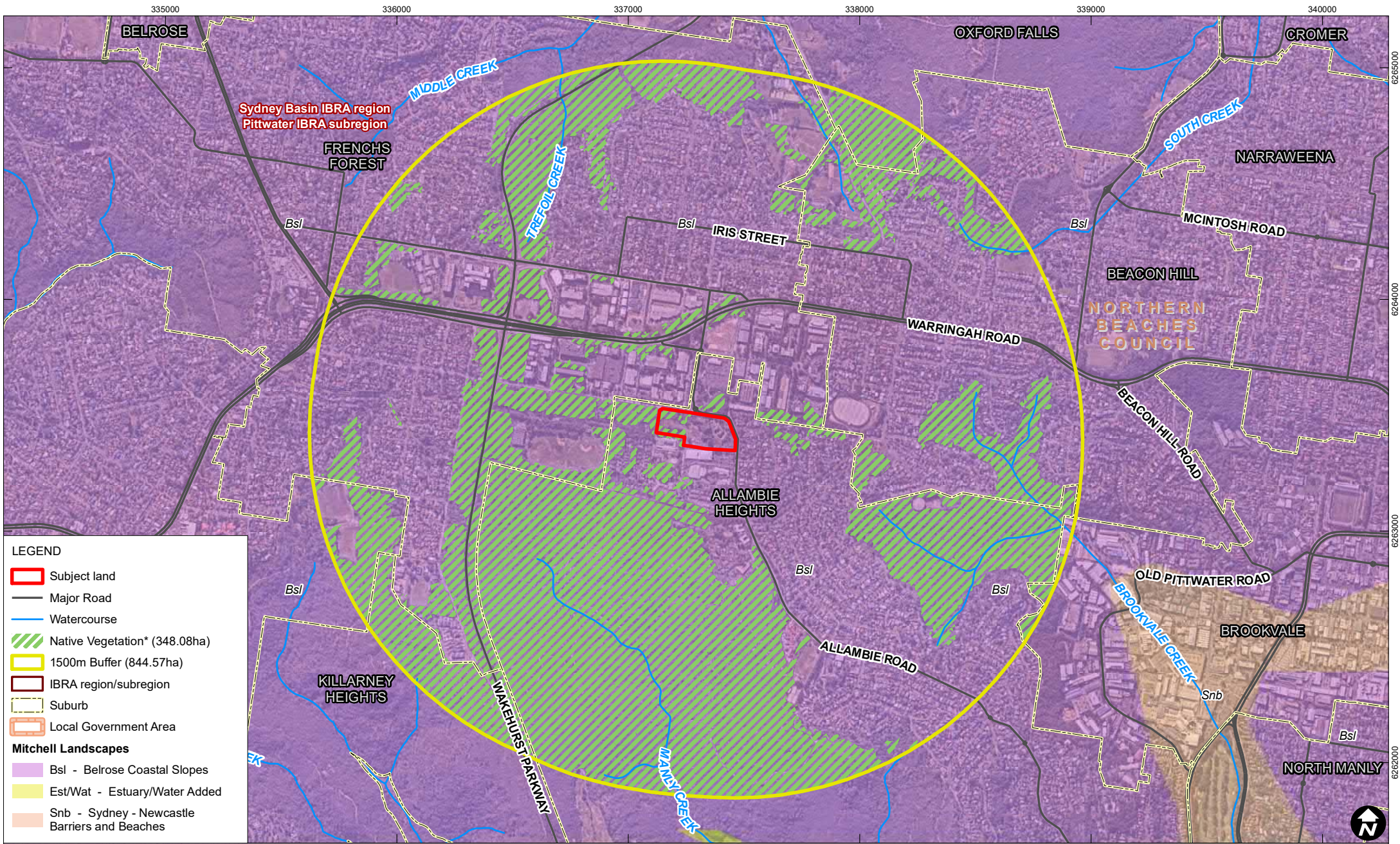
Table 4 Assessment of Native Vegetation Cover

Total Area of Native Vegetation within 1,500m Buffer (ha)	Total Area of Subject Land and 1,500m Buffer (ha)	Native Vegetation Cover within 1,500m Buffer (%)	Cover Class
348.08	844.57	41	>30-70 %

According to BAM 2020 the percentage of native vegetation cover in the assessment area is assigned to one of the following classes: 0–10%; >10–30%; >30–70%; >70%. The native vegetation cover within the 1,500 m buffer for the subject land is 41 %. Accordingly, the subject land is assigned to the >30-70% percent native vegetation cover class.

2.4 Landscape Features

Landscape features, as applicable to the subject land, are summarised in Table 5 and displayed on the Site Map (Figure 1) and Location Map (Figure 2).

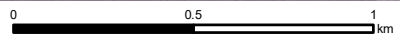


LEGEND

- Subject land
- Major Road
- Watercourse
- Native Vegetation* (348.08ha)
- 1500m Buffer (844.57ha)
- IBRA region/subregion
- Suburb
- Local Government Area

Mitchell Landscapes

- Bsl - Belrose Coastal Slopes
- Est/Wat - Estuary/Water Added
- Snb - Sydney - Newcastle Barriers and Beaches



Scale: 1:21,000 at A4
 Coordinate System: GDA 1994 MGA Zone 56

Date Drawn: 23-Aug-2022
 Project Number: 630.30197.00200



Data Source: * Native Vegetation: *SydneyMetroArea_v3_1_2016_E_4489 © State Government of NSW and Department of Planning, Industry and Environment 2016), Aerial Photo Interpretation, SLR assumed native vegetation and site PCTs NSW SS, May 2021, Aerial imagery supplied by Nearmap (July, 2022)
 Mitchell Landscapes © State Government of NSW and Department of Planning, Industry and Environment 2016, IBRA Regions Australian Government Department of Agriculture, Water and the Environment,

LOCATION MAP

FIGURE 2

H:\Projects-SLR\630-Srv\NTL\630-NTL\630.30197.00000 The Forest High School BDAR\06 SLR Data\01 CAD\GIS\IGIS\SLR63030197_BDAR_G2_LocationMap_002.mxd

Table 5 Summary of Landscape Features

Landscape Feature	Name and Comment
Interim Biogeographical Regionalisation for Australia (IBRA) Region	The subject land lies within the Sydney Basin IBRA Region on the central east coast of NSW. This region occupies 4.35% of NSW and extends from just north of Batemans Bay to Nelson Bay and almost as far west as Mudgee (NPWS 2003). The region is dominated by temperate climate characterised by warm summers with no dry season.
IBRA Sub Region	The subject land lies wholly within the Pittwater IBRA Subregion. This subregion is characterised by Triassic Hawkesbury Sandstone (with thin ridge cappings of Ashfield Shale) and Narrabeen sandstone exposed in valleys along the coast. The vegetation on the sandstone plateau is typically Sydney Peppermint, Smooth-barked Apple, Scribbly Gum, Red Bloodwood, Yellow Bloodwood, with diverse shrubs and patches of heath (NPWS 2003).
NSW Landscape (DECC 2002)	The subject land occurs wholly within the Belrose Coastal Slopes Mitchell landscape. This landscape is described as benched hill slopes and deep valleys of the coastal fall on horizontal Triassic quartz sandstone, lithic sandstone and shales. General elevation ranges from 0 to 180 m, with local relief of 80 m. Soils are shallow uniform or gradational sands and earthy sands on ridges, deeper sands, loamy sands and organic sands on wet benches and in hanging swamps, grey or yellow texture-contrast soils on shale benches. There are accumulations of deeper sand and occasional podsoles in depositional sites and along streams. Vegetation is typically composed of low woodland of Eucalyptus haemastoma, Corymbia gummifera, Eucalyptus luehmanniana, and Angophora bakeri in deeper soils on ridges, with scrub and heath of Allocasuarina distyla and Banksia ericifolia, with Hakea, Grevillea, and Baeckea spp. occurring on ridges and upper benches.
Rivers, streams and estuaries (classified according to stream order and including riparian buffers)	There are no rivers, streams or estuaries on the subject land. The nearest waterbody is Manly Creek, which is approximately 500 m to the south. The subject land has a general south-southwestern aspect with gentle to moderate sloping. Site elevation is highest in the northeast corner at 156 m falling to approximately 142 m in the southwest of the subject land. The subject land falls within the Manly Creek catchment area.
Important and local wetlands on, adjacent and downstream of the subject land	There are no wetlands (DPIE 2010b) or important wetlands (ie as listed under the Directory of Important Wetlands or Coastal Management State Environmental Planning Policy) within the landscape buffer of the site.
Habitat connectivity identifying the area/s of connectivity joining different areas of habitat that intersect with the subject land and the areas of habitat that are connected	Within the subject land native vegetation is concentrated along the southwestern boundary, with some low condition vegetation patches in the northwest. Native fauna including threatened species, could access the site from the west connecting to larger areas of bushland to the southwest. The vegetation within the subject land is not recognised as a 'Regional Corridor' (OEH 2015).
Karst, caves, crevices, cliffs and areas of geological significance	The subject land contains no other notable landscape features relevant to this assessment, including karst, caves, crevices, cliffs and areas of geological significance.
Areas of Outstanding Biodiversity Value (AOBV)	There are no AOBV on the subject land, as listed under the BC Act.

3 NATIVE VEGETATION

3.1 Native Vegetation Extent

The extent of native vegetation within the subject land is confined to a few patches in the west. An assessment of the extent of native vegetation within the subject land is presented in Table 6.

Table 6 Assessment of Native Vegetation Extent within Subject Land

Total Area of Native Vegetation (ha)	Total Area of Non-native Vegetation and Disturbed Land (ha)	Total Area (ha)	Native Vegetation Extent within Subject Land (%)
0.76	3.44	4.2	22

3.2 Review of Native Vegetation Information

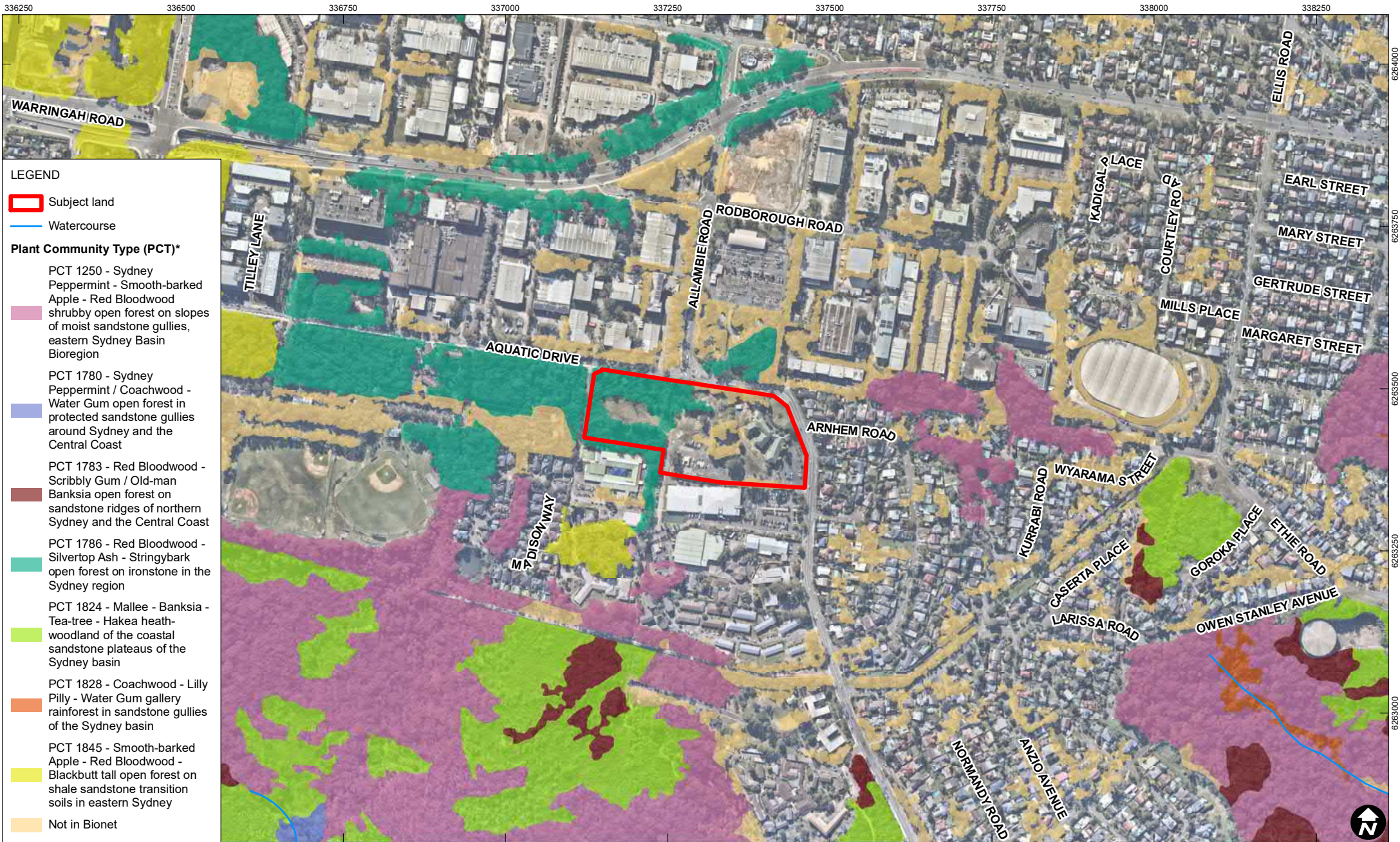
Regional scale vegetation mapping by OEH (2016) is provided in Figure 3 and indicates that there is one large patch of native vegetation within the west of the subject land. The vegetation on the subject land is mapped by OEH (2016) as PCT 1786 Sydney ironstone Bloodwood-Silvertop Ash forest. PCT 1786 is associated with Duffys Forest Ecological Community in the Sydney Basin Bioregion, which is a threatened ecological community (TEC), listed as 'endangered' under the NSW Biodiversity Conservation Act 2016 (BC Act) (ie and 'EEC'). Additional vegetation types mapped nearby are not associated with any TEC and include PCT 1250 Coastal sandstone gully forest and PCT 1845 Coastal shale-sandstone forest.

3.3 Identification of Plant Community Types

3.3.1 Methods for identifying Plant Community Types

The native vegetation assessment was undertaken in accordance with Section 4.2 of the BAM (DPIE 2020a). A preliminary vegetation assessment using floristic quadrats was undertaken by Abel Ecology on 14 December 2020 (Abel Ecology 2021). This assessment mapped Duffys Forest vegetation in the southwest of the subject land and provided a plant species list identifying numbers of species categorised into several relevant PCTs. This was supplemented by a survey of the vegetation by SLR ecologists Fiona Iolini and Jarrid Beeton on 30 June 2021, to collect BAM plot data and refine the PCT mapping. Senior ecologist Sarah Hart accompanied the arborist during tree surveys on the 3 November 2021 and 4 November 2021, where a small whipper snipper was used to access areas of dense weedy vegetation. Additional patches of low condition native vegetation were located using this method and a BAM plot was subsequently undertaken on the 3 November 2021 to sample this vegetation zone.

Areas of native vegetation within the subject land were assessed in accordance with the definition in Section 1.6 of the BC Act, which relevantly defines native vegetation as any tree, understorey plant, groundcover or wetland plant that is native to NSW (including regrowth, saplings and presumably planted vegetation). Boundaries of vegetation types and communities were assessed using aerial imagery (Nearmap 2021) supplemented by field survey notes which were later mapped using Geographical Information System (GIS) software.

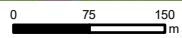


LEGEND

- Subject land
- Watercourse

Plant Community Type (PCT)*

- PCT 1250 - Sydney Peppermint - Smooth-barked Apple - Red Bloodwood shrubby open forest on slopes of moist sandstone gullies, eastern Sydney Basin Bioregion
- PCT 1780 - Sydney Peppermint / Coachwood - Water Gum open forest in protected sandstone gullies around Sydney and the Central Coast
- PCT 1783 - Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central Coast
- PCT 1786 - Red Bloodwood - Silvertop Ash - Stringybark open forest on ironstone in the Sydney region
- PCT 1824 - Mallee - Banksia - Tea-tree - Hakea heath-woodland of the coastal sandstone plateaus of the Sydney basin
- PCT 1828 - Coachwood - Lilly Pilly - Water Gum gallery rainforest in sandstone gullies of the Sydney basin
- PCT 1845 - Smooth-barked Apple - Red Bloodwood - Blackbutt tall open forest on shale sandstone transition soils in eastern Sydney
- Not in Bionet



Scale: 1:7,500 at A4
 Coordinate System: GDA 1994 MGA Zone 56

Date Drawn: 23-Aug-2022
 Project Number: 630.30197.00200



Data Source: NSW SS, August 2021
 Aerial imagery supplied by Nearmap (July, 2022)
 *SydneyMetroArea_v3_1_2016_E_4489 © State Government of NSW and Department of Planning, Industry and Environment 2016)

OEH (2016) REGIONAL VEGETATION MAPPING

FIGURE 3

Vegetation data collected via random meanders was compared with PCT descriptions provided in the BioNet Vegetation Classification (DPIE 2021b), particularly against the PCTs mapped within and around the subject land by Regional Mapping (OEH 2016). Vegetation types within the subject land were also assessed against identification criteria for State and Commonwealth listed Threatened Ecological Communities (TECs) (TSC 2021, DAWE 2021b).

3.3.2 Plant Community Types on the Subject Land

Field surveys conducted by SLR in 2021 in accordance with BAM 2020 have revealed that there are small patches of PCT 1786 Sydney Ironstone Bloodwood-Silvertop Ash forest within the western parts of the subject land. One patch in the southwest is in moderate-good condition and constitutes the Duffys Forest EEC listed under the BC Act. A description of PCT 1786 is provided in Table 7. A revised vegetation map showing the extent of native vegetation (ie PCT 1786) within the subject land is presented in Figure 4 and the portion of PCT 1786 which constitutes the Duffys Forest EEC is presented in Figure 5.

Table 7 Description of PCT 1786 Sydney Ironstone Bloodwood-Silvertop Ash Forest

Required Information	Description of Information
Vegetation class	Sydney Coastal Dry Sclerophyll Forests
Extent of PCT within subject land	0.76 ha
Evidence used to identify PCT	<p>Vegetation maps:</p> <ul style="list-style-type: none"> OEH (2016) maps PCT 1786 as a 1.8 ha patch in the west of the subject land, also extending as a small band southward through the business park. <p>Analysis of vegetated areas against VIS profile data:</p> <ul style="list-style-type: none"> PCT 1786 is known to occur within the Warringah and Pittwater LGAs (now Northern Beaches LGA), as well as the Sutherland LGA. Mean annual rainfall of PCT 1786 is 1000 to 1200 and BOM (2022) rainfall data suggest the site would receive rainfall slightly above that range (mean annual rainfall for Belrose (Evelyn Place) station 066188 since 1991 is 1270 mm). Elevations of PCT 1786 are between 2 and 80 m and site contour data (see Figure 1) indicates the subject land is slightly above this range at 142-156 m. The geology is described as steep exposed sandstone slopes around the Hawkesbury River and its tributaries, that may have thin shale lenses. Geological site investigations indicate the site is comprised of sand/sandy clay and sandstone (Tetra Tech Coffey 2021). A total of 13 of the 29 flora species described for PCT 1786 were detected on site.
Plant species relied upon to identify PCT	<p>The species of PCT 1786 detected in the southwest of the subject land were present in moderate-high abundance (57% cover in BAM plot 1) and included the following 13 species: <i>Acacia myrtifolia</i>, <i>Allocasuarina littoralis</i>, <i>Dampiera stricta</i>, <i>Dillwynia retorta</i>, <i>Entolasia stricta</i>, <i>Epacris pulchella</i>, <i>Hakea dactyloides</i>, <i>Lepidosperma laterale</i>, <i>Lindsaea linearis</i>, <i>Lomandra obliqua</i>, <i>Micrantheum ericoides</i>, <i>Platysace linearifolia</i> and <i>Xanthosia tridentata</i>. The species of PCT 1786 detected in the northwest of the subject land were present in low abundance (2.4% in BAM plot 2) and included the following five species: <i>Allocasuarina littoralis</i>, <i>Banksia serrata</i>, <i>Entolasia stricta</i>, <i>Lepidosperma laterale</i> and <i>Lomandra obliqua</i>.</p>

Required Information	Description of Information
TEC status	<p>The PCT 1786 equivalent TEC is identified in the VIS profile as Duffys Forest Ecological Community in the Sydney Basin Bioregion (or Duffys Forest EEC), which is an Endangered Ecological Community (EEC) listed under the BC Act. The main indicators that suggest that the vegetation in the southwest of the subject land is commensurate with the definition of Duffys Forest EEC, as listed in the Final Determination (TSC 2021), are:</p> <ul style="list-style-type: none"> • The location of the subject land within the Sydney basin IBRA region and Pittwater IBRA subregion. • Duffys Forest EEC is found in Warringah, Pittwater, Ku-ring-gai, Hornsby and Manly LGA's. The site is within the Northern Beaches Council area, which encompasses the previous LGAs of Manly, Warringah and Pittwater (amalgamated in 2016). • Soil landscapes are "ridgetops, plateaus, upper slopes and occasionally mid slopes on Hawkesbury sandstone" and soils are typically "laterite soils and soils derived from shale and laminate lenses". The subject land is positioned on a mid to upper slope in a modified landscape. Geological investigations (Tetra Tech Coffey, 2021) describe the residual soils as clay, sandy clay, and clayey sand. Bedrock is fine to coarse grained sandstone with some interbedded siltstone. • The vegetation in the southwest of the subject land contains at least 23 of the 73 species listed as characteristic of the Duffys Forest EEC. <p>The vegetation in the northwest of the subject land is not identified as the Duffys Forest EEC due to its history of extensive clearing, earthworks and the resultant highly modified structure and floristics of the vegetation. Very little natural regeneration has occurred within this area and there is a very dense cover of high threat exotic weeds, such as Privet.</p>
Percent cleared value	71 %



LEGEND

Subject land

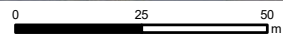
Development Footprint

Plant Community Type (PCT)

PCT 1786 Sydney ironstone Bloodwood-Silvertop Ash forest, Moderate-good

PCT 1786 Sydney ironstone Bloodwood-Silvertop Ash forest, Low

Planted Native Vegetation



Scale: 1:1,500 at A4
Coordinate System: GDA 1994 MGA Zone 56

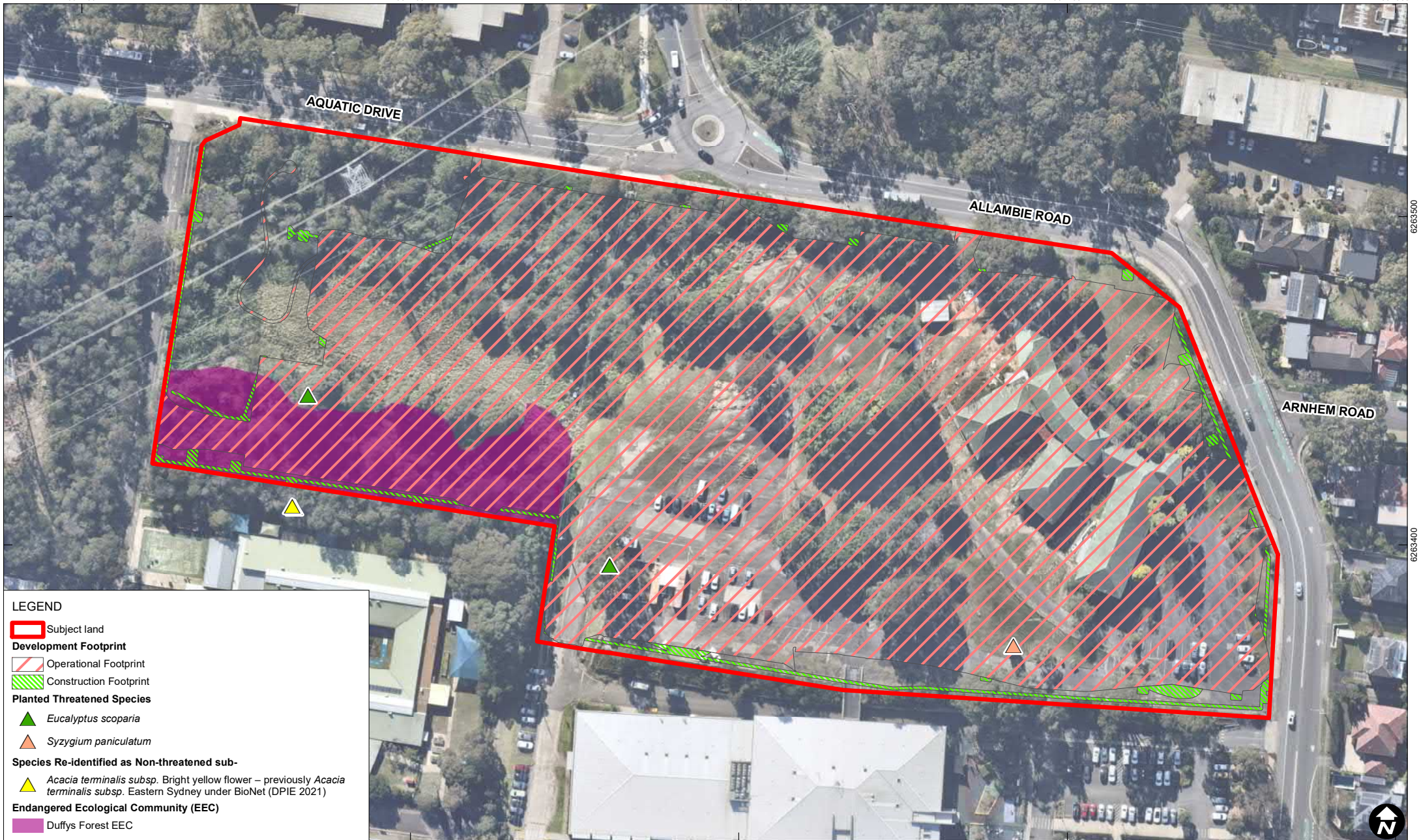
Date Drawn: 23-Aug-2022
Project Number: 630.30197.00200



Data Source: NSW SS, August 2021
Aerial imagery supplied by Nearmap (July, 2022)

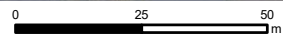
PLANT COMMUNITY TYPES

FIGURE 4



LEGEND

- Subject land
- Development Footprint**
- Operational Footprint
- Construction Footprint
- Planted Threatened Species**
- ▲ *Eucalyptus scoparia*
- ▲ *Syzygium paniculatum*
- Species Re-identified as Non-threatened sub-**
- ▲ *Acacia terminalis* subsp. Bright yellow flower – previously *Acacia terminalis* subsp. Eastern Sydney under BioNet (DPIE 2021)
- Endangered Ecological Community (EEC)**
- Duffys Forest EEC



Scale: 1:1,500 at A4
 Coordinate System: GDA 1994 MGA Zone 56

Date Drawn: 23-Aug-2022
 Project Number: 630.30197.00200



Data Source: NSW SS, August 2021
 Aerial imagery supplied by Nearmap (July, 2022)

**THREATENED ECOLOGICAL
 COMMUNITIES AND
 THREATENED PLANTS**

FIGURE 5

3.4 Vegetation Integrity Assessment

3.4.1 Vegetation Zones

Section 4.3.1 of BAM 2020 describes mapping of vegetation condition under “broad condition states” and suggests the following approach: “Disturbance to growth form groups for tree, shrub and ground cover or extent of exotics (or combinations of these) can be used to identify areas of similar condition”. The native plant community (PCT 1786) recorded on the subject land was incorporated into two vegetation zones, being low condition and moderate-good condition, based on broad condition state as defined in Table 8. The distribution and extent of vegetation zones within the subject land is displayed in Figure 6.

Table 8 Vegetation Condition Definitions

Vegetation Condition	Definition
Low	This vegetation is heavily impacted by exotic weed infestation. There is only a very small cover and diversity of native species of PCT 1786 remaining in the tree, shrub and ground cover layers. Structural characteristics are poor, species diversity is low and weeds and exotic species are dominant.
Moderate - Good	Vegetation retains the species complement of the pre-European equivalent. Vegetation retains a dense native mid-canopy, understorey and ground layer, with limited to no canopy. This condition class has minor to moderate understorey weed incursions in parts.

3.4.2 Patch Size

As defined in Section 4.3.2 of BAM 2020 “A patch is an area of native vegetation that occurs on the subject land and includes native vegetation that has a gap of less than 100 m from the next area of native vegetation (or ≤ 30 m for non-woody ecosystems).” Patch size area was calculated for each vegetation zone and assigned to a class, being < 5 ha, 5–24 ha, 25–100 ha or ≥ 100 ha. An assessment of the patch size for each vegetation zone is included in Table 9 and displayed on Figure 6.

Table 9 Vegetation Patch Size Assessment

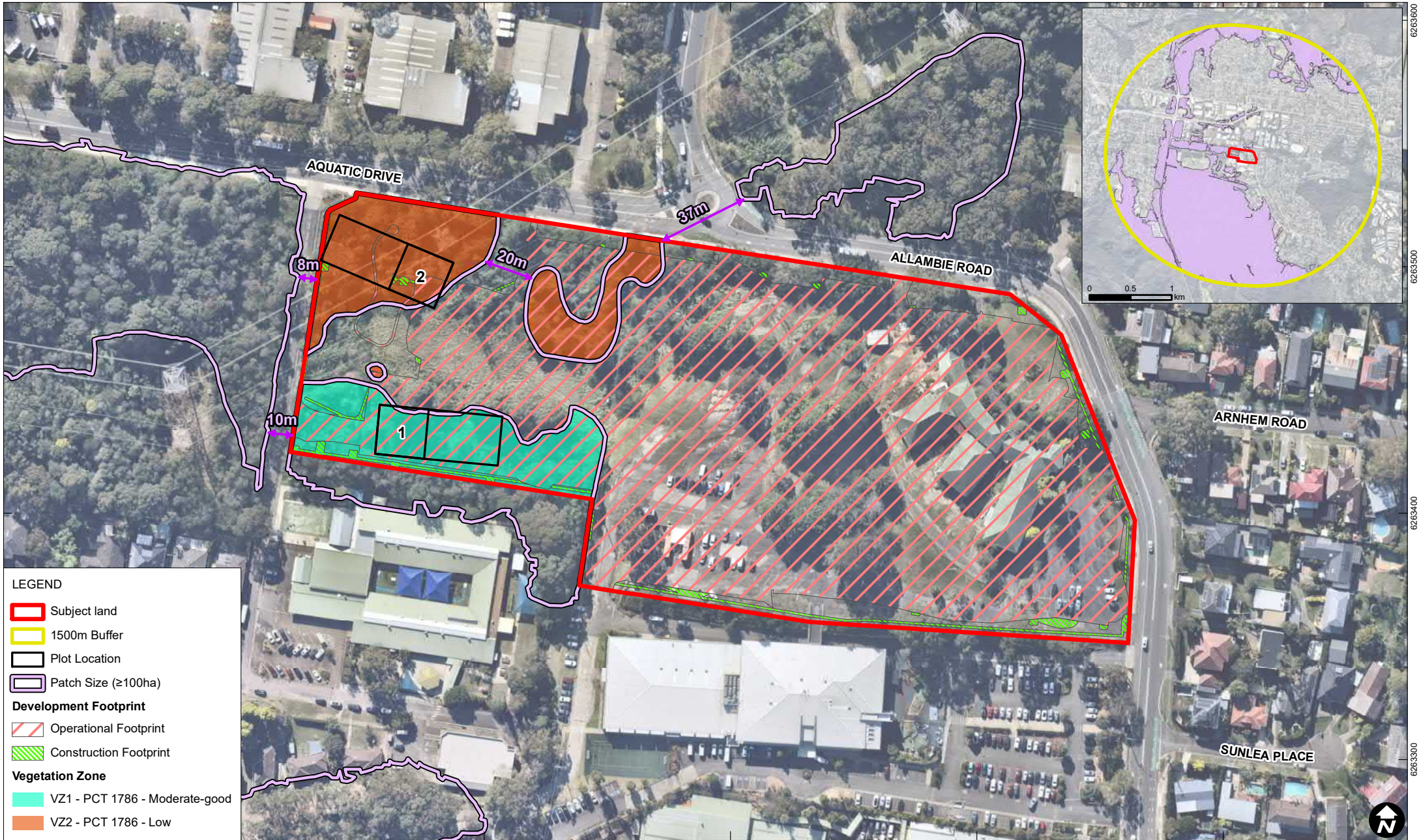
Vegetation Zone Name	Patch Number	Area (ha)	Patch Size Class (ha)
PCT 1786_Mod-good	Patch 1	~600 ha	≥ 100 ha
PCT 1786_Low	Patch 1	~600 ha	≥ 100 ha

3.4.3 Survey Effort

The number of BAM plots sampled in each vegetation zone was based on the following requirements of BAM 2020: < 2 ha (1 plot); > 2 -5 ha (2 plots); > 5 -20 ha (3 plots); > 20 -50 ha (4 plots); > 50 -100 ha (5 plots); > 100 -250 ha (6 plots); > 250 -1000 ha (7 plots or more); > 1000 (8 plots or more).

The number of BAM plots completed per vegetation zone within the subject land are presented in Table 10. Two 20 m by 50 m (1000 m²) plot/transect ('BAM plot') was sampled containing a nested 20 m by 20 m (400 m²) floristic plot. The BAM plots were positioned randomly to sample an area that was most representative of the floristic characteristics of the vegetation zone with locations presented in Figure 6.

337100 337200 337300 337400 337500



LEGEND

- Subject land
- 1500m Buffer
- Plot Location
- Patch Size (≥100ha)
- Development Footprint**
- Operational Footprint
- Construction Footprint
- Vegetation Zone**
- VZ1 - PCT 1786 - Moderate-good
- VZ2 - PCT 1786 - Low

0 25 50 m

Scale: 1:2,000 at A4
Coordinate System: GDA 1994 MGA Zone 56

Date Drawn: 23-Aug-2022
Project Number: 630.30197.00200



Data Source: NSW SS, August 2021
Aerial imagery supplied by Nearmap (July, 2022)

VEGETATION ZONES, PATCH SIZE AND PLOT LOCATIONS

FIGURE 6

Table 10 BAM Plots Required and Completed per Vegetation Zone

Vegetation Zone	Area (ha)	BAM Category [#]	Plots Required	Plots Completed
PCT 1786_Mod-good	0.35	<2 ha	1	1
PCT 1786_Low	0.41	<2 ha	1	1

Based on Table 3 of BAM 2020

3.4.4 Benchmark Data

Vegetation benchmarks used in the calculation of the Vegetation Integrity (VI) score were not amended and were adopted as per the BAM Calculator at the time of the assessment.

3.4.5 Vegetation Integrity Results

The VI score for the vegetation zones was calculated by the BAM Calculator and has been presented in Table 11. All floristic data used to obtain the VI is presented Appendix B (flora species list) and Appendix C (BAM field datasheets). A photograph of each plot taken at the start of the 50m transect is included in Photo 3 and Photo 4.

Table 11 Current Vegetation Integrity Scores

Veg Zone Name	Composition	Structure	Function	VI Score	Hollows present (Y/N)
PCT 1786_Mod-good	57.9	71.7	44.6	57	N
PCT 1786_Low	20.7	5.2	17.6	12.4	N

Photo 3 Transect Start BAM Plot 01 (30 June 2021)



Photo 4 Transect Start BAM Plot 02 (03 November 2021)



4 THREATENED SPECIES ASSESSMENT

4.1 Ecosystem Credit Species Assessment

Ecosystem credit species are those threatened species that are reliably predicted to occur within a given PCT and are assumed to occur on a given site unless geographic limitations, habitat constraints or vagrancy conditions are met or not met as described in Section 5.1 and 5.2 of BAM 2020.

The predicted (or ecosystem credit) species list derived from the BAM Calculator is provided in Table 12. In accordance with Section 5.2 of BAM 2020, justification and supporting evidence is provided for the exclusion of any ecosystem credit species (where relevant). No predicted species were excluded from the assessment (see Table 12) and no additional ecosystem credit species were added to the list.

Table 12 Ecosystem Credit Species Assessment

Species Name	Common Name	Predicted (Y/N)	Justification for Exclusion
<i>Ninox connivens</i>	Barking Owl	Y	n/a
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	Y	n/a
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	Y	n/a
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	Y	n/a
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	Y	n/a
<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	Y	n/a
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Y	n/a
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	Y	n/a
<i>Miniopterus australis</i>	Little Bent-winged Bat	Y	n/a
<i>Hieraaetus morphnoides</i>	Little Eagle	Y	n/a
<i>Glossopsitta pusilla</i>	Little Lorikeet	Y	n/a
<i>Tyto novaehollandiae</i>	Masked Owl	Y	n/a
<i>Pseudomys novaehollandiae</i>	New Holland Mouse	Y	n/a
<i>Ninox strenua</i>	Powerful Owl	Y	n/a
<i>Anthochaera phrygia</i>	Regent Honeyeater	Y	n/a
<i>Varanus rosenbergi</i>	Rosenberg's Goanna	Y	n/a
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Y	n/a
<i>Lophoictinia isura</i>	Square-tailed Kite	Y	n/a
<i>Lathamus discolor</i>	Swift Parrot	Y	n/a
<i>Daphoenositta chrysoptera</i>	Varied Sittella	Y	n/a
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Y	n/a
<i>Hirundapus caudacutus</i>	White-throated Needle-tail	Y	n/a

4.2 Species Credit Species Assessment

Species credit species are species that cannot be reliably predicted to use an area based on vegetation type or habitat surrogates and are assumed to occur on a given site unless:

- geographic limitations, habitat constraints, vagrancy conditions are met or not met as described in Section 5.1 and 5.2 of BAM 2020; or
- habitat constraints are degraded and/or microhabitats on which the species depends are absent, as described in Subsection 5.2.2 of BAM 2020.

The candidate (or species credit) species list derived from the BAM Calculator is provided in Table 13, along with justification and supporting evidence for the exclusion of species credit species (where relevant). No mapped habitat for a species is present within the subject land, no additional species credit species were added to the list and no expert reports have been used to determine species presence.

For this assessment, candidate species listed in Table 13 are either excluded due to an absence of suitable habitat or subject to targeted surveys. No species are assumed present. Based on the threatened species assessment, as summarised in Table 13, the following species credit species required survey:

- *Callistemon linearifolius*
- Eastern Pygmy Possum
- *Cryptostylis hunteriana*
- *Darwinia biflora*
- *Epacris purpurascens* var. *purpurascens*
- *Grevillea caleyi*
- *Hibbertia puberula*
- *Hibbertia spanantha*
- Southern Brown Bandicoot (eastern)
- *Lasiopetalum joyceae*
- *Melaleuca deanei*
- *Microtis angusii*
- *Persoonia hirsuta*
- *Pimelea curviflora* var. *curviflora*
- *Prostanthera marifolia*
- Red-crowned Toadlet
- *Tetratheca glandulosa*

Details of habitat assessments and targeted surveys completed for the above species credit (candidate) species are provided below in Section 5.

Table 13 Species Credit Species Assessment

Species Name and Survey Requirements (DPIE 2021a)	Habitat Requirements (DPIE 2021a)	Justification for Exclusion	Assumed Present (Y/N)	Targeted Survey Required (Y/N)
<p><i>Anthochaera phrygia</i> Regent Honeyeater It does not require survey as important habitat has been mapped.</p>	<p>A dual credit species, with a patch size <5 ha and <10% surrounding native vegetation requirement. In NSW the species is confined to two known breeding areas: the Capertee Valley and Bundarra-Barraba region. Habitat requirements are mapped breeding areas.</p>	<p>Habitat constraints not met. No mapped breeding areas on the subject land.</p>	N	N
<p><i>Callistemon linearifolius</i> Netted Bottle Brush Specific survey months, being October to January when flowering occurs.</p>	<p>Recorded from the Georges River to Hawkesbury River in the Sydney area, and north to the Nelson Bay area of NSW. Recent records in the Sydney area are limited to the Hornsby Plateau near Hawkesbury River. The species grows in dry sclerophyll forest on the coast and adjacent ranges.</p>	NA	N	Y
<p><i>Callocephalon fimbriatum</i> Gang-gang Cockatoo Specific survey months, being October to January.</p>	<p>A dual credit species with <5 ha patch size and 11-30% surrounding native vegetation requirement. Favours old growth forest and woodland attributes for nesting and roosting. Nests are in hollows that are 10 cm in diameter or larger and at least 9 m above the ground in eucalypts. Habitat requirements are Eucalyptus tree species with hollows >9 cm diameter.</p>	<p>Habitat constraints not met. No suitable hollows for nesting.</p>	N	N
<p>Gang-gang Cockatoo population in the Hornsby and Ku-ring-gai Local Government Areas</p>	<p>A species credit species with a <5 ha patch size and 31-70% surrounding native vegetation requirement. The endangered population is found in the Ku-ring-gai and Hornsby LGAs and is believed to be largely confined to an area bounded by Thornleigh and Wahroonga in the north, Epping and North Epping in the south, Beecroft and Cheltenham in the west and Turramurra/ South Turramurra to the east. Favours old growth forest and woodland attributes for nesting and roosting.</p>	<p>No suitable hollows for nesting. Not within distribution.</p>	N	N

Species Name and Survey Requirements (DPIE 2021a)	Habitat Requirements (DPIE 2021a)	Justification for Exclusion	Assumed Present (Y/N)	Targeted Survey Required (Y/N)
<p><i>Calyptrorhynchus lathamii</i> Glossy Black-Cockatoo Specific survey months, being April to August.</p>	<p>A dual credit species with <5 ha patch size and <10% surrounding native vegetation requirement. Feeds almost exclusively on the seeds of <i>Allocasuarina</i>/ <i>Casuarina</i> spp. Prefers woodland and open forests, near Sheoak. Roost in leafy canopy trees, preferably eucalypts, usually <1 km from feeding site. Habitat requirements for breeding are living or dead trees with hollows >15 cm diameter and >5 cm above ground.</p>	<p>Habitat constraints not met. No suitable hollows for nesting.</p>	N	N
<p><i>Cercartetus nanus</i> Eastern Pygmy-possum Specific survey months, being October to March.</p>	<p>A species credit species with a <5 ha patch size and 11-30% surrounding native vegetation requirement. Found in a broad range of habitats, but woodlands and heath are preferred, except in NE NSW where they prefer rainforest. Shelter in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, Ringtail Possum dreys or thickets of vegetation, (eg grass-tree skirts). Tree hollows are favoured for nesting.</p>	NA	N	Y
<p><i>Chalinolobus dwyeri</i> Large-eared Pied Bat Specific survey months, being November to January.</p>	<p>A species credit species with a <5 ha patch size and 11-30% surrounding native vegetation requirement. It has a specific cliff habitat requirement, being within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels.</p>	<p>Habitat constraints not met. No suitable cliff and cave habitat on the subject land or within 2 km of the subject land.</p>	N	N
<p><i>Cryptostylis hunteriana</i> Leafless Tongue Orchid</p>	<p>Distributed along the majority of the NSW east coast and into Victoria, tending to occur in coastal areas. Occurs in a range of habitats. Larger populations associated with woodland dominated by <i>Eucalyptus racemosa</i>, <i>E. sieberi</i>, <i>Corymbia gummifera</i> and <i>Allocasuarina littoralis</i>. Often found in association with other <i>Cryptostylis</i> species.</p>	NA	N	Y

Species Name and Survey Requirements (DPIE 2021a)	Habitat Requirements (DPIE 2021a)	Justification for Exclusion	Assumed Present (Y/N)	Targeted Survey Required (Y/N)
Darwinia biflora May be surveyed at any time of year, several times due to sporadic flowering.	The northern, southern, eastern and western limits of the range are at Maroota, North Ryde, Cowan and Kellyville, respectively. Occurs on the edges of weathered shale-capped ridges, where these intergrade with Hawkesbury Sandstone. Occurs in woodland, open forest or scrub-heath, typically with Eucalyptus haemastoma, Corymbia gummifera and/or E. squamosa.	NA	N	Y
Epacris purpurascens var. purpurascens Specific survey months, being September to October when key flowering occurs.	Recorded from Gosford in the north, to Narrabeen in the east, Silverdale in the west and Avon Dam vicinity in the South. Found in a range of habitat types, most of which have a strong shale soil influence. Use flowers to distinguish the species from E. pulchella and Woolisia pungens.	NA	N	Y
Grevillea caleyi Caley's Grevillea May be surveyed all year round.	Habitat constraints are "Other - Laterite soils located on ridgetops or within 100 m". Restricted to an 8 km square area around Terrey Hills, approximately 20 km north of Sydney. Occurs in three major areas of suitable habitat, namely Belrose, Ingleside and Terrey Hills/Duffys Forest within the Kuring-gai, Pittwater and Warringah Local Government Areas.	NA	N	Y
Haliaeetus leucogaster White-bellied Sea-Eagle Specific survey months, being July to December. This is to detect breeding, where a large stick nest is found.	A dual credit species with <5 ha patch size and <10% surrounding native vegetation requirement. In NSW the species is widespread along the east coast, and along all major inland rivers and waterways. Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. Nests are large stick nests, lined with leaves or grass. Habitat constraints for breeding are "living or dead mature trees within suitable vegetation within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines".	Habitat constraints not met. No suitable nests located on subject land.	N	N

Species Name and Survey Requirements (DPIE 2021a)	Habitat Requirements (DPIE 2021a)	Justification for Exclusion	Assumed Present (Y/N)	Targeted Survey Required (Y/N)
<p>Heleioporus australiacus Giant Burrowing Frog Specific survey months, being September to May</p>	<p>A species credit species with 5-24 ha patch size and 31-70% surrounding native vegetation requirement. Distributed along the east coast of NSW from Sydney Basin to Ulladulla and Narooma to Victoria. Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Breeding habitat is generally soaks or pools within first or second order streams. Spends more than 95% of its time in non-breeding habitat in areas up to 300 m from breeding sites. Whilst in non-breeding habitat it burrows below the soil surface or in the leaf litter.</p>	<p>No suitable first or second order stream habitats.</p>	<p>N</p>	<p>N</p>
<p>Hibbertia puberula Specific survey months, being October to December, when producing yellow flowers in groups of 1-3.</p>	<p>Widespread but uncommon, extending from Wollemi National Park south to Morton National Park and the south coast near Nowra. Occurs on sandy soil often associated with sandstone, or on clay. Habitats are typically dry sclerophyll woodlands, although heaths are also occupied, and one subspecies favours upland swamp.</p>	<p>NA</p>	<p>N</p>	<p>Y</p>
<p>Hibbertia spanantha Julian's Hibbertia Specific survey months being October and November when peak flowering occurs.</p>	<p>Species is endemic to NSW where it is restricted to four known locations. Grows in forest with canopy species including Eucalyptus pilularis, E. resinifera, Corymbia gummifera and Angophora costata. The understorey is open with species of Poaceae, Orchidaceae, Fabaceae and Liliaceae. The soil is identified as a light clay occurring on a shale sandstone soil transition.</p>	<p>NA</p>	<p>N</p>	<p>Y</p>
<p>Hieraaetus morphnoides Little Eagle It has specific survey months, being August to October. This is to detect breeding, where a large stick nest is found.</p>	<p>A dual credit species with <5 ha patch size and 11-30% surrounding native vegetation requirement. Occupies habitats rich in prey within open eucalypt forest, woodland or open woodland. For nest sites it requires a tall living tree within a remnant patch, where pairs build a large stick nest in winter and lay in early spring. Habitat requirements are nest trees – live (or occasionally dead) large old trees within vegetation.</p>	<p>Habitat constraints not met. No suitable nests located on subject land.</p>	<p>N</p>	<p>N</p>

Species Name and Survey Requirements (DPIE 2021a)	Habitat Requirements (DPIE 2021a)	Justification for Exclusion	Assumed Present (Y/N)	Targeted Survey Required (Y/N)
Hoplocephalus bungaroides Broad-headed Snake (Breeding) Specific survey months being August and September to detect breeding	A dual credit species with 5-25 ha patch size and 31-70% surrounding native vegetation requirement. The species is distributed within the coast and ranges in an area within approximately 250 km of Sydney. Shelters under rocks and crevices during the late summer to early spring, as conditions warm up it shifts to using hollows in trees - often in sandstone gully forest just downslope from the outcrops. Habitat requirements for breeding are rocky areas including escarpments, outcrops and pagodas within the Sydney Sandstone geologies.	Habitat constraints not met.	N	N
Isoodon obesulus obesulus Southern Brown Bandicoot (eastern) May be surveyed all year round	A species credit species with <5 ha patch size and 11-30% surrounding native vegetation requirement. In NSW, it occurs east of the Great Dividing Range south from the Hawkesbury River. Southern Brown Bandicoots are largely crepuscular (active mainly after dusk and/or before dawn). They are generally only found in heath or open forest with a heathy understorey on sandy or friable soils. Habitat constraints are "Requires dense ground cover in a variety of habitats".	NA	N	Y
Lasiopetalum joyceae Specific survey months, being September to November, when flowering typically occurs.	This species has a restricted range occurring on lateritic to shaley ridgetops on the Hornsby Plateau south of the Hawkesbury River. It grows in heath on sandstone.	NA	N	Y
Lathamus discolor Swift Parrot It does not require survey as areas of important habitat have been mapped.	A dual credit species with <5 ha patch size and <10% surrounding native vegetation requirement. A migratory species that travels to the mainland from March to October, and breeds in Tasmania from September to January. Habitat requirements are as per mapped areas.	Habitat constraints not met. No mapped breeding areas on the subject land.	N	N
Lophoictinia isura Square-tailed Kite Specific survey months, being September to January. This is to detect breeding, where a large stick nest is found.	A dual credit species with <5 ha patch size and 11-30% surrounding native vegetation requirement. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a preference for timbered watercourses. Habitat requirement is the presence of a nest tree.	Habitat constraints not met. No suitable nests located on subject land.	N	N

Species Name and Survey Requirements (DPIE 2021a)	Habitat Requirements (DPIE 2021a)	Justification for Exclusion	Assumed Present (Y/N)	Targeted Survey Required (Y/N)
Melaleuca deanei Deane's Paperbark Can be surveyed all year round.	The species occurs in two distinct areas, in the Ku-ring-gai/Berowra and Holsworthy/Wedderburn areas. Habitat for the species is primarily ridgetop woodland, with only 5% of sites in heath on sandstone.	NA	N	Y
Microtis angusii Angus's Onion Orchid Specific survey months being October when in flower.	The species is currently known from only one highly disturbed site at Ingleside, north of Sydney, where it occurs on highly disturbed land dominated by Hyparrhenia hirta and Acacia saligna. The soils have been modified but were originally ridgetop lateritic soils which typically support the Duffys Forest EEC. Exists as subterranean tubers during most of the year.	NA	N	Y
Miniopterus australis Little Bent-winged Bat Specific survey months, being December to February	A dual credit species with a <5 ha patch size and <10% surrounding native vegetation requirement. Only one maternity cave known in NSW, at Willi Willi, near Kempsey. Roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day. Habitat requirements are caves, tunnels, old mine culverts or other structures suspected of breeding with >500 individuals.	Habitat constraints not met.	N	N
Miniopterus orianae oceanensis Large Bent-winged Bat Specific survey months, being December to February.	A dual credit species with a <5 ha patch size and <10% surrounding native vegetation requirement. Primary roosting habitat comprises caves, but they also use derelict mines, storm water tunnels, buildings and other man-made structures. At other times of the year, populations disperse within about 300 km range of maternity caves. Habitat requirements are caves, tunnels, old mine culverts or other structures suspected of breeding with >500 individuals.	Habitat constraints not met.	N	N

Species Name and Survey Requirements (DPIE 2021a)	Habitat Requirements (DPIE 2021a)	Justification for Exclusion	Assumed Present (Y/N)	Targeted Survey Required (Y/N)
Ninox connivens Barking Owl Specific survey months, being May to December. This to detect breeding, where a suitable nesting hollow is found.	A dual credit species with a <5 ha patch size and 11-30% surrounding native vegetation requirement. Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. Roost in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as Acacia and Casuarina species. Breeding habitat constraints are living or dead trees with hollows greater than 20 cm diameter and greater than 4 m above the ground. Territorial pairs respond strongly to recordings of Barking Owl calls from up to 6 km away.	Habitat constraints not met. No suitable hollows for nesting.	N	N
Ninox strenua Powerful Owl Specific survey months, being May to August. This to detect breeding, where a suitable nesting hollow is found.	A dual credit species with a <5 ha patch size and 11-30% surrounding native vegetation requirement. Solitary and sedentary species. Inhabits a range of habitats from woodland and open sclerophyll forest to tall open wet forest and rainforest. Prefers large tracts of vegetation. Roosts by day in dense vegetation comprising species such as S. glomulifera and A. littoralis. Nests in large tree hollows (> 0.5 m deep), in large eucalypts (DBH 80-240 cm) that are at least 150 years old. Pairs have high fidelity to a small number of hollow-bearing nest trees and defend a large home range of 400 - 1,450 ha. Breeding habitat requirements are living or dead trees with hollow >20 cm diameter.	Habitat constraints not met. No suitable hollows for nesting.	N	N
Persoonia hirsuta Hairy Geebung May be surveyed all year round	The distribution of the species is scattered around Sydney, east to the Blue Mountains and from Singleton in the north to Bargo in the south. The species is found in dry sclerophyll open forest on sandy soils.	NA	N	Y
Petauroides volans Greater Glider	The Greater Glider is listed as vulnerable under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The Greater Glider occurs in eucalypt forests and woodlands along the east coast of Australia from northeast Queensland to the Central Highlands of Victoria. Habitat constraints within the BAM-C include hollow bearing trees.	Habitat constraints not met. No suitable large trees or hollows for nesting.	N	N

Species Name and Survey Requirements (DPIE 2021a)	Habitat Requirements (DPIE 2021a)	Justification for Exclusion	Assumed Present (Y/N)	Targeted Survey Required (Y/N)
Petaurus norfolcensis Squirrel Glider May be surveyed all year round, but sites with bipinnate acacia, autumn winter flowering trees (E. robusta) and shrubs (Banksia spp.) should be surveyed March to August.	A species credit species with a <5 ha patch size and <10% surrounding native vegetation requirement. Inhabits Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia mid-storey. Relies on large old trees with hollows for breeding and nesting. These trees are also critical for movement and typically need to be closely connected (ie no more than 50 m apart).	No suitable large trees or hollows for nesting.	N	N
Petaurus norfolcensis Population on Barrenjoey Peninsula May be surveyed all year round	A species credit species with a 25-100 ha patch size and 11-30% surrounding native vegetation requirement. The endangered population is within the Pittwater Local Government Area on the Barrenjoey Peninsula, north of Bushrangers Hill. Requires a high diversity of tree and shrub species for foraging, including a high nectar producing species and one or more winter flowering species (eg in Pittwater this may be winter flowering Banksia integrifolia and Corymbia maculata and summer flowering B. serrata and E. paniculata). Tree hollows required for denning and breeding.	No suitable large trees or hollows for nesting. Not within distribution.	N	N
Phascolarctos cinereus Koala May be surveyed all year round	A dual credit species with a <5 ha patch size and <10% surrounding native vegetation requirement. Important habitat is defined by the density of koalas and quality of habitat determined by on-site survey. Inhabits eucalypt woodlands and forests feeding on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Habitat requirements include areas identified via survey as important habitat.	No suitable tree canopy within areas of native vegetation. Hostile surrounds limit accessibility.	N	N
Pimelea curviflora var. curviflora Specific survey months, being October to March, with recommendation to survey at least twice during flowering.	The species is confined to the coastal area of the Sydney and Illawarra regions of NSW. Occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands.	NA	N	Y

Species Name and Survey Requirements (DPIE 2021a)	Habitat Requirements (DPIE 2021a)	Justification for Exclusion	Assumed Present (Y/N)	Targeted Survey Required (Y/N)
<p><i>Prostanthera marifolia</i> Seaforth Mintbush May be surveyed all year round, after confirming flowering of a reference population.</p>	<p>Currently only known from the northern Sydney suburb of Seaforth. Occurs in localised patches in or in close proximity to the endangered Duffys Forest ecological community. Located on deeply weathered clay-loam soils associated with ironstone and scattered shale lenses, a soil type which only occurs on ridge tops and has been extensively urbanised.</p>	NA	N	Y
<p><i>Pseudophryne australis</i> Red-crowned Toadlet May be surveyed all year round.</p>	<p>A species credit species with a <5 ha patch size and 11-30% surrounding native vegetation requirement. The species is restricted to the Sydney Basin, from Nowra to Pokolbin and west to Mt Victoria. It occurs in open forests, mostly on Hawkesbury and Narrabeen Sandstones. Inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or caps. Shelters under rocks and amongst masses of dense vegetation or thick piles of leaf litter.</p>	NA	N	Y
<p><i>Pteropus poliocephalus</i> Grey-headed Flying-fox Specific survey months, being October to December. This is to detected breeding within a known camp</p>	<p>A dual credit species with a <5 ha patch size and <10% surrounding native vegetation requirement. Inhabits subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Habitat requirements are breeding camps.</p>	Habitat constraints not met. No camp or evidence of a camp was detected on the subject land.	N	N
<p><i>Tetratheca glandulosa</i> Specific survey months, being August to November, when flowering</p>	<p>Restricted to LGAs: Baulkham Hills, Gosford, Hawkesbury, Hornsby, Ku-ring-gai, Pittwater, Ryde, Warringah, and Wyong. Associated with shale-sandstone transition in Lucas Heights, Gynea, Lambert and Faulconbridge soil landscapes. Typically occurs in Sydney Sandstone Ridgetop Woodland on ridgetops and upper slopes with shallow yellow, clayey/sandy loam soil often with stony lateritic fragments.</p>	NA	N	Y

Species Name and Survey Requirements (DPIE 2021a)	Habitat Requirements (DPIE 2021a)	Justification for Exclusion	Assumed Present (Y/N)	Targeted Survey Required (Y/N)
<p>Tyto novaehollandiae Masked Owl Specific survey months, being May to August to detect breeding, where a suitable nesting hollow is found</p>	<p>A dual credit species with a <5 ha patch size and 11-30% surrounding native vegetation requirement. Inhabits dry eucalypt forest and woodland. Roosts and breeds in large (>20cm) hollows in moist eucalypt forested gullies. Hunts along the edges of forests and roadsides. The typical diet consists of tree-dwelling and ground mammals, especially rats. Habitat requirements are presence of a living or dead tree with hollow >20cm diameter.</p>	<p>Habitat constraints not met. No suitable hollows for nesting.</p>	<p>N</p>	<p>N</p>

5 THREATENED SPECIES SURVEYS

5.1 Field Survey Personnel

Targeted species surveys were undertaken by Jarrid, Sarah and/or Fiona on 30 June 2021, 01 July 2021, 02 July 2021, 15 October 2021, 03 November 2021 and 04 November 2021. The qualifications and roles of field survey personnel is included in Section 1.5 and additional field survey experience is included in Table 14.

Table 14 Field Survey Personnel Experience

Staff	Experience
Fiona Iolini	Fiona has approximately 15 years' ecological consulting experience including undertaking over 90 field surveys in the Sydney region over the past 10 years at SLR. Fiona has experience identifying PCTs and TECs (including Duffys Forest EEC). She has experience undertaking targeted threatened flora searches for all species in this assessment, having located and identified the following species: <i>Callistemon linearifolius</i> , <i>Darwinia biflora</i> , <i>Cryptostylis hunteriana</i> , <i>Grevillea caleyi</i> , <i>Pimelea curviflora</i> var. <i>curviflora</i> , <i>Prostanthera marifolia</i> and <i>Tetratheca glandulosa</i> . Fiona has experience planning and undertaking fauna surveys using the following techniques/equipment: spotlighting, call playback, infrared cameras, ultrasonic bat detector, harp trapping, cage trapping, tube traps, pitfall traps and reptile searches. Fiona has experience undertaking targeted fauna surveys for all species in this assessment and has previously located and identified the following threatened fauna: Eastern Pygmy Possum, Red-crowned Toadlet, Broad-headed Snake, Gang-gang Cockatoo, Glossy-black Cockatoo, Grey-headed Flying-fox, Koala, Little Eagle, Powerful Owl, Squirrel Glider and White-bellied Sea-Eagle.
Sarah Hart	Sarah has 7 years' experience in Natural Resource Management and has worked extensively in ecological restoration. Her field-based experience includes targeted threatened flora and fauna survey, vegetation survey, plant species identification, vegetation mapping, floristic plots, spotlighting, amphibian surveys and monitoring riparian habitats. Sarah has experience applying the following fauna survey techniques: Elliot traps, pitfall traps, various sized cage traps. Sarah has experience assisting with BAM methodology in the field and has recently completed BAM training.
Jarrid Beeton	Jarrid has one-year ecological consulting experience and further two years' experience in environmental management at local government. He has undertaken a range of ecological assessments across NSW including several fauna and flora field surveys within the Sydney region. Jarrid has experience assisting with BAM methodology in the field as well as undertaking targeted surveys for threatened fauna and flora species using the following techniques: spotlighting, threatened species traverse, infrared cameras, stag watching, threatened gastropod plots, cage trapping and ultrasonic bat detector.

5.2 Habitat Assessment

Opportunistic and incidental observations of flora and fauna species were recorded during the field surveys. These included opportunistic observation of fauna activity such as scats, tracks, burrows, or other traces. The locations of any important habitat features, such as microbat roosting habitat, hollow-bearing trees and nests/burrows were captured with a handheld Global Positioning System (GPS) unit and photographed where appropriate. Searches for potential habitat of threatened fauna species included but were not limited to koala feed trees, foraging trees for threatened arboreal fauna, caves and rocky areas, hollow-bearing trees, waterbodies and soaks and terrestrial refugia such as woody debris and logs.

Specific habitat assessment survey techniques include:

- Large trees were inspected from all angles to determine whether there were any hollows or nests, as well as thoroughly inspected at the trunk and base to search for evidence of scratches and scats
- Searches for evidence of chewed cones were undertaken beneath Allocasuarina/Casuarina species
- Searches for any rocky areas, caves/crevices that could form possible Large-eared Pied Bat roosting sites or Broad-headed Snake breeding habitat
- Searches for soaks or pools of water within drainage lines that could provide potential breeding habitat for the Giant Burrowing Frog
- Assessment of drainage features and potential habitat for the Red-crowned Toadlet

The habitat assessment determined that the patch of PCT 1786 moderate-good vegetation could provide potential habitat for the Eastern Pygmy Possum due to the presence of a dense patch of *Banksia ericifolia* and dense ground layer which was thought to provide potential foraging and shelter for this species. The TBDC does not contain any guidance around specific targeted survey techniques and as such a targeted survey using passive Pygmy Possum trapping and infrared camera surveillance was deployed.

Sandy friable soils with diggings and fungi were also noted within the patch of PCT 1786 moderate-good vegetation (see Photo 5), so this area was assessed as providing potential habitat for the Southern Brown Bandicoot. The TBDC does not contain any guidance around specific targeted survey techniques and as such, targeted surveys including spotlighting and deployment of infrared camera surveillance, were implemented.

Photo 5 Evidence of Bandicoot Foraging and Fungi



The presence of ephemeral drainage features and dense ground litter within the areas of PCT 1786 moderate-good condition vegetation the west of the subject land (see Section 2.1) provide some potential (albeit low quality) habitat for the Red-crowned Toadlet. As such, call playback surveys were undertaken in accordance with survey guidelines for this species.

Habitat for the Giant Burrowing Frog was determined to be absent due to a lack of permanent soaks or pools within the small drainage features. In addition, it is also likely that the soil clay content is too high, and the habitat may be too degraded for the Giant Burrowing Frog.

No large trees were found within the areas of the subject land that contain native vegetation, and only one small hollow was found in a Lemon-scented Gum *Corymbia citriodora* within the planted native vegetation. The subject land does not contain any large nests or hollows and therefore, the subject land does not provide breeding habitat to threatened species of arboreal mammals, owls, cockatoos or birds of prey. No caves or crevices suitable for Large-eared Pied Bat were found and no exposed rocky areas suited to breeding of the Broad-headed Snake are present. In general, the subject land is highly modified and historic evidence suggests the site has been cleared (GML 2022), and possibly used for landfill (Tetra Tech Coffey 2021), so despite the presence of areas of native vegetation habitat quality is relatively low.

5.3 Targeted Survey Techniques

As a result of the habitat assessment findings the following targeted survey techniques were adopted:

- Nocturnal fauna surveys involving spotlighting for the Southern Brown Bandicoot over two nights.
- Installation of eight passive PVC pipe traps designed to target the Pygmy Possum (see Photo 6) in October 2021. These were inspected on 3 November 2021 and 17 December 2021.
- Two infrared cameras were installed and baited using oats and honey from 30 June 2021 to 3 July 2021. Three infrared cameras were installed from 15 October 2021 to 17 December 2021, two were baited with oats and sardines and one was erected at a pipe trap (See Photo 7).
- Red-crowned Toadlet call playback surveys in accordance with the NSW Survey Guide for Threatened Frogs (DPIE 2020).
- Parallel traverses in areas of native vegetation in accordance with Surveying threatened plants and their habitats (DPIE 2020), including confirmation of reference flowering where required (see Photo 8).

Details of targeted threatened species surveys including survey effort and results are included in Table 15, with threatened flora tracks shown in Figure 7 and fauna survey sites shown in Figure 8. All targeted surveys were undertaken within the appropriate survey period and using the survey methods identified by the TBDC. Relevant weather conditions during the surveys are included in Appendix D. Results are presented in Section 5.4 below, and a flora species list and fauna species list are included in Appendix B and Appendix E, respectively.

Photo 6 Passive Pygmy Possum Trap Set-up



Photo 7 Infrared Camera Trap Set-up (30 June 2021 and 15 October 2021)



Photo 8 Seaforth Mintbush Reference Population in Flower (Manly Dam, 30 June 2021)



337100

337200

337300

337400

337500

AQUATIC DRIVE

ALLAMBIE ROAD

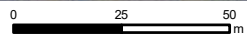
ARNHEM ROAD

MADISON WAY

SUNLEA PLACE

LEGEND

- Subject land
- Development Footprint
- Threatened Flora Search (June 2021)
- Threatened Flora Search (October 2021)
- Threatened Flora Search (November 2021)



Scale: 1:1,750 at A4
 Coordinate System: GDA 1994 MGA Zone 56

Date Drawn: 23-Aug-2022
 Project Number: 630.30197.00200

Data Source: NSW SS, August 2021
 Aerial imagery supplied by Nearmap (July, 2022)



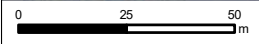
THREATENED FLORA SPECIES SURVEY

FIGURE 7



LEGEND

Subject land	Fauna Survey	Red-crowned Toadlet Call Playback (June/July 2021)
Development Footprint	Camera Trap (June/July 2021)	Red-crowned Toadlet Call Playback (October 2021)
Hollow-bearing Tree	Camera Trap (October 2021)	Red-crowned Toadlet Call Playback (November 2021)
Grey-headed Flying-fox	Passive Pygmy Possum Trap (October 2021)	Fauna Survey Track (October 2021)
	Pygmy Possum Surveillance Camera	Fauna Survey Track (November 2021)



Scale: 1:1,750 at A4
 Coordinate System: GDA 1994 MGA Zone 56

Date Drawn: 23-Aug-2022
 Project Number: 630.30197.00200



Data Source: NSW SS, August 2021
 Aerial imagery supplied by Nearmap (July, 2022)

THREATENED FAUNA SPECIES SURVEY

FIGURE 8

Table 15 Targeted Species Credit Species Surveys

Species Surveyed	Survey Effort	Survey Timing	Detection (Y/N)
<i>Callistemon linearifolius</i>	5-10m parallel traverses in areas of native vegetation over three days.	15 October 2021, 3-4 November 2021	N
<i>Cercartetus nanus</i> Eastern Pygmy-possum	Eight passive Pygmy Possum traps were set in a patch of <i>Banksia ericifolia</i> within the Duffys Forest EEC on 15 October 2021 (see Photo 6). Traps were checked for signs of use on 03 November 2021 and 17 December 2021. One trap (PPT 3) was set with an Infra-red camera (PPT-CAM) recording from 15 October 2021 to 17 December 2021. Two infrared cameras were set on the ground (CT1 and CT2 October 2021) recording from 15 October 2021 to 17 December 2021.	15 October 2021 to 17 December 2021	N
<i>Cryptostylis hunteriana</i>	5-10m parallel traverses in areas of native vegetation over two days.	3-4 November 2021	N
<i>Darwinia biflora</i>	5-10m parallel traverses in areas of native vegetation over four days.	30 June 2021, 15 October 2021, 3-4 November 2021	N
<i>Epacris purpurascens</i> var. <i>purpurascens</i>	5-10m parallel traverses in areas of native vegetation over one day.	15 October 2021	N
<i>Grevillea caleyi</i> Caley's Grevillea	5-10m parallel traverses in areas of native vegetation over four days.	30 June 2021, 15 October 2021, 3-4 November 2021	N
<i>Hibbertia puberula</i>	5-10m parallel traverses in areas of native vegetation over three days.	15 October 2021, 3-4 November 2021	N
<i>Hibbertia spanantha</i> Julian's Hibbertia	5-10m parallel traverses in areas of native vegetation over three days.	15 October 2021, 3-4 November 2021	N
<i>Isodon obesulus</i> Southern Brown Bandicoot (eastern)	Four total person-hours of spotlighting was undertaken on 30 June 2021 and 02 July 2021. Two infrared cameras were set on the ground (CT1 and CT2 June/July) recording from 30 June 2021 to 02 July 2021. Two infrared cameras were set on the ground (CT1 and CT2 October 2021) recording from 15 October 2021 to 17 December 2021.	30 June 2021 to 17 December 2021	N
<i>Lasiopetalum joyceae</i>	5-10m parallel traverses in areas of native vegetation over three days.	15 October 2021, 3-4 November 2021	N
<i>Melaleuca deanei</i> Deane's Paperbark	5-10m parallel traverses in areas of native vegetation over four days.	30 June 2021, 15 October 2021, 3-4 November 2021	N
<i>Microtis angusii</i> Angus's Onion Orchid	5-10m parallel traverses in areas of native vegetation over one day.	15 October 2021	N
<i>Persoonia hirsuta</i> Hairy Geebung	5-10m parallel traverses in areas of native vegetation over four days.	30 June 2021, 15 October 2021, 3-4 November 2021	N
<i>Pimelea curviflora</i> var. <i>curviflora</i>	5-10m parallel traverses in areas of native vegetation over three days.	15 October 2021, 3-4 November 2021	N

Species Surveyed	Survey Effort	Survey Timing	Detection (Y/N)
Prostanthera marifolia Seaforth Mintbush	5-10m parallel traverses in areas of native vegetation over four days. Reference population at Manly Dam was checked on 30 June 2021 and confirmed flowering.	30 June 2021, 15 October 2021, 3-4 November 2021	N
Pseudophryne australis Red-crowned Toadlet	Red-crowned Toadlet Call playback was undertaken at six locations over four days, with a total listening period of 8 hours.	02 July 2021, 15 October 2021, 3-4 November 2021	N
Tetratheca glandulosa	5-10m parallel traverses in areas of native vegetation over three days.	15 October 2021, 3-4 November 2021	N

5.4 Survey Outcomes

5.4.1 Overview

No species credit (candidate) species were detected during the targeted surveys and as such, no species polygons are required in accordance with BAM 2020. Results of the surveys are further explained in the following sections.

5.4.2 Threatened Flora

One BioNet (DPIE 2020) record of a threatened plant, *Acacia terminalis* subsp. Eastern Sydney has been made along the southwest boundary of the subject land. The specimen was located by SLR (see Photo 9 and Figure 5) and further identification (including inspection of photographs by SLR Principal Botanist Mr Gary Leonard) was undertaken, which concluded that the specimen is *Acacia terminalis* subsp. Bright yellow flower.

Photo 9 *Acacia terminalis* along Southern Boundary of Subject Land



Note - leaf branchlets, petiole and rachis were found to be glabrous, and the gland at base of petiole 2 mm long

Two threatened species of flora, the Wallangarra White Gum *Eucalyptus scoparia* and Magenta Lilly Pilly *Syzygium paniculatum* have been recorded within the subject land (see Figure 5). These are commonly planted trees used in landscaping and their presence on the site does not warrant a species polygon.

5.4.3 Threatened Fauna

Call playback surveys did not detect the Red-crowned Toadlet and it is thought that the subject land is too small and degraded and lacking sandstone ridge habitat for this species.

One threatened species of fauna (Grey-headed Flying-fox), three common species of native fauna (Long-nosed Bandicoot, Common Brushtail Possum and Swamp Wallaby) and one pest species (Black Rat) were recorded during spotlighting surveys.

The infrared cameras detected eight native species of fauna (Australian Brush-turkey, Noisy Miner, Long-nosed Bandicoot, Common Ringtail Possum, Short-beaked Echidna, Common Brushtail Possum, Lace Monitor and Swamp Wallaby) and three feral pest species (Rabbit, Black Rat, Fox). One scat was recorded on a passive trap on the 3 November 2021 (see Photo 10). This scat is too large to be of the Pygmy Possum and is most likely from a Ringtail Possum or Rat.

One threatened species of fauna, the Grey-headed Flying-fox, was detected during surveys of the subject land. The Grey-headed Flying-fox was observed foraging within the tree canopies of planted native vegetation (in particular of the Swamp Mahogany *Eucalyptus robusta* and Hills Weeping Fig *Ficus hillii*) and as a fly-over during nocturnal surveys. As no breeding habitat (ie camp) was detected for the Grey-headed Flying-fox, a species polygon is not required for this species.

Photo 10 Animal Scat Found on Passive Pygmy Possum Trap 3 November 2021



5.5 Survey Limitations

Given the duration and timing of the field surveys, it is likely that some of the species that may occur within the subject land (ie permanently, seasonally or transiently) were not detected. It was beyond the scope of the survey to carry out extensive fauna surveys, such as fauna trapping, however, a detailed habitat assessment was conducted to inform the 'likelihood of occurrence' of threatened species known or predicted to occur within the locality. Limitations with respect to survey timing in relation to candidate species is covered in Section 4.2.

Site conditions (including the presence of threatened species of flora and fauna) may change after the date of this report. SLR does not accept responsibility arising from, or in connection with, any change to the site conditions. SLR is also not responsible for updating this report if the site conditions change.

6 PRESCRIBED BIODIVERSITY IMPACTS

This chapter identifies relevant prescribed additional impacts on biodiversity values, in accordance with Section 6 of BAM 2020.

The proposed development would not impose a potential prescribed biodiversity impact on threatened entities associated with the following:

- Karst, caves, crevices, cliffs, rocks and other geological features of significance
- Corridors or other areas of connectivity linking habitat for threatened entities
- Water bodies or any hydrological processes that sustain threatened entities
- Protected animals that may use the proposed wind farm development site as a flyway or migration route
- Human-made structures
- Removal of non-native vegetation
- An increased risk of vehicle strike on threatened fauna

Note - whilst the subject land contains human-made structures that could provide habitat for threatened species; removal of these features is being undertaken under a separate approved DA (DA2011/1633).

7 AVOID AND MINIMISE IMPACTS

Consideration has been given to avoiding and minimising impacts to biodiversity throughout each phase of the project to date, in accordance with Section 7 of BAM 2020.

In relation to the recommendations for avoiding and minimising impacts on native vegetation and habitat during the proposal design and planning phase, as per Section 7.1 and 7.2 of BAM 2020:

- Alternative routes (for access) – an alternative access option was considered along the central west boundary (see Figure 9).
- Alternative locations - the proposal is for a new school to be constructed on a large lot surrounded by existing development that is appropriate for the location. No other locations are available for consideration as part of the proposed development.
- Alternative sites within the property (ie designing the project layout) - due to the adoption of the “access for all” design (ie single storey) the proposed school buildings and associated infrastructure were unable to avoid clearing of areas of Duffys Forest in the west of the subject land. The proposed development and alternative development footprints are presented in Figure 9.
- Design measures to avoid or minimise impacts on biodiversity values are further considered against the items under Section 7.1.2 of BAM 2020 in Table 16 below.

Table 16 Justification of Project Design

No	Requirement	Design Justification
1a)	Reducing the proposal’s clearing footprint by minimising the number and type of facilities	Avoiding clearing of native vegetation was a key consideration throughout the design process, however, the clearing footprint was ultimately expanded due to the adoption of the “access for all” design.
1b)	Locating ancillary facilities in areas that have no biodiversity values	Ancillary facilities have been positioned within the proposed footprint of the school’s operational area where possible.
1c)	Locating ancillary facilities in areas where the native vegetation or threatened species habitat is in the poorest condition (i.e. areas with the lowest vegetation integrity scores)	Ancillary facilities have been positioned within the proposed footprint of the school’s operational area where possible.
1d)	Locating ancillary facilities in areas that avoid habitat for species and vegetation that has a high threat status (e.g. an endangered ecological community (EEC) or critically endangered ecological community (CEEC) or is an entity at risk of a serious and irreversible impact (SAIL)	Ancillary facilities have been positioned within the proposed footprint of the school’s operational area where possible.
1e)	Actions and activities that provide for rehabilitation, ecological restoration and/or ongoing maintenance of retained areas of native vegetation, threatened species, threatened ecological communities and their habitat on the subject land	SLR recommends that the area identified within the plans as “Existing remnant Forest” is fenced and rehabilitated as Duffys Forest EEC, including weed removal and replanting of native groundcovers, shrubs and small trees.
2	The BDAR or BCAR must document and justify efforts to avoid or minimise impacts through design	Avoiding clearing of native vegetation was a key consideration throughout the design process.

Measures to be implemented to avoid and minimise impacts are presented in Table 17.

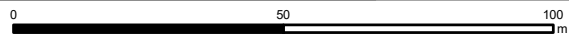
Table 17 Measures to be Implemented to Avoid and Minimise Impacts

Action	Outcome	Timing	Responsibility
Implement best practise tree and vegetation protection fencing for areas of retained native vegetation	Clearing of Duffys Forest EEC vegetation limited to development footprint	Construction	Proponent
Implement best practise sediment and erosion control	No sediment enters areas of native vegetation or drainage line. No erosion.	Construction	Proponent/ Construction contractor
Management of "Existing Remnant Forest" will be governed by a Vegetation Management Plan which will include measures to remove weeds and replant Duffys Forest.	Reduce weed cover and improve Duffys Forest within "Existing remnant Forest".	Operation	Proponent



LEGEND

Development Footprint (February 2021 Design)



Scale: 1:1,400 at A4
 Coordinate System: GDA 1994 MGA Zone 56

Date Drawn: 23-Aug-2022
 Project Number: 630.30197.00200



Data Source: NSW SS, August 2021
 Image from - The Forest High School | Master Plan Report | Architectus

ALTERNATIVE DEVELOPMENT FOOTPRINT

FIGURE 9

8 IMPACT ASSESSMENT

8.1 Direct Impacts

Construction of the proposed development will require the permanent removal of 0.43 ha of native vegetation, comprising 0.28 ha of PCT 1786 in moderate-good condition and 0.15 ha of PCT 1786 in low condition. The removal of the PCT 1786 in moderate-good condition also represents the permanent removal of 0.28 ha of Duffys Forest EEC, which is also an SAll entity.

A summary of the impacts on native vegetation within each vegetation zone, is presented in Table 18. The impacts to areas of native vegetation are presented in Figure 10.

The impacts on native vegetation summarised in terms of vegetation integrity loss are provided in the BAM Credit Summary Report in Appendix F and summarised in Table 19.

Table 18 Native Vegetation Impacts

Vegetation Zone	Operational Impact Area (ha)	Construction Impact Area (ha)	Total Impact Area (ha)
PCT 1786_Mod-good	0.26	0.02	0.28
PCT 1786_Low	0.14	0.01	0.15

Table 19 Change in Vegetation Integrity Score

Vegetation Zone	Current VI	Change in VI (loss)
PCT 1786_Mod-good	57	57
PCT 1786_Low	12.4	12.4



LEGEND

Subject land

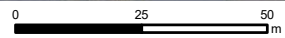
Development Footprint

Plant Community Type (PCT)

PCT 1786 Sydney ironstone Bloodwood-Silvertop Ash forest, Moderate-good

PCT 1786 Sydney ironstone Bloodwood-Silvertop Ash forest, Low

Planted Native Vegetation



Scale: 1:1,500 at A4
Coordinate System: GDA 1994 MGA Zone 56

Date Drawn: 23-Aug-2022
Project Number: 630.30197.00200



Data Source: NSW SS, August 2021
Aerial imagery supplied by Nearmap (July, 2022)

NATIVE VEGETATION IMPACT ASSESSMENT

FIGURE 10

8.2 Indirect Impacts

Indirect impacts relevant to the proposed development relate to the Duffys Forest in the west of the subject land. Indirect impacts listed in Section 8.2.2 of BAM 2020 are assessed for their relevance in Table 20 and impacts relevant to the proposed development are assessed against criteria listed in BAM Section 8.2.1 in Table 21.

Table 20 Indirect Impacts on Native Vegetation and Threatened Entities

No	BAM Suggested Indirect Impacts	Description of impact if relevant
2a	Inadvertent impacts on adjacent habitat or vegetation	Incidental clearing could take place during construction and operation of the school
2b	Reduced viability of adjacent habitat due to edge effects	Not relevant
2c	Reduced viability of adjacent habitat due to noise, dust or light spill	Not relevant
2d	Transport of weeds and pathogens from the site to adjacent vegetation	Weeds and pathogens could be transported to areas of retained vegetation during construction and operation
2e	Increased risk of starvation or exposure, and loss of shade or shelter	Not relevant
2f	Loss of breeding habitat	Not relevant
2g	Trampling of threatened flora species	Not relevant
2h	Inhibition of nitrogen fixation and increased soil salinity	Not relevant
2i	Fertiliser drift	Not relevant
2j	Rubbish dumping	Rubbish dumping could occur during construction and operation
2k	Wood collection	Not relevant
2l	Removal and disturbance of rocks, including bush rock	Not relevant
2m	Increase in predators	Not relevant
2n	Increase in pest animal populations	Not relevant
2o	Changed fire regimes	Not relevant
2p	Disturbance to specialist breeding and foraging habitat	Not relevant
NA	Any additional Indirect Impacts determined by SLR	Not relevant

Table 21 Assessment of Indirect Impacts

No	BAM Assessment Criteria	Inadvertent Impacts on Adjacent Habitat or Vegetation	Weeds and Pathogens	Rubbish
1ai	Nature, extent, frequency, duration and timing during Construction	Accidental clearing of areas of retained native vegetation could occur for the duration of construction (6 months to 2yrs).	Increased risk of dispersal of weeds and pathogens through retained native vegetation due to access through Duffys Forest EEC; more likely during site clearing (1-2wks), with lower risk during construction (6 months to 2 yrs).	Rubbish may enter the site or be dumped within areas of retained vegetation during construction phase (6 months to 2yrs).
1aai	Nature, extent, frequency, duration and timing during Operation	The potential for accidental clearing is likely to reduce during site operation.	The risk of transporting weeds and pathogens to retained native vegetation is likely to be reduced during operation.	Rubbish dumping during operation is an ongoing risk that may occur sporadically.
1aiii	Nature, extent, frequency, duration and timing arising from a change in land-use patterns	As the subject land is largely disused at present the likelihood of accidentally clearing the vegetation is low, therefore the proposal would represent an increase in the nature, extent, frequency and duration of accidental clearing.	The areas of remnant vegetation are currently affected by weeds, with particularly high levels in the northwest. No evidence of pathogens has been recorded. The proposed development is likely to represent a minor increase to the nature, extent, frequency and duration of weed and pathogen impacts.	Evidence of historic and ongoing rubbish dumping are apparent within the subject land. The proposed development is likely to represent a minor increase to the nature, extent, frequency and duration of rubbish dumping.
1b	Consequences of indirect impacts on biodiversity values	Accidental clearing could reduce the area of the retained native vegetation.	The minor increase in weed and pathogen impacts could result in a reduction in species composition, structure, and function of the retained native vegetation (ie Duffys Forest EEC).	The minor increase in rubbish dumping could result in a reduction in species composition, structure, and function of the areas of retained native vegetation.
1c	Limitations to data, assumptions and predictions about impacts on biodiversity	See survey limitations in Section 5.5	See survey limitations in Section 5.5	See survey limitations in Section 5.5

No	BAM Assessment Criteria	Inadvertent Impacts on Adjacent Habitat or Vegetation	Weeds and Pathogens	Rubbish
3a	Describe the nature, extent and duration of short-term impacts and long-term impacts	Accidental clearing is a moderate short-term impact of construction and can be managed with preventative measures such as protection fencing.	Potential introduction of weeds and pathogens into the site are moderate short-term impacts of construction and minor long-term impacts that can be managed.	Rubbish dumping is a minor short-term and long-term impact that can be managed.
3b	Identify the native vegetation, threatened species, TECs and their habitats likely to be affected and the type of indirect impact that is likely to occur	Impacts to areas of PCT 1786 in the western outer edges of the site, including a portion of Duffys Forest EEC, could reduce the total area of retained vegetation.	Impacts to areas of PCT 1786 in the western outer edges of the site, including a portion of Duffys Forest EEC, could reduce vegetation condition.	Impacts to areas of PCT 1786 in the western outer edges of the site, including a portion of Duffys Forest EEC, could reduce vegetation condition.

8.3 Assessment of Prescribed Biodiversity Impacts

This section of the BDAR addresses relevant prescribed impacts identified in Section 6. In the case of the proposed development, there are no expected prescribed impacts on threatened species and their habitats and assessment in accordance with Section 8.3.2 of BAM 2020 with respect to prescribed impacts is not required.

8.4 Assessment of Planted Native Vegetation

The subject land contains 0.35 ha of planted native vegetation, of which 0.31 ha will be removed to facilitate the proposed development (see Figure 10). Appendix D of the BAM 2020 has been applied for streamlined assessment of this vegetation, as per Table 22.

Table 22 Streamlined Assessment for Planted Native Vegetation

No	Decision-making Key	Response
1	Does the planted native vegetation occur within an area that contains a mosaic of planted and remnant native vegetation and which can be reasonably assigned to a PCT known to occur in the same IBRA subregion as the proposal? i. Yes The planted native vegetation must be allocated to the best-fit PCT and the BAM must be applied. ii. No Go to 2.	ii. No Justification: All native vegetation within the northeast of the subject land is assessed as planted in origin. The species selection is typical of landscaping in the Sydney area and includes species which do not naturally occur in the region (Lophostemon confertus, Eucalyptus microcorys, E. scoparia and Corymbia citriodora). This part of the site has been historically cleared and maintained as open space for the cerebral palsy facility. Soils and ground surfaces are modified and there is no evidence of a natural ground or shrub layers.

No	Decision-making Key	Response
2	Is the planted native vegetation: a. planted for the purpose of environmental rehabilitation or restoration under an existing conservation obligation listed in BAM Section 11.9(2.), and b. the primary objective was to replace or regenerate a plant community type or a threatened plant species population or its habitat? i. Yes The planted native vegetation must be assessed in accordance with Chapters 4 and 5 of the BAM. ii. No..... Go to 3.	ii. No Justification: The vegetation was not planted for environmental rehabilitation as described. There are no relevant threatened species of plants, and the species composition is not reflective of a threatened ecological community that would naturally occur in Allambie Heights.
3	Is the planted/translocated native vegetation individuals of a threatened species or other native species planted/translocated for the purpose of providing threatened species habitat under one of the following: (a) a species recovery project; (b) Saving our Species project; (c) other types of government funded restoration project; (d) condition of consent for a development approval that required those species to be planted or translocated for the purpose of providing threatened species habitat; (e) legal obligation as part of a condition or ruling of court. This includes regulatory directed or ordered remedial plantings (e.g. Remediation Order for clearing without consent issued under the BC Act or the Native Vegetation Act); (f) ecological rehabilitation to re-establish a PCT or TEC that was, or is carried out under a mine operations plan; or (g) approved vegetation management plan (e.g. as required as part of a Controlled Activity Approval for works on waterfront land under the NSW Water Management Act 2000)? i. Yes The planted native vegetation must be assessed in accordance with Chapters 4 and 5 of the BAM. ii. No Go to 4.	ii. No Justification: It is clear by the nature and composition of the trees in the northeast of the subject land that the planted vegetation does not contain threatened species, is not a threatened ecological community and was not planted for the purpose of providing threatened species habitat. Whilst two threatened species, <i>E. scoparia</i> and <i>Syzygium paniculatum</i> were detected within the planted native vegetation (see Figure 5) these species are a popular cultivar and street tree. The <i>E. scoparia</i> is also outside of its natural range in the Sydney region and <i>S. paniculatum</i> is typically a rainforest plant, so the subject land would not have historically represented potential habitat for this species.
4	Was the planted native vegetation (including individuals of a threatened flora species) undertaken voluntarily for revegetation, environmental rehabilitation or restoration without a legal obligation to secure or provide for management of the native vegetation? i. Yes Go to D.2 Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied). ii. No Go to 5.	ii. No Justification: The planted vegetation was not planted for revegetation, environmental rehabilitation or restoration purposes as described
5	Is the native vegetation (including individuals of a threatened flora species) planted for functional, aesthetic, horticultural or plantation forestry purposes? This includes examples such as: windbreaks in agricultural landscapes, roadside plantings (including street trees, median strips, roadside batters), landscaping in parks, gardens and sport fields/complexes, macadamia plantations or teatree farms? i. Yes Go to D.2 Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied). ii. No Go to 6.	i. Yes Justification: The nature of the plantings and species selection indicate that the vegetation was planted for landscaping purposes

No	Decision-making Key	Response
D2	<p>The assessor must assess the suitability of the planted native vegetation for use by threatened species and record any incidental sightings or evidence (e.g. scats, stick nests) of threatened species credit species (flora and fauna) using, inhabiting or being part of the planted native vegetation. If there is evidence that threatened species are using the planted native vegetation as habitat, the assessor must apply Section 8.4 of the BAM to mitigate and manage impacts on these species. Species credits are not required to offset the proposed impacts. The steps taken to assess threatened species habitat and all reasonable measures proposed to be taken to mitigate or minimise impacts must be set out in the BDAR or BCAR.</p>	<p>The Grey-headed Flying-fox was found to be foraging within blossoming/fruiting Swamp Mahogany and Hills Figs within the areas of planted native vegetation. The Swamp Mahogany could also provide foraging habitat to threatened parrots such as the Swift Parrot. The remainder of the planted native vegetation is not suitable for threatened species and would only provide intermittent habitat to mobile species of fauna. To mitigate potential loss of foraging habitat for threatened bats and birds, removal of planted native vegetation is considered in Section 9.</p>

9 MITIGATION AND MANAGEMENT OF IMPACTS

9.1 Mitigate and Manage Direct Impacts

Recommended measures to mitigate or manage impacts on biodiversity values are listed in BAM Sections 8.4 and 8.5. Table 23 presents these measures as relevant to mitigating impacts on native vegetation, threatened species, TECs and their habitat and identifies where these are applicable to the proposed development in accordance with Section 8.4.1 of BAM 2020.

Table 23 Mitigation Measures

No	BAM Suggested Measure	Action	Outcome	Timing	Responsibility
2a	Timing works to avoid critical life cycle events, such as breeding or nursing	NA	NA	NA	NA
2b	Instigating clearing protocols, including pre-clearing surveys, daily surveys and staged clearing, and using a trained ecologist or licensed wildlife handler during clearing events	<ul style="list-style-type: none"> No clearing should occur during the early evening or at night, when nocturnal fauna species are most likely to be active. The direction of clearing should ensure that fauna species are directed away from threats such as roads, developed areas or disturbed areas. Trained ecologist or licensed wildlife handler is on-call during all native vegetation clearance in the case that native fauna is injured and requires capture and veterinary care. 	Reduced likelihood of displacement of or injury to resident fauna	Construction	Proponent, construction team
2c	Relocating habitat features (eg fallen timber, hollow logs) from the development or clearing site, to adjacent retained vegetation	NA	NA	NA	NA
3a	Adoption of clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance; for example, a chainsaw is preferable to heavy machinery to remove native vegetation for partial clearing	<ul style="list-style-type: none"> Areas of vegetation outside the development footprint are to be clearly demarcated with temporary chain mesh fencing to prevent accidental clearing during the construction phase. Areas of disturbance are to be rehabilitated as soon as practicable 	Reduce likelihood of indirect impacts on native vegetation and habitat	Construction	Proponent, construction team

No	BAM Suggested Measure	Action	Outcome	Timing	Responsibility
3b	Using noise barriers, or daily/seasonal timing of construction and operational activities to reduce impacts of noise	NA	NA	NA	NA
3c	Using light shields, or daily/seasonal timing of construction and operational activities to reduce impacts of light spill	NA	NA	NA	NA
3d	Using adaptive dust management and monitoring programs to control air quality	NA	NA	NA	NA
3e	Scheduling the timing of construction activities to avoid impacts (e.g. timing the construction for when migratory species are not at the site, or when particular species known to, or likely to use the habitat on the site, are not breeding or nesting)	NA	NA	NA	NA
3f	Erecting temporary fencing to protect significant environmental features, such as riparian zones	<ul style="list-style-type: none"> Areas of vegetation outside the development footprint are to be clearly demarcated with temporary chain mesh fencing to prevent accidental clearing during the construction phase. 	Reduce likelihood of accidental clearing of native vegetation and habitat	Construction	Proponent, construction team
3g	Using hygiene protocols to prevent the spread of weeds or pathogens between infected and uninfected areas	<ul style="list-style-type: none"> All vehicles, equipment, footwear and clothing should be clean and free of weed propagules prior to entering the subject land. Any weeds that are removed during the construction phase should be disposed of appropriately. 	Reduce risk of spread of weeds and plant pathogens into retained native vegetation and habitat	Construction	Proponent, construction team
3h	Training staff and conducting site briefings to communicate environmental features to be protected and measures to be implemented	<ul style="list-style-type: none"> Sensitive environmental areas are to be identified and communicated in all onsite briefings, for all staff prior to conducting work on the site 	Reduce likelihood of indirect impacts on native vegetation and habitat	Construction	Proponent, construction team

No	BAM Suggested Measure	Action	Outcome	Timing	Responsibility
3i	Preparing a vegetation management plan to regulate activity in vegetation and habitats adjacent to residential developments. The plan may include controls on pet ownership, rubbish disposal, wood collection, fire management, and disturbance to nests and other niche habitats	NA	NA	NA	NA
3j	Providing for the ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation habitat on, or adjacent to, the development or clearing site	<ul style="list-style-type: none"> A Vegetation Management Plan (VMP) is to be prepared prior to construction The VMP is to ensure that the persons undertaking the development undertakes initial weed removal and planting works over a minimum of three years 	Reduce likelihood of indirect impacts on native vegetation and habitat	Construction	Proponent, construction team

9.2 Mitigate Prescribed Impacts

As identified in Section 6 and Section 8.3 of this BDAR there are no relevant prescribed impacts. As such none of the mitigation measures for prescribed impacts in accordance with Section 8.4.2 of BAM 2020 and as identified in Table 24 are required. In accordance with Section 8.4.2 of BAM 2020 the following factors are to be considered in determining appropriate mitigation measures for the proposal:

- industry best practice and standards
- the proportion of the total cost of the proposal that is dedicated to biodiversity protection
- the risk that the measure could fail

Table 24 Measures to Mitigate Prescribed Impacts

No.	BAM Suggested Measure	Application
a	Scheduling the timing of construction activities to avoid critical life cycle events (e.g. timing construction activities to avoid migratory species on site, or using the site)	NA
b	Instigating clearing protocols, including pre-clearing surveys, daily surveys and staged clearing, and using a trained ecologist or licensed wildlife handler during clearing, construction and maintenance activities for human-made structures and non-native vegetation	NA
c	Retaining habitat features (e.g. fallen timber, hollow logs, rocks) within the subject land, or relocating them to adjacent retained remnant vegetation	NA
d	Installing artificial connectivity measures (e.g. glider poles, rope crossings, habitat bridges) to re-establish connections between habitat and favoured transport corridors	NA
e	Erecting temporary fencing to protect significant environmental features, such as karst, caves, rock outcrops and water bodies	NA

No.	BAM Suggested Measure	Application
f	Replacing habitat provided by human-made structures and non-native vegetation with alternative habitat	NA
g	Using sediment barriers or sedimentation ponds to control the quality of water released from the site into the receiving environment	NA
h	Training staff and conducting site briefings to communicate environmental features to be protected and the measures implemented to protect them	NA
i	Ecological restoration, rehabilitation actions and/or maintenance of retained native vegetation on, or adjacent to, the subject land	NA
j	Development control measures that regulate the types of activities that can occur in native vegetation and habitat adjacent to residential development, including prohibiting the collection of bush rocks.	NA

9.3 Adaptive Management of Uncertain Impacts

An adaptive management plan can be used to address impacts that are infrequent or difficult to measure. These include indirect or prescribed impacts, or other remaining biodiversity impacts. The proponent must develop an adaptive management plan to address any remaining impacts where mitigation measures have not been proposed. SLR is of the opinion that all indirect, prescribed, or other residual biodiversity impacts are minor in nature and/or will be sufficiently mitigated and managed by implementing measures outline in this BDAR. As such an adaptive management plan is not proposed.

9.4 Use of Biodiversity Credits to Mitigate Indirect or Prescribed Impacts

The retirement of biodiversity credits may be used with other conservation measures to mitigate prescribed impacts or the indirect impacts of a proposal on areas of native vegetation, TECs and/or threatened species, or their habitat adjacent to the subject land. SLR is of the opinion that all indirect and prescribed impacts are minor in nature and/or will be sufficiently mitigated and managed by implementing measures outlined in this BDAR. As such, additional biodiversity credits to mitigate indirect or prescribed impacts are not proposed.

10 IMPACT SUMMARY

10.1 Serious and Irreversible Impacts

The determination of a serious and irreversible impact (SAII) on biodiversity values is to be made by the decision-maker in accordance with the principles set out in the BC Regulation. The assessor must identify every threatened entity at risk of an SAII that would be impacted by the proposal and provide information for the SAII entity to assist the decision maker.

The only SAII entity relevant to the proposed development at Allambie Heights is Duffys Forest TEC. Details of the assessment of the STIF SAII in accordance with the criteria set out in Subsection 9.1.1 of BAM 2020 is provided in Table 25.

Table 25 Additional Impact Assessment for TECs at Risk of an SAII

No	Assessment Criteria	SAII Assessment Information
2a	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Evidence of reduction in geographic distribution as the current total geographic extent of the TEC in NSW AND the estimated reduction in geographic extent of the TEC since 1970 (not including impacts of the proposal)	The Duffys Forest Final Determination (TSC 2021) references Smith and Smith (2000). Smith and Smith (2000) state the total area of the community as 239.9 ha and the estimated original extent as 1,500 ha, representing an 84 % reduction in extent. It is noted that presumably none of the vegetation within the subject land was included in this estimate as it is not included in the accompanying maps (Smith and Smith 2000).
2bi	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes indicated by: change in community structure	The structural form of Duffys Forest is “predominantly of open-forest to woodland” (TSC 2022). Smith and Smith (2000) comments on the current condition of remaining patches as: “A total of 59% of the community was considered to be in good condition, 22% in average condition, and 19% in poor condition”. In relation to canopy structure some patches are also described as “thinned to woodland density by disturbance”. The understorey is variable dependent on disturbance history: “the height, density and number of understorey layers varied with fire history and other factors” (Smith and Smith 2000). The structure is also described as affected by high frequency fires.
2bii	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes indicated by: change in species composition	The Duffys Forest Final Determination states the following in relation to the change in species composition: “The species composition of the site will be influenced by the size of the site and by its recent disturbance history. The number of species and the above ground composition of species will change with time since fire, and may also change in response to changes in fire frequency”. The species composition is affected by too high frequency or too low frequency of fires and increased soil moisture and nutrient levels from urban runoff. Smith and Smith (2000) describe the effects of “prolonged absence of fires or the replacement of hot bushfires by cool fires” as “the understorey vegetation was becoming increasingly dominated by <i>Pittosporum undulatum</i> or <i>Allocasuarina littoralis</i> ”, and “in the absence of fires these species tend to form dense stands that inhibit the regeneration of other species”.

No	Assessment Criteria	SAIL Assessment Information
2biii	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes indicated by: disruption of ecological processes	The Final Determination states the following in relation to the disruption of ecological processes: "Threats to the survival of the Duffys Forest Ecological Community include land clearing and associated fragmentation, habitat degradation by rubbish dumping; weed invasion facilitated by urban runoff, an inappropriate fire regime, unauthorised horse riding activities in the area and access by people, trail bikes, and other vehicles."
2biv	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes indicated by: invasion and establishment of exotic species	Weed invasion is described by Smith and Smith (2000) as: "Weed invasion is facilitated by fragmentation of the community, urban runoff (increased moisture levels, nutrient enrichment of soils, and a source of weed propagules), physical disturbance of the vegetation or soil, and dumping of garden and lawn clippings (a common practice in reserves adjacent to houses). Duffys Forest vegetation was found to be relatively resilient to weed invasion. However, the highly fragmented condition of the community means that the remnants tend to be small patches and narrow strips with a high edge to interior ratio and adjacent to urban areas. Weed invasion is always a problem in such situations".
2bv	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes indicated by: degradation of habitat	Smith and Smith (2000) comments on the current condition of remaining patches as: "A total of 59% of the community was considered to be in good condition, 22% in average condition, and 19% in poor condition".
2bvi	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes indicated by: fragmentation of habitat	Smith and Smith (2000) state the following in relation to fragmentation of habitat: "As a result of clearing the Duffys Forest community has become much more fragmented and the individual remnants smaller, more isolated and more internally fragmented, making them more prone to loss of species and less likely to be recolonised after such losses. Fragmentation has also resulted in extensive edges adjacent to cleared lands. Bushland edges are sites that are particularly prone to habitat degradation through processes such as weed invasion, physical disturbance, changed drainage patterns, increased tree mortality, and alteration of the microclimate."
2ci	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Evidence of restricted geographic distribution, based on the TEC's geographic range in NSW according to the: extent of occurrence	The original extent of Duffy Forest is mapped in Smith and Smith (2000). It shows the community occurring from North Balgowlah in the south to Bilgola Head in the north and from the coastline to as far west as North Epping. Therefore the north/south extent of occurrence is approximately 15 km and the east/west extent of occurrence is approximately 20 km.

No	Assessment Criteria	SAIL Assessment Information
2cii	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Evidence of restricted geographic distribution, based on the TEC's geographic range in NSW according to the: area of occupancy	Smith and Smith (2000) state the total area of the community as 239.9 ha and the estimated original extent as 1,500 ha.
2ciii	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Evidence of restricted geographic distribution, based on the TEC's geographic range in NSW according to the: number of threat-defined locations	Smith and Smith (2000) states: "A total of 116.8 ha of Duffys Forest vegetation is conserved in National Parks and Wildlife Service reserves, representing 49% of the total area (239.9 ha) of the community", and "The remaining 87.2 ha of the community (36% of the total) is unreserved". There are 21 unreserved mapped locations and 16 reserved locations of various patch sized as detailed in Smith and Smith (2000).
2d	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including: Evidence that the TEC is unlikely to respond to management	There is no information regarding evidence that the TEC is unlikely to respond to management. Detailed management recommendations are made for each remnant patch in Smith and Smith (2000).
3	Where the TBDC indicates data is 'unknown' or 'data deficient' for a TEC for a criterion listed in Subsection 9.1.1(2.), the assessor must record this in the BDAR or BCAR.	No information was able to be presented in relation to (2d).
4ai	Include data and information on the impact on the geographic extent of the TEC by estimating the total area of the TEC to be impacted by the proposal: in hectares. Data and information should include direct impacts (i.e. from clearing) and indirect impacts where partial loss of the TEC is likely as a result of the proposal.	The total area impacted by the proposed is 0.28 ha. No partial loss of the community due to indirect impacts is likely, provided mitigation measures proposed in this BDAR are implemented.
4aii	Include data and information on the impact on the geographic extent of the TEC by estimating the total area of the TEC to be impacted by the proposal: as a percentage of the current geographic extent of the TEC in NSW. Data and information should include direct impacts (i.e. from clearing) and indirect impacts where partial loss of the TEC is likely as a result of the proposal.	According to Smith and Smith (2000), the current extent of Duffys Forest in NSW is 239.9 ha. The total area of Duffy Forest to be affected by the proposed development is 0.28 ha. Therefore, the impact of the proposal on the geographic extent is estimated at 0.12 %.
4bi	The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes of the TEC by: estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500 m of the development footprint or equivalent area for other types of proposals.	The total area of the Duffys Forest patch in the southwest of the subject land is 0.35 ha of which, 0.28ha will be cleared and 0.07ha will remain. There will remain a narrow band along the southern edge of the site which is connected to larger areas to the south and west and a small patch will also remain in the northwest corner which will be similarly connected as per existing conditions to the north and west. The patch size of ≥ 100 ha will still apply to remaining areas of Duffys Forest.

No	Assessment Criteria	SAIL Assessment Information
4bii	<p>The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes of the TEC by: describing the impacts on connectivity and fragmentation of the remaining areas of TEC measured by:</p> <ul style="list-style-type: none"> • distance between isolated areas of the TEC, presented as the average distance if the remnant is retained AND the average distance if the remnant is removed as proposed, and • estimated maximum dispersal distance for native flora species characteristic of the TEC, and • other information relevant to describing the impact on connectivity and fragmentation, such as the area to perimeter ratio for remaining areas of the TEC as a result of the development 	<p>The total area of the Duffys Forest EEC patch in the southwest of the subject land is 0.35 ha. The 0.28 ha of Duffys Forest to be removed to facilitate the proposal represents most of the patch; a narrow band will remain along the southern boundary and a small section will be rehabilitated in the northwest corner. There will be minimal change to the distances between patches due to connectivity to the west (see Figure 6). It is also recommended that areas of low condition PCT 1786 are retained and rehabilitated in the northwest of the subject land.</p>
4biii	<p>The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes of the TEC by: describing the condition of the TEC according to the vegetation integrity score for the relevant vegetation zone(s) (Section 4.3). The assessor must also include the relevant composition, structure and function condition scores for each vegetation zone.</p>	<p>The Vegetation Integrity (VI) of the Duffys Forest EEC vegetation (ie areas of PCT 1786 in moderate to good condition) is 57 and is made up of the following scores for composition, structure and function:</p> <ul style="list-style-type: none"> • 57.9 composition • 71.7 structure • 44.6 function <p>Provided that the mitigation and management measures (as outlined in Section 9) are put in place, then the proposed development should not contribute to further degradation (or reduction to VI) of Duffys Forest vegetation.</p>
5	<p>The assessor may also provide new information that demonstrates that the principle identifying that the TEC is at risk of an SAIL is not accurate.</p>	<p>None available</p>

10.2 Impacts Requiring Offset

10.2.1 Impacts on Native Vegetation and TECs (Ecosystem Credits)

An offset is required for impacts of proposals on PCTs that are associated with a vegetation zone that has a vegetation integrity (VI) score of:

- ≥ 15 , where the PCT is representative of an EEC or a CEEC
- ≥ 17 , where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community
- ≥ 20 , where the PCT does not represent a TEC and is not associated with threatened species habitat.

The 'low condition' PCT 1786 vegetation zone is not a TEC and is not associated with threatened species habitat, and therefore requires an offset for impacts to this vegetation where the VI score is ≥ 20 . The VI for the 'low condition' PCT 1786 vegetation zone is 12.4 and being less than 20, impacts on this vegetation do not require an offset. The 'moderate-good condition' PCT 1786 vegetation zone represents an EEC and therefore an offset is required for VI scores ≥ 15 ; the VI score for this vegetation zone is 57 and as such, impacts on this vegetation require an offset.

Impacts on patches of moderate-good condition PCT 1786 vegetation that require an offset are identified in Figure 11.

10.2.2 Impacts on Threatened Species and their Habitat

An offset is required for the impacts of proposals on the habitat of threatened species assessed for ecosystem credits and associated with a PCT in a vegetation zone with a vegetation integrity score of ≥ 17 . These ecosystem credits are therefore generated for removal of 'moderate-good condition' PCT 1786 vegetation, but not for the removal of areas of 'low condition' PCT 1786 vegetation. An offset is also required for the impacts of proposals on threatened species that require species credits. In the case of the proposed development of the subject land at Allambie Heights there are no species credits species requiring offsetting.

Threatened species impacts for ecosystem credit species requiring an offset (ie areas of 'moderate-good condition' PCT 1786 vegetation to be removed) are identified in Figure 11.

10.3 Impacts Not Requiring an Offset

An offset is not needed for impacts on native vegetation if the VI score is below those listed in Section 10.2.1. The VI scores for the PCT 1786 'low condition' zone are less than 20 and as such these areas of native vegetation removal do not require an offset.

Impacts on 'low condition' PCT 1786 vegetation that do require an offset are identified in Figure 11.

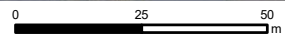
10.4 Areas Not Requiring Further Assessment

Areas that are proposed to be impacted within the subject land that do not contain native vegetation do not need to be assessed for ecosystem credits; however, they still need to be assessed for threatened species habitat. Any areas that do not represent native vegetation or prescribed impacts do not require further assessment and are identified in Figure 11.



LEGEND

- Subject land
- Impacts Requiring Offsetting
- Impacts Not Requiring Offsetting
- Areas Not Requiring Further Assessment



Scale: 1:1,500 at A4
 Coordinate System: GDA 1994 MGA Zone 56

Date Drawn: 23-Aug-2022
 Project Number: 630.30197.00200



Data Source: NSW SS, August 2021
 Aerial imagery supplied by Nearmap (July, 2022)

IMPACTS MAP

FIGURE 11

10.5 Ecosystem Credits and Species Credits

The BAM Calculator was used to determine the offset obligation for the removal of vegetation and habitat associated with the proposed development. The ecosystem credit requirement is eight PCT 1786 credits, as presented in Table 26.

Table 26 Ecosystem Credits

Vegetation Zone Name	Current VI	Future VI	Change in VI (loss)	Ecosystem Credits Required
PCT 1786_Mod-good	57	0	57	8
PCT 1786_Low	12.4	0	12.4	0
Total Duffys Forest EEC ecosystem credits required				8

10.6 Biodiversity Credit Reports

The Biodiversity Credit Reports for the project are included in Appendix F. Biodiversity credits that share the same attributes form a class of credits (or an offset trading group). The credit classes for ecosystem credits are presented in Table 27.

Table 27 Credit Class and Matching Credit Profile for Ecosystem Credits

PCT Name	TEC Name	Offset Trading Group	Vegetation Class	Vegetation Formation	Presence/Absence of hollows	IBRA Subregions
1786-Sydney ironstone Bloodwood-Silvertop Ash forest (Mod-good)	Duffys Forest Ecological Community in the Sydney Basin Bioregion	Duffys Forest Ecological Community in the Sydney Basin Bioregion	Sydney Coastal Dry Sclerophyll Forests	Dry Sclerophyll Forests (Shrubby sub-formation)	No	Pittwater

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APPENDIX A

Plans of Proposed Development

Figure A3 Extract of Tree Retention and Removal Plan (Source: Oculus, 15 August 2022)

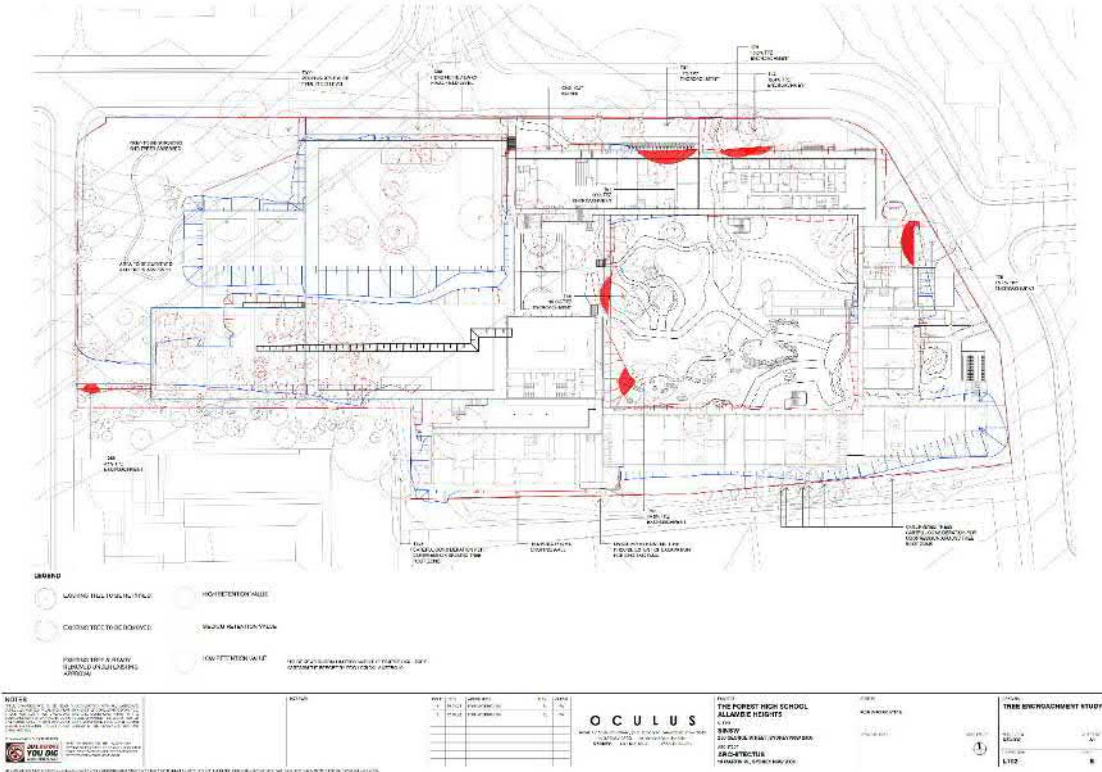


Figure A4 Extract of Landscape Plan (Source: Oculus, 10 August 2022)



APPENDIX B

Flora Data

Table B1 Flora Data

Duffys Forest sp. (Yes/No)	PCT 1786 sp. (Yes/No)	Species Name	Common Name	Native/ HTW/ non-HTW	Growth Form Group	Cover in BAM Plot 01	Cover in BAM Plot 02
No	No	<i>Acacia binervia</i>	Coastal Myall	N	TG	0	0
No	No	<i>Acacia longifolia</i> ssp. <i>longifolia</i>	Sydney Golden Wattle	N	SG	1	0
Yes	Yes	<i>Acacia myrtifolia</i>	Red-stemmed Wattle	N	SG	0	0
No	No	<i>Acacia parramattensis</i>	Parramatta Wattle	N	TG	0	0
No	No	<i>Acacia saligna</i>	Golden Wreath Wattle	Non-HTW	-	0	0
No	No	<i>Acianthus fornicatus</i>	Pixie Caps	N	FG	0.1	0
No	No	<i>Agapanthus</i> sp.	-	-	-	0.1	0
No	No	<i>Ageratina adenophora</i>	Crofton Weed	HTW	-	0	0
Yes	Yes	<i>Allocasuarina littoralis</i>	Black She-oak	N	TG	50	2
No	No	<i>Andropogon virginicus</i>	Whisky Grass	HTW	-	0.1	0
Yes	No	<i>Anisopogon avenaceus</i>	Oat Speargrass	N	GG	0.1	0
No	No	<i>Asparagus aethiopicus</i>	Asparagus 'Fern'	HTW	-	0	0
No	No	<i>Banksia ericifolia</i> ssp. <i>ericifolia</i>	Heath-leaved Banksia	N	SG	5	0
No	No	<i>Banksia integrifolia</i> ssp. <i>integrifolia</i>	Coast Banksia	N	TG	2	0
Yes	Yes	<i>Banksia serrata</i>	Old-man Banksia	N	TG	0	0.1
No	No	<i>Callistemon linearis</i>	Narrow-leaved Bottlebrush	N	SG	0	0
No	No	<i>Cenchrus clandestinus</i>	Kikuyu	HTW	-	0	0
No	No	<i>Centella asiatica</i>	Indian Pennywort	N	FG	0.1	0
No	No	<i>Cinnamomum camphora</i>	Camphor Laurel	HTW	-	0	0
No	No	<i>Cirsium vulgare</i>	Spear Thistle	Non-HTW	-	0	0
No	No	<i>Commelina cyanea</i>	-	N	FG	0	0.1
No	No	<i>Cotoneaster glaucophyllus</i>	Glaucous Cotoneaster	Non-HTW	-	0	0
No	No	<i>Cyathea australis</i>	Rough Tree-fern	N	OG	0	0
Yes	Yes	<i>Dampiera stricta</i>	-	N	FG	0	0
No	No	<i>Delairea odorata</i>	Cape Ivy	HTW	-	0	0
Yes	No	<i>Dianella caerulea</i> var. <i>caerulea</i>	Blue Flax Lily	N	FG	0.1	0
No	No	<i>Dichondra repens</i>	Kidney Weed	N	FG	0	0.1
Yes	Yes	<i>Dillwynia retorta</i>	-	N	SG	0.5	0
No	No	<i>Drosera auriculata</i>	-	N	FG	0.1	0
No	No	<i>Ehrharta erecta</i>	Panic Veldtgrass	HTW	-	0	0
Yes	Yes	<i>Entolasia stricta</i>	Wiry Panic	N	GG	5	0.1
No	No	<i>Elaeocarpus reticulatus</i>	Blueberry Ash	N	SG	0	0
Yes	Yes	<i>Epacris pulchella</i>	Wallum Heath	N	SG	1	0
No	No	<i>Eucalyptus scoparia</i>	Wallangarra White Gum	N	TG	0	0
No	No	<i>Ficus hillii</i>	Hills Weeping Fig	Non-HTW	-	0	0
No	No	<i>Gahnia aspera</i>	Rough Saw-sedge	N	GG	0	0.2
No	No	<i>Gahnia clarkei</i>	Tall Saw-sedge	N	GG	0	0
No	No	<i>Gleichenia dicarpa</i>	Pouched Coral Fern	N	EG	0.1	0

Duffys Forest sp. (Yes/No)	PCT 1786 sp. (Yes/No)	Species Name	Common Name	Native/ HTW/ non-HTW	Growth Form Group	Cover in BAM Plot 01	Cover in BAM Plot 02
No	No	<i>Glochidion ferdinandi</i>	Cheese Tree	N	TG	0.1	0
No	No	<i>Glycine tabacina</i>	-	N	OG	0	0
No	No	<i>Gomphocarpus fruticosus</i>	Narrow-leaved Cotton Bush	Non-HTW	-	0	0
Yes	No	<i>Gonocarpus teucroides</i>	Raspwort	N	FG	0.1	0
Yes	No	<i>Grevillea linearifolia</i>	Linear-leaf Grevillea	N	SG	1	0
Yes	Yes	<i>Hakea dactyloides</i>	Finger Hakea	N	SG	0.1	0
No	No	<i>Hakea salicifolia</i>	Willow-leaved Hakea	N	SG	0	5
Yes	No	<i>Hakea sericea</i>	Needlebush	N	SG	1	0
Yes	No	<i>Hakea teretifolia</i>	Needlebush	N	SG	1	0
No	No	<i>Hedychium gardnerianum</i>	Ginger Lily	Non-HTW	-	0	0
No	No	<i>Hibbertia aspera</i>	Rough Guinea Flower	N	SG	0	0
No	No	<i>Homalanthus populifolius</i>	Bleeding Heart	N	SG	0	0
No	No	<i>Hydrocotyle sibthorpioides</i>	-	N	FG	0	0
No	No	<i>Kunzea ambigua</i>	Tick Bush	N	SG	40	0
No	No	<i>Lantana camara</i>	Lantana	HTW	-	0	15
Yes	Yes	<i>Lepidosperma laterale</i>	-	N	GG	0.1	0.1
No	No	<i>Leptospermum polygalifolium</i>	Tantoon	N	SG	5	0
No	No	<i>Leucopogon juniperinus</i>	Prickly Beard-heath	N	SG	0	0
No	No	<i>Ligustrum lucidum</i>	Large-leaved Privet	HTW	-	0	10
No	No	<i>Ligustrum sinense</i>	Small-leaved Privet	HTW	-	0	20
Yes	Yes	<i>Lindsaea linearis</i>	Screw Fern	N	EG	0	0
Yes	No	<i>Lindsaea microphylla</i>	Lacy Wedge Fern	N	EG	0.1	0
Yes	No	<i>Lomandra longifolia</i>	Spiny-headed Mat-rush	N	GG	0.2	1
Yes	Yes	<i>Lomandra obliqua</i>	-	N	GG	0.1	0.1
No	No	<i>Marsdenia suaveolens</i>	Scented Marsdenia	N	OG	0	0
No	No	<i>Melaleuca armillaris</i>	Bracelet Honey-myrtle	N	SG	0	0
No	No	<i>Melaleuca hypericifolia</i>	Hillock Bush	N	SG	0	0
Yes	Yes	<i>Micranthemum ericoides</i>	-	N	SG	0.1	0
No	No	<i>Nandina domestica</i>	Japanese Sacred Bamboo	Non-HTW	-	0	0
No	No	<i>Nephrolepis exaltata</i>	Boston Fern	Non-HTW	-	0	0
No	No	<i>Ochna serrata</i>	Mickey Mouse Plant	HTW	-	0	1
No	No	<i>Olea europaea ssp. cuspidata</i>	African Olive	HTW	-	0	0
No	No	<i>Opercularia hispida</i>	Hairy Stinkweed	N	FG	0	0.1
No	No	<i>Ozothamnus diosmifolius</i>	White Dogwood	N	SG	0	0
No	No	<i>Paspalum urvillei</i>	Vasey Grass	Non-HTW	-	0	0
No	No	<i>Passiflora edulis</i>	Common Passionfruit	Non-HTW	-	0	0.1
Yes	No	<i>Patersonia sericea</i>	Silky Purple-flag	N	FG	0.1	0
No	No	<i>Pittosporum undulatum</i>	Sweet Pittosporum	N	SG	5	10
No	No	<i>Platynerium bifurcatum</i>	Elkhorn Fern	N	EG	0	0

Duffys Forest sp. (Yes/No)	PCT 1786 sp. (Yes/No)	Species Name	Common Name	Native/ HTW/ non-HTW	Growth Form Group	Cover in BAM Plot 01	Cover in BAM Plot 02
Yes	Yes	Platysace linearifolia	-	N	SG	0	0
Yes	No	Pteridium esculentum	Common Bracken	N	EG	0	0.5
No	No	Schizaea bifida	Forked Comb Fern	N	EG	0.1	0
No	No	Schoenus melanostachys	Black Bog-rush	N	GG	0.1	0
No	No	Senna pendula var. glabrata	-	HTW	-	0.1	5
No	No	Setaria parviflora	-	Non-HTW	-	0	0
No	No	Sida rhombifolia	Paddy's Lucerne	Non-HTW	-	0	0
No	No	Smilax glycyphylla	Sweet Sarsaparilla	N	OG	0	0.5
No	No	Stenotaphrum secundatum	Buffalo Grass	HTW	-	0	0
Yes	No	Tetrarrhena juncea	Wiry Ricegrass	N	GG	0.1	0
No	No	Themeda triandra	Kangaroo Grass	N	GG	0	0
No	No	Verbena bonariensis	Purpletop	Non-HTW	-	0	0
No	No	Veronica plebeia	Trailing Speedwell	N	FG	0	0
No	No	Vinca major	Greater Periwinkle	HTW	-	0	0
No	No	Westringia eremicola	Slender Westringia	N	SG	0	0
Yes	Yes	Xanthosia tridentata	Rock Xanthosia	N	FG	0.1	0

Status and nomenclature according to PlantNet (RBGTD 2021). Growth form and HTW status according to BAM 2020.

APPENDIX C

BAM Field Datasheets

Numbers 1-8 on this page correlate with the numbers and explanatory notes on page 3

Site sheet # 1 of Date 30/6/21 Survey name Forest high Plot identifier BAR 1
 Recorders J. Beeton IBRA region Veg zone ID
 Datum Coordinate system Projected Geographic MGA zone 'X coordinate 33.7566976 'Y coordinate 151.2417046

Location description descriptive notes to locate site without grid reference
 Plot dimensions For composition & structure (400m²): 20 m x 20 m For function (1000m²): 20 m x 50 m Orientation of midline from 0 m point Magnetic Photo #

Datum: AGD66, WGS84, GDA94, GDA2020 or Other (specify). MGA Zone (for Projected coordinate, system only): 56 (Coastal NSW), 55 (Central NSW or 54 (Western NSW). X/Y coordinate: Long/Lat (for Projected coordinate, system), Easting/Northing (for geographic coordinate, system)

Vegetation integrity
 Composition and structure sum values may be completed after entering data into available tools. It is not required while in the field.

Composition (400 m ² plot)		Structure (400 m ² plot)		Function (1000 m ² plot)	
	Sum values		Sum values (%) (may sum to >100%)	³ Tree stem size class (DBH)	If data are to be used as more appropriate local data i.e. to generate local benchmarks, stems must be counted. Count
Total count of native plant species (richness) in each growth form group (not individual plants within each growth form)	Trees (TG)	Sum of ² foliage cover of native plant species by growth form group	Trees (TG)	80 + cm	Count (best practice)/tick. If ⁸ large tree benchmark size ≥ 50 cm, count
	Shrubs (SG)		Shrubs (SG)	50 – 79 cm	Count (best practice)/tick. If ⁸ large tree benchmark size ≥ 30 cm, count
	Grasses etc. (GG)		Grasses etc. (GG)	30 – 49 cm	Count (best practice)/tick. If ⁸ large tree benchmark size ≥ 20 cm, count
	Forbs (FG)		Forbs (FG)	20 – 29 cm	Count (best practice)/tick. If ⁸ large tree benchmark size ≥ 20 cm, count
	Ferns (EG)		Ferns (EG)	10 – 19 cm	Count (best practice)/tick
	Other (OG)		Other (OG)	5 – 9 cm	Count (best practice)/tick
Total high threat weed cover			%	⁴ Tree regeneration <5 cm	Tick
				⁶ Length of fallen logs	Tally space Total m
				⁸ Hollow bearing trees	Tick

Vegetation integrity - function cont. (five 1 m² plots)

Subplot score (% in each)	⁷ Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Average of the 5 subplots	70 100 20 5 70	0 0 5 0 0	0 0 0 0 0	0 0 0 0 0
	53	2	2	0

These attributes require consideration of site observations and may be completed after field work:
⁸ Large tree benchmark size 20/ 30/ 50/ 80 DBH Confidence H/ M/ L

Plant community type (PCT) EEC Tick Confidence H/ M/ L

Physiography and site features that may help in determining PCT and management zone (optional) or for BioNet systematic flora survey purposes:

Morphological type	Landform element	Landform pattern	Microrelief
Lithology	Soil surface texture	Soil colour	Soil depth
Slope	Aspect	Site drainage	Distance to nearest water and type

Disturbance	Severity code	Age code	Brief site description or other notes											
Clearing (inc. logging)	0													
Cultivation (inc. pasture)	0													
Soil erosion	0													
Firewood / CWD removal	0													
Grazing (id. native/stock)	0													
Fire damage	0													
Storm damage	0		Emergents heights			Upper stratum heights			Middle stratum heights			Lower stratum heights		
Weediness			Top	Mid	Bottom	Top	Mid	Bottom	Top	Mid	Bottom	Top	Mid	Bottom
Other			m	m	m	m	m	m	m	m	m	m	m	m

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)

400 m ² floristics plot:		Survey name	Plot identifier	Recorders	
Date	30 06 2021 (2:30-3:30pm)	Forest HS BDAR	BAM01	Fiona Tolini	
GF code	Species name Full species name, or a unique means of identifying separate taxa within a survey is mandatory. Data from here will be used to assign growth form richness and cover.	N, HTW or non-HTW	² Foliage cover	Abundance	Voucher
SC ₁ (Shrub)	1 <i>Kunzea ambigua</i>	N	40		
TG ₁ (Tree)	2 <i>Allocasuarina littoralis</i>	N	50		
SC ₁	3 <i>Grevillea linearifolia</i>	N	1		
SC ₁	4 <i>Acacia longifolia</i>	N	1		
SC ₁	5 <i>Banksia ericifolia</i>	N	5		
(Grass)	6 <i>Entolasia stricta</i>	N	5		
(Forb)	7 <i>Dianella caerulea</i>	N	0.1		
	8 <i>Lepidosperma laterale</i>	N	0.1		
	9 <i>Gonocarpus tetrorioides</i>	N	0.1		
-	10 <i>Sonchum oleraceum</i>	HTW	0.1		
SC ₁	11 <i>Leptospermum polygalifolium</i>	N	5		
SC ₁	12 <i>Epacris pulchella</i>	N	1		✓ photo
GG	13 <i>Anisopogon avenaceus</i>	N	0.1		
FG	14 <i>Drosera auriculata</i>	N	0.1		photo
SC	15 <i>Micranthemum ericoides</i>	N	0.1		
GG	16 <i>Lomandra longifolia</i>	N	0.2		
GG	17 <i>Tetrarrhena juncea</i>	N	0.1		photo ✓
GG	18 <i>Lomandra obliqua</i>	N	0.1		
SC	19 <i>Pittosporum undulatum</i>	N	5		
TG	20 <i>Glochidion ferdinandi</i>	N	0.1		
(Fern)	EG	21 <i>Schizaea bifida</i>	N	0.1	photo
	FG	22 <i>Xanthosia tridentata</i>	N	0.1	photo
	SC	23 <i>Hakea teretifolia</i>	N	1	
	EG	24 <i>Gleichenia dicarpa</i>	N	0.1	
	SC	25 <i>Hakea sericea</i>	N	1	photo
	EG	26 <i>Lindsaea microphylla</i>	N	0.1	
	FG	27 <i>Patersonia sericea</i>	N	0.1	
	FG	28 <i>Centella asiatica</i>	N	0.1	
	-	29 <i>Agapanthus</i> sp.	E	0.1	
	FG	30 <i>Acianthus fornicatus</i>	N	0.1	photo
	TG	31 <i>Banksia integrifolia</i>	N	2	photo
	GG	32 <i>Schoenus apogon melanostachys</i>	N	0.1	✓ photo
	-	33 <i>Andropogon virginicus</i>	HTW	0.1	
	SC	34 <i>Dillwynia retorta</i>	N	0.5	photo
	SC	35 <i>Hakea dactyloides</i>	N	0.1	
	FG	36 <i>Hydrocotyle sibthorpioides</i>	N	0.1	photo

Print more copies of this page to allow for higher species counts at a plot. All vascular plant species in a plot need to be recorded.

GF Code: see growth form definitions in BAM 2020 Appendix F. **N:** native, **HTW:** high threat weed.

²Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m. Note the top 3 dominant native species within each GF group.

Abundance: Count 1, 2, 3 ..., when ≤10, estimate when >10, 20, 30 ... 100, 200, 300 ..., 1000, 2000, 3000 ... (as integer values).

* Transcribed from electronic data capture for report presentation

Numbers 1-8 on this page correlate with the numbers and explanatory notes on page 3

Site sheet #	1 of	Date	4/11/21	Survey name	Forest High School BDAR	Plot identifier	BATH02				
Recorders	Sarah Hart (transcribed by Fiona Iolini)			IBRA region	Sydney Basin	Veg zone ID	PCT1786 Low				
Datum	Coordinate system	<input type="checkbox"/> Projected <input type="checkbox"/> Geographic	MGA zone	'X coordinate	'Y coordinate						
Location description <small>descriptive notes to locate site without grid reference</small>											
Plot dimensions	For composition & structure (400m ²): 20 m x 20 m For function (1000m ²): 20 m x 50 m			Orientation of midline from 0 m point	290°	Photo #					
Datum: AGD66, WGS84, GDA94, GDA2020 or Other (specify). MGA Zone (for Projected coordinate system only): 56 (Coastal NSW), 55 (Central NSW or 54 (Western NSW). X/Y coordinate: Long/Lat (for Projected coordinate system), Easting/Northing (for geographic coordinate system).											
Vegetation integrity Composition and structure sum values may be completed after entering data into available tools. It is not required while in the field											
Composition (400 m ² plot)		Structure (400 m ² plot)		Function (1000 m ² plot)		If data are to be used as more appropriate local data i.e. to generate local benchmarks, stems must be counted					
Total count of native plant species (richness) in each growth form group (not individual plants within each growth form)	Trees (TG)	Sum of foliage cover of native plant species by growth form group	Trees (TG)	Sum values (%) (may sum to >100%)	Tree stem size class (DBH)	Count					
	Shrubs (SG)		Shrubs (SG)			80 + cm	Count (best practice)/tick If ⁶ large tree benchmark size ≥ 250 cm, count				
	Grasses etc. (GG)		Grasses etc. (GG)			50 - 79 cm	Count (best practice)/tick If ⁶ large tree benchmark size ≥ 30 cm, count				
	Forbs (FG)		Forbs (FG)			30 - 49 cm	Count (best practice)/tick If ⁶ large tree benchmark size ≥ 20 cm, count				
	Ferns (EG)		Ferns (EG)			20 - 29 cm	Count (best practice)/tick				
	Other (OG)		Other (OG)			10 - 19 cm	Count (best practice)/tick				
Total high threat weed cover			%	Tree regeneration <5 cm	Length of fallen logs	Tally species	5				
Vegetation integrity - function cont. (five 1 m ² plots)			Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)					
Subplot score (% in each)		85 80 95 90 25									
Average of the 5 subplots		75									
These attributes require consideration of site observations and may be completed after field work:											
Vegetation class			Large tree benchmark size			20/ 30/ 50/ 80 DBH	Confidence H/ M/ L				
Plant community type (PCT)			EEC			Tick	Confidence H/ M/ L				
Physiography and site features that may help in determining PCT and management zone (optional) or for BioNet systematic flora survey purposes:											
Morphological type	Landform element	Landform pattern	Microrelief								
Lithology	Soil surface texture	Soil colour	Soil depth								
Slope	Aspect	Site drainage	Distance to nearest water and type								
Disturbance	Severity code	Age code	Brief site description or other notes								
Clearing (inc. logging)											
Cultivation (inc. pasture)											
Soil erosion											
Firewood / CWD removal											
Grazing (id. native/stock)											
Fire damage											
Storm damage			Emergents heights		Upper stratum heights		Middle stratum heights		Lower stratum heights		
Weediness			Top	Mid	Bottom	Top	Mid	Bottom	Top	Mid	Bottom
Other			m	m	m	m	m	m	m	m	m

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)

400 m ² floristics plot:	Survey name	Plot identifier	Recorders
Date 4 11 2021	Forest HS-BDAR	BAM02	Sarah Hart

GF code	Species name Full species name, or a unique means of identifying separate taxa within a survey is mandatory. Data from here will be used to assign growth form richness and cover.	N, HTW or non-HTW	² Foliage cover	Abundance	Voucher
-	1 <i>Lantana camara</i>	HTW	15		
-	2 <i>Ligustrum lucidum</i>	HTW	10		
-	3 <i>Ligustrum sinense</i>	HTW	20		
-	4 <i>Ochna serrulata</i>	HTW	1		
-	5 <i>Passiflora edulis</i>	non-HTW	0.1	1	
-	6 <i>Senna pendula</i>	HTW	5		
TG	7 <i>Allocastrum littoralis</i>	N	2		
TG	8 <i>Banksia serrata</i>	N	0.1	1	
FG	9 <i>Commelina cyanea</i>	N	0.1	3	
FG	10 <i>Dichondra repens</i>	N	0.1	10	
GG	11 <i>Entolasia stricta</i>	N	0.1	10	
GG	12 <i>Gahnia aspera</i>	N	0.2	1	
SG	13 <i>Hakea salicifolia</i>	N	5		
GG	14 <i>Lepidosperma laterale</i>	N	0.1	1	
GG	15 <i>Lomandra longifolia</i>	N	1	5	
GG	16 <i>Lomandra obliqua</i>	N	0.1	1	
FG	17 <i>Opercularia hispida</i>	N	0.1	10	
SG	18 <i>Pittosporum undulatum</i>	N	10		
EG	19 <i>Pteridium esculentum</i>	N	0.5	50	
OG	20 <i>Smitax glycyphylla</i>	N	0.5	1	
	21				
	22				
	23				
	24				
	25				
	26				
	27				
	28				
	29				
	30				
	31				
	32				
	33				
	34				
	35				

Print more copies of this page to allow for higher species counts at a plot. All vascular plant species in a plot need to be recorded.

GF Code: see growth form definitions in BAM 2020 Appendix F. **N:** native, **HTW:** high threat weed.

² **Foliage cover:** 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m. Note the top 3 dominant native species within each GF group.

Abundance: Count 1, 2, 3 ..., when ≤10, estimate when >10, 20, 30 ... 100, 200, 300 ..., 1000, 2000, 3000 ... (as integer values).

APPENDIX D

Weather Data

Table D1 Weather Data

Date (2021)	Minimum Temp (°C)	Maximum Temp (°C)	Rain (mm)
30 June	9.3	16.6	19.6
01 July	10.1	17.9	2
02 July	10.3	19.3	3
15 October	12.6	20.7	10.8
16 October	11.1	21.6	1
17 October	9.9	20.4	0
18 October	10.1	24.6	0
19 October	12.6	23.2	0
20 October	9.7	20.2	0
21 October	11.7	21.4	0
22 October	13.3	21.7	0
23 October	14.1	27.7	0
24 October	15.2	19.9	1.6
25 October	11.6	21.6	0
26 October	10.8	19.8	0
27 October	13.9	22.3	0
28 October	13.9	28.7	0
29 October	19.8	31.8	0
30 October	14	17.9	0
31 October	9.7	19.3	0
01 November	10.8	21.4	0
02 November	15.9	23.2	0.2
03 November	15.7	22.9	0
04 November	16	19.4	0
05 November	15.5	21.5	16.4
06 November	14.8	24.2	0
07 November	16.7	22	0
08 November	16.5	22.7	11.8
09 November	15.9	21.4	2
10 November	17.2	19.5	0
11 November	16.2	17.2	36
12 November	11.6	20.8	14
13 November	12.7	19.8	2.2
14 November	11.4	21.8	0.8
15 November	11.2	20.7	1.2
16 November	11.1	18.9	0
17 November	11.8	19.3	0
18 November	14.7	22.7	0
19 November	18.3	27.3	1.2
20 November	15.9	19.6	0

Date (2021)	Minimum Temp (°C)	Maximum Temp (°C)	Rain (mm)
21 November	14.3	16.3	10.2
22 November	14.3	19.3	15.6
23 November	14.9	20	2.8
24 November	16.5	24.9	1.4
25 November	18.8	24.1	8.6
26 November	15.4	17.1	13.6
27 November	13.6	16.9	15.4
28 November	13.6	18.8	2
29 November	12.1	20.1	0
30 November	16	21.5	
01 December	18	24.3	1.6
02 December	16.5	25.2	0
03 December	17.3	27.9	0
04 December	16.6	20	0
05 December	14.4	18.4	2
06 December	13.9	20.4	1.2
07 December	15.9	26.3	0
08 December	15.7	18.7	2.6
09 December	14.8	22.6	11.8
10 December	12.2	20.4	29.2
11 December	12.9	20.1	9
12 December	13.4	20.8	0.4
13 December	14.4	21.3	0
14 December	12.9	22.9	0
15 December	14.7	28.1	0
16 December	18.4	22.7	1.6
17 December	16.8	23.6	0

Source: BOM 2021; Temperature and wind data sourced from Terrey Hills AWS station (number 66059) located at Thompson Drive, Terrey Hills (ie approximately 9 km northwest of the subject land). Rainfall data sourced from Belrose station (number 066188) located at Evelyn Place, Belrose (ie approximately 3km northwest of the subject land).

APPENDIX E

Fauna Data

Table E1 Fauna Species List

Species Name	Common Name	Status	Observation Type
<i>Alectura lathamii</i>	Australian Brush-turkey	Native	IR camera
<i>Anthochaera carunculata</i>	Red Wattlebird	Native	Sighted
<i>Anthochaera chrysoptera</i>	Little Wattlebird	Native	Sighted
<i>Crinia signifera</i>	Common Eastern Froglet	Native	Calling
<i>Dacelo novaeguineae</i>	Laughing Kookaburra	Native	Sighted
<i>Gymnorhina tibicen</i>	Australian Magpie	Native	Sighted
<i>Hirundo neoxena</i>	Welcome Swallow	Native	Sighted
<i>Manorina melanocephala</i>	Noisy Miner	Native	Sighted, IR camera
<i>Microeca fascians</i>	Jacky Winter	Native	Sighted
<i>Oryctolagus cuniculus</i>	Rabbit	Introduced	Sighted, IR camera
<i>Perameles nasuta</i>	Long-nosed Bandicoot	Native	Spotlight, IR camera
<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum	Native	Sighted, IR camera
<i>Psophodes olivaceus</i>	Eastern Whipbird	Native	Calling
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable (BC Act, EPBC Act)	Spotlighted
<i>Rattus rattus</i>	Black Rat	Introduced	Spotlight, IR camera
<i>Rhipidura albiscapa</i>	Grey Fantail	Native	Sighted
<i>Sphecotheres vieillotii</i>	Australasian Figbird	Native	Sighted
<i>Strepera graculina</i>	Pied Currawong	Native	Sighted
<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	Native	IR camera
<i>Trichoglossus haematodus</i>	Rainbow Lorikeet	Native	Sighted
<i>Trichosurus vulpecula</i>	Common Brushtail Possum	Native	Spotlight, IR camera
<i>Varanus varius</i>	Lace Monitor	Native	IR camera
<i>Vulpes vulpes</i>	Fox	Introduced	IR camera
<i>Wallabia bicolor</i>	Swamp Wallaby	Native	Spotlight, IR camera

Status and nomenclature according to BioNet (DPIE 2021a).

Table D2 Habitat Tree Data

HBT No.	Type of Hollow		Hollow Size Class (cm)					Tree Information			Other Notes
	Branch	Trunk	5-10	10-20	20-30	30-40	>40	Species	Ht (m)	DBH (cm)	
126	No	Yes	1	0	0	0	0	<i>Corymbia citriodora</i>	15	64	NA

APPENDIX F

Biodiversity Credit Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00027224/BAAS19042/21/00027225	The Forest High School	14/10/2022
Assessor Name	Report Created	BAM Data version *
Fiona Iolini	01/11/2022	55
Assessor Number	BAM Case Status	Date Finalised
BAAS19042	Open	To be finalised
Assessment Revision	Assessment Type	
0	Major Projects	

* 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.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAI	Ecosystem credits

Sydney ironstone Bloodwood-Silvertop Ash forest												
1	1786_Mod-good	Duffys Forest Ecological Community in the Sydney Basin Bioregion	57	57.0	0.28	PCT Cleared - 71%	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	True	8
											Subtotal	8
Sydney ironstone Bloodwood-Silvertop Ash forest												
2	1786_Low	Not a TEC	12.4	12.4	0.15	PCT Cleared - 71%	High Sensitivity to Gain			2.00		0
											Subtotal	0
											Total	8

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAI	Species credits

Proposal Details

Assessment Id 00027224/BAAS19042/21/00027225	Proposal Name The Forest High School	BAM data last updated * 14/10/2022
Assessor Name Fiona Iolini	Report Created 01/11/2022	BAM Data version * 55
Assessor Number BAAS19042	Assessment Type Major Projects	BAM Case Status Open
Assessment Revision 0	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.

List of Species Requiring Survey

Name	Presence	Survey Months
<i>Callistemon linearifolius</i> Netted Bottle Brush	No (surveyed)	<input type="checkbox"/> Jan <input type="checkbox"/> Feb <input type="checkbox"/> Mar <input type="checkbox"/> Apr <input type="checkbox"/> May <input type="checkbox"/> Jun <input type="checkbox"/> Jul <input type="checkbox"/> Aug <input type="checkbox"/> Sep <input checked="" type="checkbox"/> Oct <input checked="" type="checkbox"/> Nov <input type="checkbox"/> Dec <input type="checkbox"/> Survey month outside the specified months?
<i>Cercartetus nanus</i> Eastern Pygmy-possum	No (surveyed)	<input type="checkbox"/> Jan <input type="checkbox"/> Feb <input type="checkbox"/> Mar <input type="checkbox"/> Apr <input type="checkbox"/> May <input type="checkbox"/> Jun <input type="checkbox"/> Jul <input type="checkbox"/> Aug <input type="checkbox"/> Sep <input checked="" type="checkbox"/> Oct <input checked="" type="checkbox"/> Nov <input checked="" type="checkbox"/> Dec <input type="checkbox"/> Survey month outside the specified months?
<i>Cryptostylis hunteriana</i> Leafless Tongue Orchid	No (surveyed)	<input type="checkbox"/> Jan <input type="checkbox"/> Feb <input type="checkbox"/> Mar <input type="checkbox"/> Apr <input type="checkbox"/> May <input type="checkbox"/> Jun <input type="checkbox"/> Jul <input type="checkbox"/> Aug <input type="checkbox"/> Sep <input type="checkbox"/> Oct <input checked="" type="checkbox"/> Nov <input type="checkbox"/> Dec <input type="checkbox"/> Survey month outside the specified months?

BAM Candidate Species Report

<p><i>Darwinia biflora</i> Darwinia biflora</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input checked="" type="checkbox"/> Jun</td> <td><input type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input checked="" type="checkbox"/> Nov</td> <td><input type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input checked="" type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec
<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr											
<input type="checkbox"/> May	<input checked="" type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug											
<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec											
<p><i>Epacris purpurascens var. purpurascens</i> Epacris purpurascens var. purpurascens</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input type="checkbox"/> Jun</td> <td><input type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input type="checkbox"/> Nov</td> <td><input type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input type="checkbox"/> Nov	<input type="checkbox"/> Dec
<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr											
<input type="checkbox"/> May	<input type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug											
<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input type="checkbox"/> Nov	<input type="checkbox"/> Dec											
<p><i>Grevillea caleyi</i> Caley's Grevillea</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input checked="" type="checkbox"/> Jun</td> <td><input type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input checked="" type="checkbox"/> Nov</td> <td><input type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input checked="" type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec
<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr											
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<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec											
<p><i>Hibbertia puberula</i> Hibbertia puberula</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input type="checkbox"/> Jun</td> <td><input type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input checked="" type="checkbox"/> Nov</td> <td><input type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec
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<p><i>Hibbertia spanantha</i> Julian's Hibbertia</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input type="checkbox"/> Jun</td> <td><input type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input checked="" type="checkbox"/> Nov</td> <td><input type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec
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<p><i>Isoodon obesulus obesulus</i> Southern Brown Bandicoot (eastern)</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input checked="" type="checkbox"/> Jun</td> <td><input checked="" type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input checked="" type="checkbox"/> Nov</td> <td><input checked="" type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input checked="" type="checkbox"/> Jun	<input checked="" type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input checked="" type="checkbox"/> Dec
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BAM Candidate Species Report

<p><i>Lasiopetalum joyceae</i> Lasiopetalum joyceae</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input type="checkbox"/> Jun</td> <td><input type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input checked="" type="checkbox"/> Nov</td> <td><input type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec
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<p><i>Melaleuca deanei</i> Deane's Paperbark</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input checked="" type="checkbox"/> Jun</td> <td><input checked="" type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input checked="" type="checkbox"/> Nov</td> <td><input type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input checked="" type="checkbox"/> Jun	<input checked="" type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec
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<p><i>Microtis angusii</i> Angus's Onion Orchid</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input type="checkbox"/> Jun</td> <td><input type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input type="checkbox"/> Nov</td> <td><input type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input type="checkbox"/> Nov	<input type="checkbox"/> Dec
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<p><i>Persoonia hirsuta</i> Hairy Geebung</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input checked="" type="checkbox"/> Jun</td> <td><input checked="" type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input checked="" type="checkbox"/> Nov</td> <td><input type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input checked="" type="checkbox"/> Jun	<input checked="" type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec
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<p><i>Pimelea curviflora var. curviflora</i> Pimelea curviflora var. curviflora</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input type="checkbox"/> Jun</td> <td><input type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input checked="" type="checkbox"/> Nov</td> <td><input type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec
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<p><i>Prostanthera marifolia</i> Seaforth Mintbush</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input checked="" type="checkbox"/> Jun</td> <td><input type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input checked="" type="checkbox"/> Nov</td> <td><input type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input checked="" type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec
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BAM Candidate Species Report

<p><i>Pseudophryne australis</i> Red-crowned Toadlet</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input checked="" type="checkbox"/> Jun</td> <td><input checked="" type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input checked="" type="checkbox"/> Nov</td> <td><input type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input checked="" type="checkbox"/> Jun	<input checked="" type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec
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<p><i>Tetratheca glandulosa</i> Tetratheca glandulosa</p>	<p>No (surveyed)</p>	<table border="1"> <tr> <td><input type="checkbox"/> Jan</td> <td><input type="checkbox"/> Feb</td> <td><input type="checkbox"/> Mar</td> <td><input type="checkbox"/> Apr</td> </tr> <tr> <td><input type="checkbox"/> May</td> <td><input type="checkbox"/> Jun</td> <td><input type="checkbox"/> Jul</td> <td><input type="checkbox"/> Aug</td> </tr> <tr> <td><input type="checkbox"/> Sep</td> <td><input checked="" type="checkbox"/> Oct</td> <td><input checked="" type="checkbox"/> Nov</td> <td><input type="checkbox"/> Dec</td> </tr> </table> <p><input type="checkbox"/> Survey month outside the specified months?</p>	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec
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Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Barking Owl	Ninox connivens	Habitat constraints
Broad-headed Snake	Hoplocephalus bungaroides	Habitat constraints
Gang-gang Cockatoo	Callocephalon fimbriatum	Habitat constraints
Gang-gang Cockatoo population in the Hornsby and Ku-ring-gai Local Government Areas	Callocephalon fimbriatum - endangered population	Refer to BAR
Giant Burrowing Frog	Heleioporus australiacus	Refer to BAR
Glossy Black-Cockatoo	Calyptorhynchus lathami	Habitat constraints
Greater Glider	Petauroides volans	Habitat constraints
Grey-headed Flying-fox	Pteropus poliocephalus	Habitat constraints
Koala	Phascolarctos cinereus	Refer to BAR
Large Bent-winged Bat	Miniopterus orianae oceanensis	Habitat constraints
Large-eared Pied Bat	Chalinolobus dwyeri	Habitat constraints
Little Bent-winged Bat	Miniopterus australis	Habitat constraints

BAM Candidate Species Report

Little Eagle	<i>Hieraaetus morphnoides</i>	Habitat constraints
Masked Owl	<i>Tyto novaehollandiae</i>	Habitat constraints
Powerful Owl	<i>Ninox strenua</i>	Habitat constraints
Regent Honeyeater	<i>Anthochaera phrygia</i>	Refer to BAR
Square-tailed Kite	<i>Lophoictinia isura</i>	Habitat constraints
Squirrel Glider	<i>Petaurus norfolcensis</i>	Refer to BAR
Squirrel Glider on Barrenjoey Peninsula, north of Bushrangers Hill	<i>Petaurus norfolcensis</i> - endangered population	Refer to BAR
Swift Parrot	<i>Lathamus discolor</i>	Refer to BAR
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	Habitat constraints

Proposal Details

Assessment Id 00027224/BAAS19042/21/00027225	Proposal Name The Forest High School	BAM data last updated * 14/10/2022
Assessor Name Fiona Iolini	Report Created 01/11/2022	BAM Data version * 55
Assessor Number BAAS19042	Assessment Type Major Projects	BAM Case Status Open
Assessment Revision 0		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.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Barking Owl	Ninox connivens	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Broad-headed Snake	Hoplocephalus bungaroides	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Dusky Woodswallow	Artamus cyanopterus cyanopterus	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Gang-gang Cockatoo	Callocephalon fimbriatum	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Glossy Black-Cockatoo	Calyptorhynchus lathami	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Grey-headed Flying-fox	Pteropus poliocephalus	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Large Bent-winged Bat	Miniopterus orianae oceanensis	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Little Bent-winged Bat	Miniopterus australis	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Little Eagle	Hieraaetus morphnoides	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Little Lorikeet	Glossopsitta pusilla	1786-Sydney ironstone Bloodwood-Silvertop Ash forest

BAM Predicted Species Report

Masked Owl	Tyto novaehollandiae	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
New Holland Mouse	Pseudomys novaehollandiae	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Powerful Owl	Ninox strenua	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Regent Honeyeater	Anthochaera phrygia	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Rosenberg's Goanna	Varanus rosenbergi	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Spotted-tailed Quoll	Dasyurus maculatus	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Square-tailed Kite	Lophoictinia isura	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Swift Parrot	Lathamus discolor	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Varied Sittella	Daphoenositta chrysoptera	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
White-bellied Sea-Eagle	Haliaeetus leucogaster	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
White-throated Needletail	Hirundapus caudacutus	1786-Sydney ironstone Bloodwood-Silvertop Ash forest

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C
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Proposal Details

Assessment Id	Assessment name	BAM data last updated *
00027224/BAAS19042/21/00027225	The Forest High School	14/10/2022
Assessor Name	Report Created	BAM Data version *
Fiona Iolini	01/11/2022	55
Assessor Number	Assessment Type	BAM Case Status
BAAS19042	Major Projects	Open
Assessment Revision	Date Finalised	
0	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.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	1786_Mod-good	1786-Sydney ironstone Bloodwood-Silvertop Ash forest	Mod-good	0.28	1	



BAM Vegetation Zones Report

2	1786_Low	1786-Sydney ironstone Bloodwood-Silvertop Ash forest	Low	0.15	1	
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BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00027224/BAAS19042/21/00027225	The Forest High School	14/10/2022
Assessor Name	Assessor Number	BAM Data version *
Fiona Iolini	BAAS19042	55
Proponent Names	Report Created	BAM Case Status
	01/11/2022	Open
Assessment Revision	Assessment Type	Date Finalised
0	Major Projects	To be finalised

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Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Duffys Forest Ecological Community in the Sydney Basin Bioregion	Endangered Ecological Community	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Species		
Nil		

Additional Information for Approval

Assessment Id	Proposal Name
00027224/BAAS19042/21/00027225	The Forest High School



BAM Biodiversity Credit Report (Like for like)

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT

No Changes

Predicted Threatened Species Not On Site

Name

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	HBT Cr	No HBT Cr	Total credits to be retired
1786-Sydney ironstone Bloodwood-Silvertop Ash forest	Duffys Forest Ecological Community in the Sydney Basin Bioregion	0.3	0	8	8
1786-Sydney ironstone Bloodwood-Silvertop Ash forest	Not a TEC	0.2	0	0	0



BAM Biodiversity Credit Report (Like for like)

1786-Sydney ironstone Bloodwood-Silvertop Ash forest	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Duffys Forest Ecological Community in the Sydney Basin Bioregion This includes PCT's: 1786	-	1786_Mod-good	No	8	Pittwater, Cumberland, Sydney Cataract, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
1786-Sydney ironstone Bloodwood-Silvertop Ash forest	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Sydney Coastal Dry Sclerophyll Forests This includes PCT's: 1625, 1778, 1782, 1786	Sydney Coastal Dry Sclerophyll Forests >=70% and <90%	1786_Low	No	0	Pittwater, Cumberland, Sydney Cataract, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.



BAM Biodiversity Credit Report (Like for like)

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00027224/BAAS19042/21/00027225	The Forest High School	14/10/2022
Assessor Name	Assessor Number	BAM Data version *
Fiona Iolini	BAAS19042	55
Proponent Name(s)	Report Created	BAM Case Status
	01/11/2022	Open
Assessment Revision	Assessment Type	Date Finalised
0	Major Projects	To be finalised

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Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Duffys Forest Ecological Community in the Sydney Basin Bioregion	Endangered Ecological Community	1786-Sydney ironstone Bloodwood-Silvertop Ash forest
Species		
Nil		

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

BAM Biodiversity Credit Report (Variations)

PCT
No Changes

Predicted Threatened Species Not On Site

Name
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	HBT Cr	No HBT Cr	Total credits to be retired
1786-Sydney ironstone Bloodwood-Silvertop Ash forest	Duffys Forest Ecological Community in the Sydney Basin Bioregion	0.3	0	8	8.00
1786-Sydney ironstone Bloodwood-Silvertop Ash forest	Not a TEC	0.2	0	0	0.00

1786-Sydney ironstone Bloodwood-Silvertop Ash forest	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Duffys Forest Ecological Community in the Sydney Basin Bioregion This includes PCT's: 1786	-	1786_Mod-good	No	8	Pittwater,Cumberland, Sydney Cataract, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
Formation	Trading group	Zone	HBT	Credits	IBRA region	

BAM Biodiversity Credit Report (Variations)

	Dry Sclerophyll Forests (Shrubby sub-formation)	Tier 3 or higher threat status	1786_Mod-good	No	8	IBRA Region: Sydney Basin, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
1786-Sydney ironstone Bloodwood-Silvertop Ash forest	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Sydney Coastal Dry Sclerophyll Forests This includes PCT's: 1625, 1778, 1782, 1786	Sydney Coastal Dry Sclerophyll Forests >=70% and <90%	1786_Low	No	0	Pittwater, Cumberland, Sydney Cataract, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
Formation	Trading group	Zone	HBT	Credits	IBRA region	
Dry Sclerophyll Forests (Shrubby sub-formation)	Tier 2 or higher threat status	1786_Low	No	0	IBRA Region: Sydney Basin, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.	

Species Credit Summary

No Species Credit Data

Credit Retirement Options Like-for-like options

ASIA PACIFIC OFFICES

BRISBANE

Level 2, 15 Astor Terrace
Spring Hill QLD 4000
Australia
T: +61 7 3858 4800
F: +61 7 3858 4801

MACKAY

21 River Street
Mackay QLD 4740
Australia
T: +61 7 3181 3300

PERTH

Ground Floor, 503 Murray Street
Perth WA 6000
Australia
T: +61 8 9422 5900
F: +61 8 9422 5901

AUCKLAND

Level 4, 12 O'Connell Street
Auckland 1010
New Zealand
T: 0800 757 695

CANBERRA

GPO 410
Canberra ACT 2600
Australia
T: +61 2 6287 0800
F: +61 2 9427 8200

MELBOURNE

Level 11, 176 Wellington Parade
East Melbourne VIC 3002
Australia
T: +61 3 9249 9400
F: +61 3 9249 9499

SYDNEY

Tenancy 202 Submarine School
Sub Base Platypus
120 High Street
North Sydney NSW 2060
Australia
T: +61 2 9427 8100
F: +61 2 9427 8200

NELSON

6/A Cambridge Street
Richmond, Nelson 7020
New Zealand
T: +64 274 898 628

DARWIN

Unit 5, 21 Parap Road
Parap NT 0820
Australia
T: +61 8 8998 0100
F: +61 8 9370 0101

NEWCASTLE

10 Kings Road
New Lambton NSW 2305
Australia
T: +61 2 4037 3200
F: +61 2 4037 3201

TOWNSVILLE

12 Cannan Street
South Townsville QLD 4810
Australia
T: +61 7 4722 8000
F: +61 7 4722 8001

GOLD COAST

Level 2, 194 Varsity Parade
Varsity Lakes QLD 4227
Australia
M: +61 438 763 516

NEWCASTLE CBD

Suite 2B, 125 Bull Street
Newcastle West NSW 2302
Australia
T: +61 2 4940 0442

WOLLONGONG

Level 1, The Central Building
UoW Innovation Campus
North Wollongong NSW 2500
Australia
T: +61 2 4249 1000