ESEA

Environmental Services & Education Australia

# 16-20 Middle Harbour Road, Lindfield

## Streamlined Assessment (BDAR) – Small Area

11 June 2025

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11 June 2025

# 20250115 16-20 Middle Harbour Road, Lindfield Streamlined Assessment (BDAR) – Small Area

The Client is proposing the construction of a Residential Flat Building (RFB) on R2 – Low-Density Residential zoned land at 16 - 20 Middle Harbour Road, Lindfield NSW 2070.

The subject property has Biodiversity Values covering an area of 0.010 ha in the north-eastern portion of proposed works area. Works within these mapped areas trigger the Biodiversity Offsets Scheme (BOS) under the *Biodiversity Conservation Act 2016*. As such, a Biodiversity Development Assessment Report (BDAR), prepared by a qualified and accredited ecologist is required to assess the impacts of the proposed development on biodiversity.

The area of native vegetation clearing required for the proposed development is less than the maximum clearing limit of 1 ha for minimum lot sizes of ≤1 ha. As a result, the proposed development qualifies for streamlined assessment under the small area module of the Biodiversity Assessment Method 2020.

The proposed works area contains one (1) distinct patch of native vegetation. This patch is mapped as PCT 0 – Exotic and Planted Vegetation under the NSW State Vegetation Type Mapping. However, floristic surveys conducted by ESEA (2025) determined that this vegetation is most closely defined as PCT 3136 – Blue Gum High Forest. Notably, the vegetation present is a highly degraded representation of this PCT.

One (1) distinct zone of the PCT was identified based on ESEA's surveys of the subject property. *Syncarpia glomulifera* was the only major canopy species, and the midstratum was predominantly *Exocarpos cupressiformis*. The ground stratum was found to be highly degraded; although, the fern species *Platycerium bifurcatum* was found throughout the vegetation zone. Additionally, there are a number of planted non-native midstratum trees and shrubs that were found to be present throughout the planted garden beds within the subject property.

The vegetation present does not satisfy the criteria to be listed as any Threatened Ecological Community Blue under the NSW *Biodiversity Conservation Act 2016* or Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

This vegetation was assessed as possessing a vegetation integrity score of 9.0. The total vegetation integrity loss from the subject property will be -9.0 over 0.022 ha as a result of the proposed works. Therefore, a total of zero (0) ecosystem credits have been applied to the proposed development due to the highly degraded nature of the vegetation within the subject property.

The vegetation to be removed was found to exhibit potential habitat features for one (1) fauna species in the locality - the Large-eared Pied Bat (*Chalinolobus dwyeri*). Therefore, one (1) species credit has been applied to the proposed development to offset the impacts of the proposed works.

The proposed design plans and layouts have undergone iterative changes that have resulted in all native vegetation along the northern boundary being retained. Previous design revisions proposed the complete removal of all vegetation. These positive design changes have resulted in the retention of approximately 0.023 ha of native vegetation. These revisions demonstrate an attempt to avoid the removal of any native vegetation from the subject site. Environmental Services & Education Australia considers that the proponent has also demonstrated application of the "avoid, minimise, offset hierarchy" by proposing works in an area of Lindfield with minimal impacts for threatened entities in the locality. The impacted area within the subject property is

largely of poor quality, with a low vegetation integrity score. It is dominated by non-native vegetation, exotic weed species, and existing residential structures.

The following tables present information on the ecosystem and species credits required to offset the residual impacts of the proposed works. The BAM-C credit report identifies the numbers and classes of biodiversity credits required to be retired in accordance with the like-for-like requirements of the offset rules. The BDAR must be submitted to the decision-maker within 14 days of the date the BAM-C credit report is finalised. The full credit report is provided in 12Appendix B.

**Table 0-1 Impacts that require an offset - ecosystem credits**

| Vegetation Zone | PCT name | TEC | Total area (ha) | Impact area (ha) | Current VI score | Future VI score | Change in VI score | Biodiversity risk weighting | Number of ecosystem credits required |
|---|---|---|---|---|---|---|---|---|---|
| Zone 1 | PCT 3136 – Blue Gum High Forest | N/A | 0.045 | 0.022 | 9.0 | 0 | -9.0 | 2.5 | 0 |

**Table 0-2 Impacts that require an offset - species credits**

| Common name | Scientific name | BC Act status | EPBC Act status | Loss of habitat (ha) or individuals | Biodiversity risk weighting | Number of species credits required |
|---|---|---|---|---|---|---|
| Large-eared Pied Bat | *Chalinolobus dwyeri* | Endangered | Endangered | 0.022 | 3.00 | 1 |

Yours sincerely,

**Clayton Woods**
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Table 0-3 Shortened Forms

| | |
|---|---|
| APZ | Asset Protection Zone |
| BAM | Biodiversity Assessment Method |
| BAM-C | Biodiversity Assessment Method Calculator |
| BC Act | Biodiversity Conservation Act 2016 (NSW) |
| BC Regulation | Biodiversity Conservation Regulation 2017 (NSW) |
| BDAR | Biodiversity Development Assessment Report |
| BOAMS | Biodiversity Offsets and Agreement Management System |
| BOS | Biodiversity Offsets Scheme |
| CEEC | Critically Endangered Ecological Community |
| DBH | Diameter at breast height over bark |
| EPBC Act | Environment Protection and Biodiversity Conservation Act 1999 (Cwlth) |
| EP&A Act | Environmental Planning and Assessment Act 1979 (NSW) |
| EEC | Endangered Ecological Community |
| HTW | High Threat Weed |
| IBRA | Interim Biogeographic Regionalisation for Australia |
| LLS Act | Local Land Services Act 2013 (NSW) |
| MNES | Matters of National Environmental Significance |
| NPW Act | National Parks and Wildlife Act 1974 (NSW) |
| NSW | New South Wales |
| PCT | Plant community type |
| RFB | Residential Flat Building |
| SAII | Serious and irreversible impact |
| SEARs | Secretary's Environmental Assessment Requirements |
| TBDC | Threatened Biodiversity Data Collection |
| TEC | Threatened ecological community |
| VEC | Vulnerable ecological community |
| Vegetation SEPP | State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 (NSW) |

# DECLARATIONS

## Certification under clause 6.15 *Biodiversity Conservation Act 2016*

I certify that this report has been prepared based on the requirements of, and information provided under, the Biodiversity Assessment Method and clause 6.15 of the *Biodiversity Conservation Act 2016* (BC Act).

Signature: 

Date: 11 May 2025

BAM Assessor Accreditation no: BAAS24031

## Details and experience of author/s and contributors

### Authors and contributors

| Name | BAM Assessor Accreditation no. (if relevant) | Position/Role | Tasks performed | Relevant qualifications |
|---|---|---|---|---|
| Clayton Woods | BAAS24031 | Director / Principal Ecologist | Report preparation<br>Document review<br>BAM plot surveys<br>BAM-C data entry and analysis | BSc (Hons) Ecology and Environmental Science – 1st Class, University of Edinburgh<br>BAM Accredited Assessor |
| Aran Singham | | Environmental Consultant | Report Preparation<br>Figure Preparation<br>BAM plot surveys | BSc (Hons) Wildlife Conservation – 1st Class, University of Sydney<br>BAdvStud Animal Health, Disease and Welfare – 1st Class, University of Sydney |
| Jayden Maisel | | Environmental and Sustainability Consultant | Document Review | Bsc Climate Systems, Mathematics, University of New South Wales |

## Conflict of interest

I declare that I have considered the circumstances and there is no actual, perceived, or potential conflict of interest.

This declaration has been made in the interests of full disclosure to the decision-maker. Full disclosure has also been provided to the client.

Signature: 

Date: 11 May 2025

BAM Assessor Accreditation no: BAAS24031

# 1 INTRODUCTION

## 1.1 Development Overview

This Biodiversity Development Assessment Report (BDAR) has been prepared for the proposed development at 16 - 20 Middle Harbour Road, Lindfield NSW 2070. The proposed works area has been depicted in Figure 1-1.

The following lots are included in the proposal:

- Lot 1, DP569232
- Lot 10, DP5374
- Lot 11, DP5374
- Lot 1, DP983946

The subject property is zoned as R2 – Low-Density Residential.

The proposal is to construct a residential flat building on the subject property (Figure 1-1). Plans for the development are still being prepared; however, it is likely that the entire site will require bulk earthworks (hence requiring complete vegetation removal) and will include stormwater drainage from the site into the existing drainage systems on Middle Harbour Road.

## 1.2 Location

The subject property is situated at 16 - 20 Middle Harbour Road, Lindfield NSW 2070, in the Ku-ring-gai Council Local Government Area (LGA). It is located approximately 11 km northwest of Sydney CBD, and approximately 300 m southwest of the Lindfield town centre.

The subject property covers an area of approximately 0.385 ha and consists of two residential properties (to be removed) including two tennis courts and pools, as well as vegetation within planted garden beds. The subject property has frontage to Middle Harbour Road to the south. Whilst the site is bound by residential properties to the east and west, and by Lindfield Tennis Club to the north, along Russell Avenue. The subject property also has footpath access to Russell Avenue, along the eastern boundary of Lindfield Tennis Club.

Due to the proximity of the subject property to the town centre and Lindfield Train Station, other land zonings occur immediately north and west of the subject property. This zoning includes R3 – Medium Density Residential, R4 – High Density Residential, SP2 – Infrastructure, and E1 – Local Centre. With consideration to the site's proximity to the station and town centre, it has been identified within the Lindfield Transport Oriented Development (TOD) catchment under *State Environmental Planning Policy (Housing) 2021,* which permits the proposed residential flat building.

A large majority of the greenspace on the subject property is limited to cultivated lawn and garden beds. The northern extent of the property has one (1) mature native canopy tree and several native midstratum shrub species. Notably, garden beds throughout the subject property are predominantly planted with non-native tree and shrub species.

The vegetation present on the subject property has moderate connectivity with Seven Little Australians Park, approximately 700 m northeast of the subject property. In addition to Sir Philip Game Reserve and Blue Gum Reserve approximately 1.1 km southwest of the subject property (MetroMap 2024; NSW Sixmaps 2024).

The subject property does not occur within a Growth Centre and is not within subject lands for biocertification. The closest conservation land to the subject property is Sir Philip Game Reserve 1.2 km south-west, Blue Gum

Reserve 1.5 km south, and Seven Little Australians Park 800 m north-east. The vegetation within these conservation lands displays moderate connectivity with the vegetation present within the subject property.

The subject property has not undergone any environmental works such as revegetation with native species. The locality of the subject property is a highly developed residential precinct, directly southwest of the Lindfield town centre and train station. As a result, the surrounding lands are relatively flat. An elevation of 88 to 96 metres above sea level is exhibited across the subject property (Figure 1-1).

## 1.3 Biodiversity Offsets Scheme Entry

The subject land is mapped as containing Biodiversity Values (as defined by clause 7.3(3) of the *Biodiversity Conservation Regulation 2017*) (Figure 1-2). Clearing of vegetation within mapped Biodiversity Values areas triggers entry into the NSW Biodiversity Offsets Scheme (the Scheme). Under Division 2 Section 6.7 of the *Biodiversity Conservation Act 2016* (BC Act), the NSW Environment Minister established the Biodiversity Assessment Method (BAM) in connection with the Scheme.

Compliantly, the proposed development's impacts on biodiversity have been assessed through the application of the BAM and are documented in this Biodiversity Development Assessment Report (BDAR).

The vegetation clearing proposed is less than the maximum area clearing limit for the application of the streamlined assessment module for small area development. In this instance, the proposed area of clearing is 0.022 ha, which is less than the maximum area clearing limit of 1 ha for minimum lot sizes of ≤ 1 ha. As such, the works meet the requirements for the application of the streamlined assessment module for small area developments. This assessment was conducted as a site-based assessment.

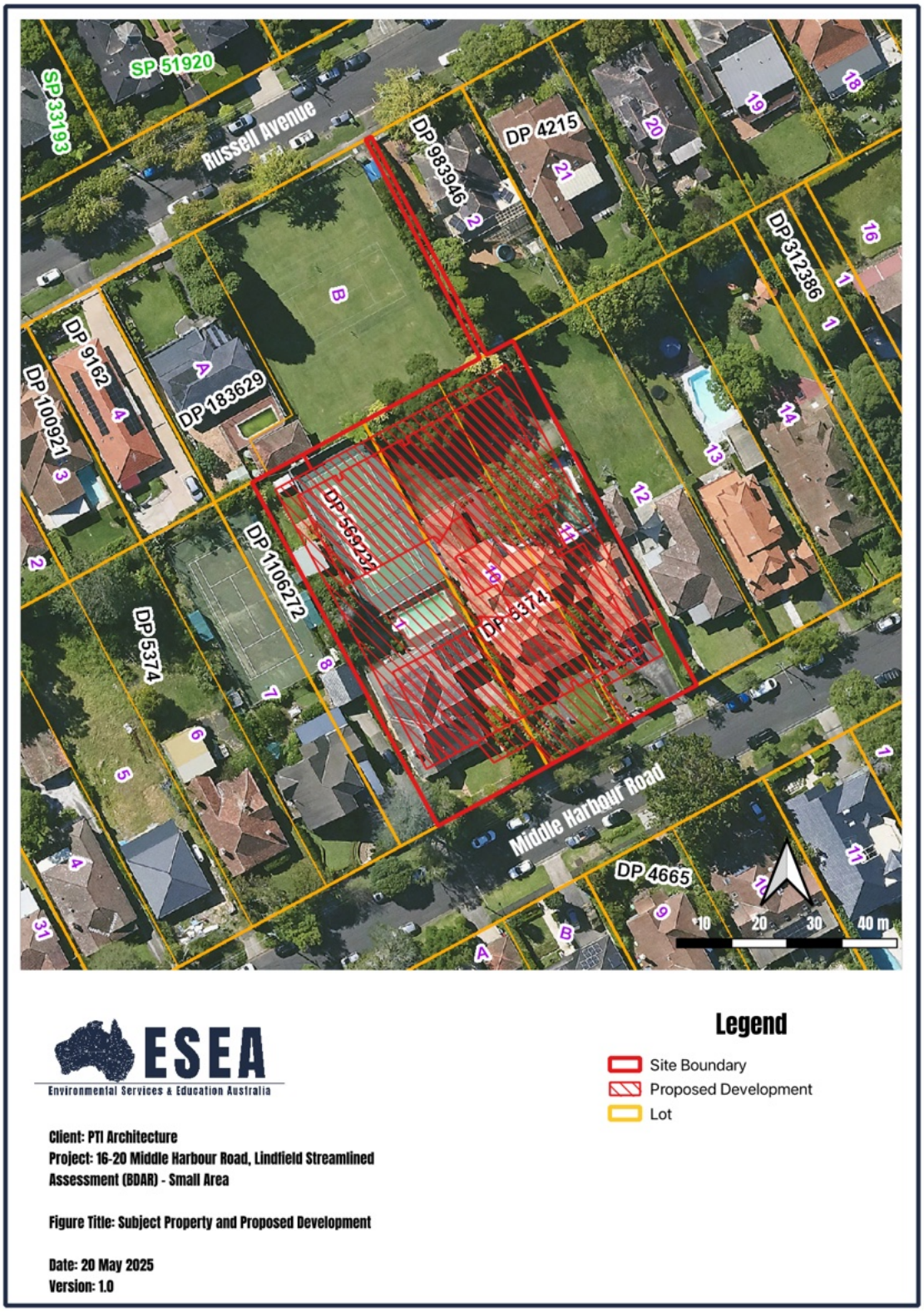



**Figure 1-1 Site Map**

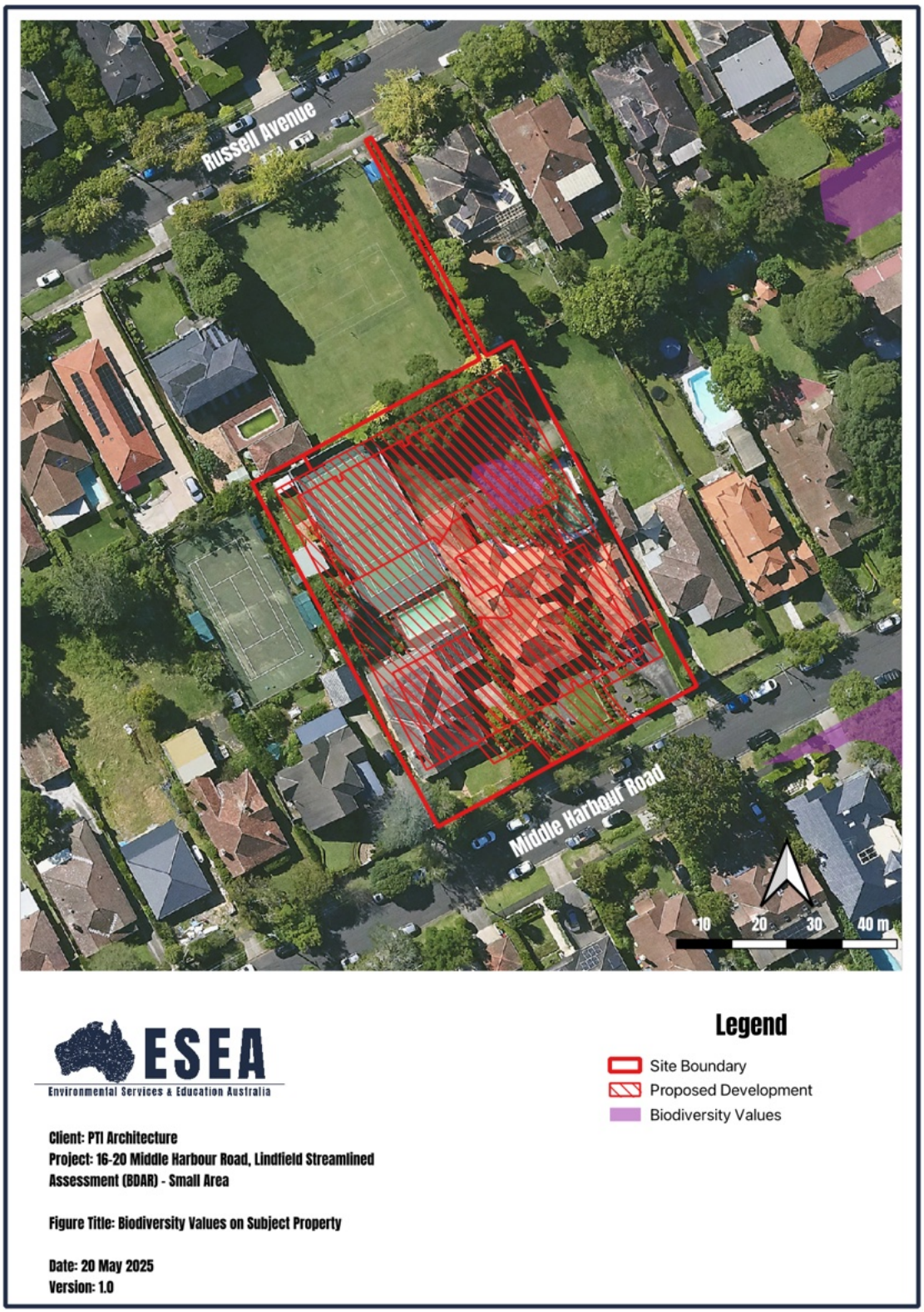



**Figure 1-2 Biodiversity Values Map**

# 2 INFORMATION SOURCES

The following information sources were used in the preparation of this report:

- Imagery:
  - Aerial imagery: MetroMap 12 May 2025
- Australian Government Department of Climate Change, Energy, the Environment and Water
  - Protected Matters Search Tool: https://pmst.awe.gov.au/
  - Species Profiles and Threats Database (SPRAT): http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl
  - Significant Impact Guidelines 1.1 - Matters of National Environmental Significance (Department of the Environment, Water, Heritage and the Arts, 2013 EPBC Act Policy Statement)
  - Interim Biogeographic Regionalisation for Australia (IBRA) version 7.0
- NSW Department of Planning and Environment (DPE), Environment, Energy and Science (EES) Group, formerly the Office of Environment and Heritage (OEH)
  - NSW (Mitchell) Landscapes - version 3.1
  - Biodiversity Values Map: https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap
  - NSW State Vegetation Type Map: https://datasets.seed.nsw.gov.au/dataset/95437fbd-2ef7-44df-8579-d7a64402d42d
  - BioNet Threatened Biodiversity Data Collection
  - BioNet Vegetation Classification
  - NSW Spatial Services Historical Imagery Viewer: https://www.spatial.nsw.gov.au/products_and_services/aerial_and_historical_imagery

# 3 ESTABLISHING THE SITE CONTEXT

## 3.1 IBRA Subregion and Landscape Features

### 3.1.1 IBRA subregion

The subject property lies within the Sydney Basin IBRA region and the Cumberland IBRA subregion.

### 3.1.2 Relevant landscape features

Landscape features relevant to the proposal have been assessed from within a 1500 m buffer zone (the BDAR assessment area) around the subject property, which covers 525.78 ha (Figure 3-1). In accordance with Sections 3.1 and 3.2 of the BAM (2020) assessment and mapping of the landscape features have been undertaken as summarised in Table 3-1 and shown in Figure 3-1.

Figure 3-1 illustrates the extent of native vegetation within the BDAR assessment area.

**Table 3-1 Landscape Assessment**

| Feature | Subject property | BDAR assessment area relevance |
|---|---|---|
| IBRA bioregion | Sydney Basin | Sydney Basin |
| IBRA subregion | Cumberland | BDAR assessment area partially contains land within Pittwater IBRA subregion to the west but is mainly within the Cumberland IBRA subregion. |
| NSW landscapes (Mitchell) | The subject property is situated within the Pennant Hills Ridges Mitchell Landscape. | The BDAR assessment area encompasses three (3) major landscapes. This includes Pennant Hills Ridges, Port Jackson Basin and Belrose Coastal Slopes Mitchell Landscapes. |
| Rivers and streams | According to NSW *Water Management (General) Regulation 2018* Hydroline Spatial Data, zero (0) waterways occur within the subject property. | Named Hydrolines within the BDAR assessment area includes the Strahler 1st Order Hydrolines: Little Blue Gum Creek, approximately 815 m west of the subject property, and Sugarbag Creek, approximately 1 km south of the subject property<br><br>The Strahler 2nd Order Hydroline Gordon Creek is also situated approximately 300 m east of the subject property with unnamed Strahler 1st order Hydrolines branching from the creek.<br><br>Additionally, there is an unnamed Strahler 1st Order Hydroline at the southern extent of the BDAR assessment area. 1.15 km from the subject property. This Hydroline leads from Blue Gum Creek which is situated on the peripheries of the assessment area.<br><br>These Hydrolines feed into the Lane Cove River to the south-west and Middle Harbour to the east. |
| Wetlands | The subject property does not contain estuaries or wetlands. | The BDAR assessment area does not contain any significant wetland. |

| | | |
|---|---|---|
| Connectivity | The subject property is largely cleared of native vegetation. However, the northern extent of the property is vegetated with several native midstratum species and one (1) major canopy tree within garden beds that exhibits low to moderate connectivity with native vegetation in the locality of the subject property. | There is moderate connectivity exhibited in the eastern and western portions of the BDAR assessment area, leading to large expanses of vegetation in Seven Little Australians Park to the west, as well as Sir Philip Game reserve to the west and Blue Gum Reserve to the south.<br><br>The remainder of the BDAR assessment area is dominated by residential precincts with low to moderate connectivity between vegetation on the subject property and vegetation that borders Middle Harbour east of the assessment area and the Lane Cove River west of the assessment area. |
| Geological features | The subject property does not contain any geological features of significance, including karst, caves, crevices, or cliffs. | The vast majority of the BDAR assessment area is relatively flat residential precincts.<br><br>Areas containing notable geological features such as rocky outcrops and small cliffs are present within Seven Little Australians Park to the north-east of the subject property and Sir Philip Game Reserve to the south-west of the subject property. |
| Areas of outstanding biodiversity value | The subject property does not contain any Areas of Outstanding Biodiversity Value. | No Areas of Outstanding Biodiversity Value occur within the BDAR assessment area. |
| Native vegetation cover | The subject property is 0.385 ha and contains approximately 0.045 ha of native vegetation. | The BDAR assessment area including the subject land is approximately 525.78 ha. The total of native vegetation cover in the BDAR assessment area is approximately 138.103 ha, which equates to 26.3% of the assessment area. |

## 3.2 Site Context

The proposed works area consists of one (1) major native canopy tree and several midstratum species within managed garden beds. In addition to cultivated lawn space, the canopy stratum has been almost entirely removed, and the groundcover is highly degraded and dominated by introduced weed species. Vegetation proposed to be removed on the subject property has low to moderate connectivity with Seven Little Australians Park northeast as well as Sir Philip Game Reserve and Blue Gum Reserve, southwest of the BDAR assessment area.

There are two (2) residential dwellings on the subject property with accompanying hardstand areas. In addition to two (2) pools and two (2) tennis courts in northern extent of the property.

### 3.2.1 Geology and soils

Several historical soil cores, taken within 800 m of the subject property have mapped the area as possessing Dermosols; gravelly, sandy, clay, loamy, Yellow-Brown Podzolic Soil (GSG). Table 3-2 presents the likely soil properties relevant to the subject property.

**Table 3-2 Geology and soil properties relevant to the subject property**

| Soil feature | Relevance to subject site |
|---|---|
| Greater Soil Group | Historic Soil coring has identified Yellow and Brown Podzolic Soil present in locality. |
| Australian Soil Classification | Soils Near Me NSW classifies the subject property as occurring on Dermosols. |
| Hydrological Soil Groups | Dermosols have characteristically high water holding capacity. Soil on the subject property appear to be well drained. |
| Acid Sulphate Soil Risk | Not present in subject site. |
| Salinity Risk | No salting evident in locality. |
| Soil Erosion Risk | Slight – though none present at subject property. |
| Drainage and waterlogging | Subject property appears well-drained. |

### 3.2.2 Native vegetation cover

Native vegetation cover must be assessed in relation to native vegetation cover across a broader BDAR assessment area. The cover of native vegetation within the BDAR assessment area is required to determine the context of the subject land. The cover of native vegetation was assessed via desktop assessment as follows:

- Clipping the NSW State Vegetation Type Map within the greater BDAR assessment area using QGIS;
- Editing the shapefile to remove areas of vegetation no longer evident, based on up-to-date satellite imagery, and the addition of new polygons identifying areas of vegetation not represented in mapping.

An on-site field assessment was then conducted to refine the result of the desktop assessment and determine the floral composition of the site. The flora survey consisted of irregular traverses within the assessment area, ensuring comprehensive coverage of all vegetation present. Physical data, including plant species composition, health, and weed coverage were recorded.

The BDAR assessment area, including the subject land, is approximately 525.78 ha. The total native vegetation cover in the BDAR assessment area is approximately 138.103 ha, which equates to 26.3 % (26 % in BAM-C). The subject property is approximately 0.385 ha and contains approximately 0.045 ha of native vegetation.

### 3.2.3 Patch size

A patch is an area of native vegetation that occurs within the BDAR assessment area 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 was calculated using available vegetation mapping for all patches of intact native vegetation on and adjoining the subject property. Patch size was assigned to one of four classes (<5 ha, 5-24 ha, 25-100 ha or ≥100 ha).

A patch size of approximately 138.103 ha was determined for the BDAR assessment area. Therefore, an area of 138 ha was entered in the BAM-C. Note that patch connectivity extends beyond the BDAR assessment area (Figure 3-1).

### 3.2.4 Native vegetation extent

Table 3-3 summarises the extent of native vegetation cover within the assessment area. Figure 3-1 shows native vegetation cover within the assessment area.

**Table 3-3 Native vegetation extent**

| | |
|---|---|
| Assessment area (ha) | 525.78 ha |
| Total area of native vegetation cover (ha) | 138.103 ha |
| Percentage of native vegetation cover (%) | 26.3% |
| Class (0-10, >10-30, >30-70 or >70%) | >10-30% |

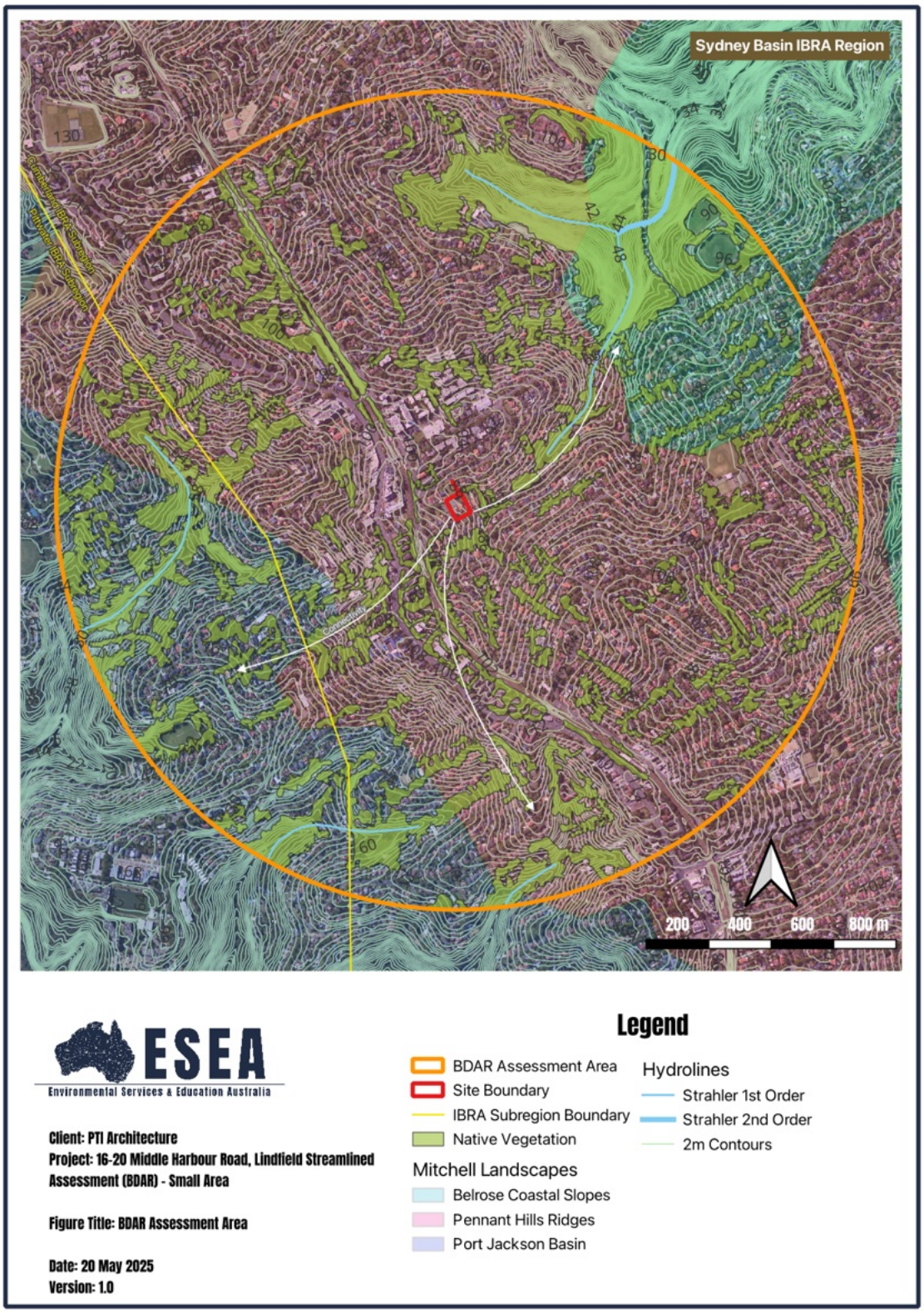



**Figure 3-1 Map of BDAR Assessment Area**

# 4 ASSESSING NATIVE VEGETATION, THREATENED ECOLOGICAL COMMUNITIES AND VEGETATION INTEGRITY

## 4.1 Native Vegetation Mapping

### 4.1.1 Plot-based vegetation survey

Floristic surveys were carried out on Wednesday the 14th of May 2025. Identification of plant community types (PCTs) within the subject land were confirmed during site surveys with reference to the BioNet Vegetation Classification database and data collected from floristic and site integrity plots/transects in accordance with Section 2 of the BAM (2020).

Two (2) floristic vegetation plots were surveyed to obtain an accurate representation of the vegetation present on the subject property.

### 4.1.2 Vegetation integrity survey

The vegetation integrity survey was conducted as per the BAM 2020 Operation Manual. Two (2) plots were conducted within the subject property. These plots assessed the two (2) distinctive patches of native vegetation within the footprint of the proposed works.

### 4.1.3 Changes to mapped native vegetation extent

According to the NSW State Vegetation Type Mapping, no PCT is mapped as occurring within the area of proposed works. Vegetation within the subject property has been labelled as the following (Figure 4-2):

- PCT 0 – Exotic and Planted Vegetation.

Native vegetation extent within the subject property has been reclassified and refined based on data collected during field surveys. The native vegetation within the subject site has been reclassified as PCT 3136 – Blue Gum High Forest.

The extent of mapped native vegetation has been increased to include areas that contain native species. ESEA have excluded areas that comprise only exotic weed species.

Native vegetation extent within the subject property was determined to cover an area of approximately 0.045 ha.

### 4.1.4 Areas that are not native vegetation

Areas that are not native vegetation extend over approximately 0.340 ha of the subject property. These areas are characterised by two (2) existing residential buildings, two (2) tennis courts, two (2) pools, hardstand areas, cultivated lawn space, and introduced plant species within garden areas or small-scale garden allotments. Table 4-1 and Table 4-2 illustrate the nature of native and non-native vegetation within the subject property.

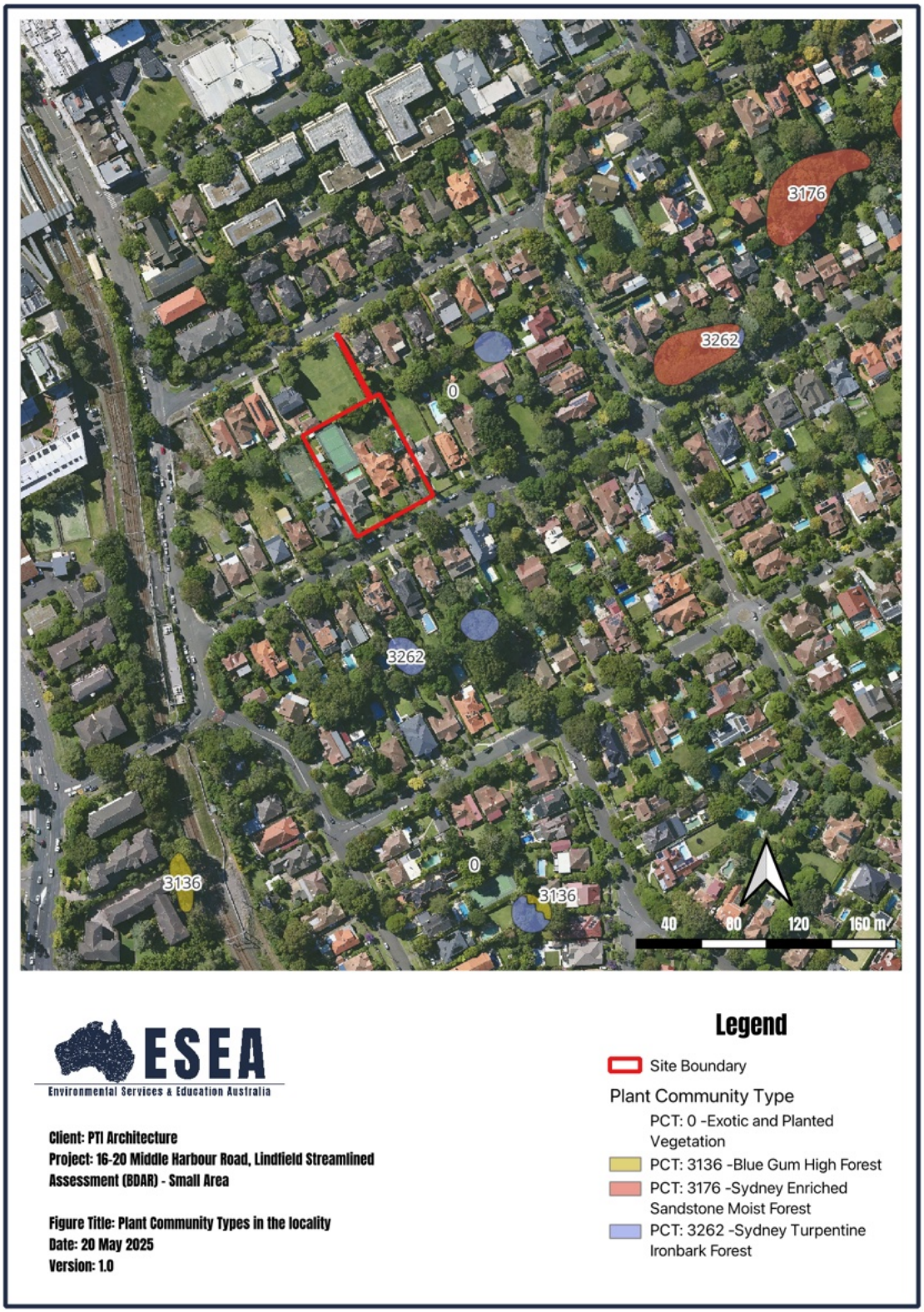
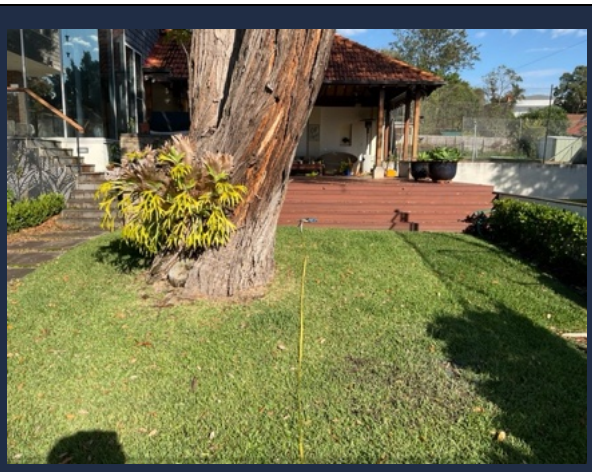


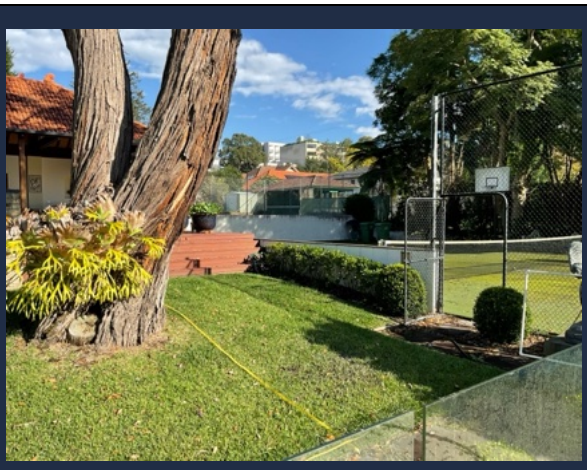

**Figure 4-1 Plant community type mapping**


**Figure 4-2 Native Vegetation Cover within Subject Property**

**Table 4-1 Photo-plate 1: BAM plot 1 and site images**



Start of BAM plot 1 looking west



North side of BAM plot 1

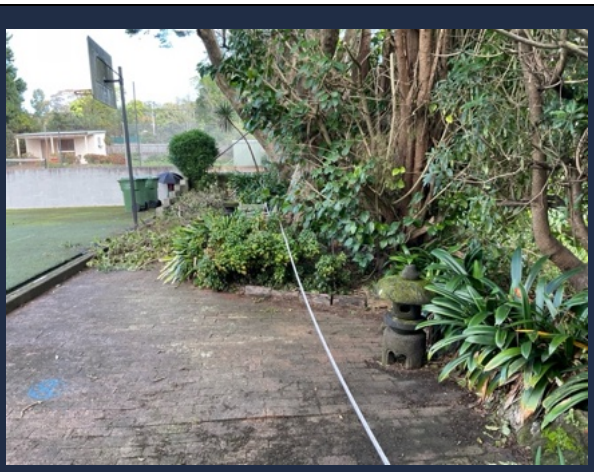
South side of BAM plot 1

End of BAM plot 1 looking East

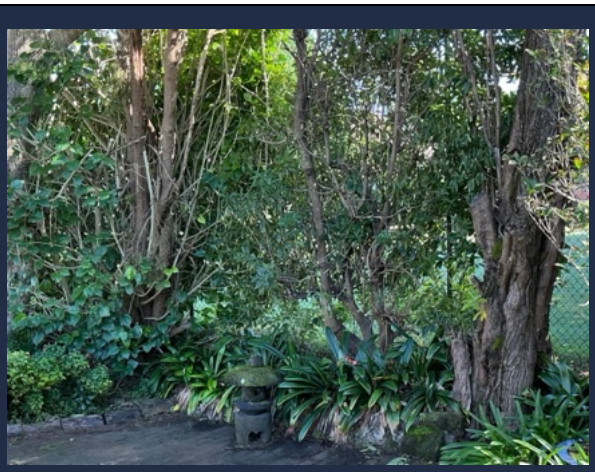
Context of the vegetation patch assessed within the BAM plot

Nature of the locality surrounding the BAM plot (residential housing)

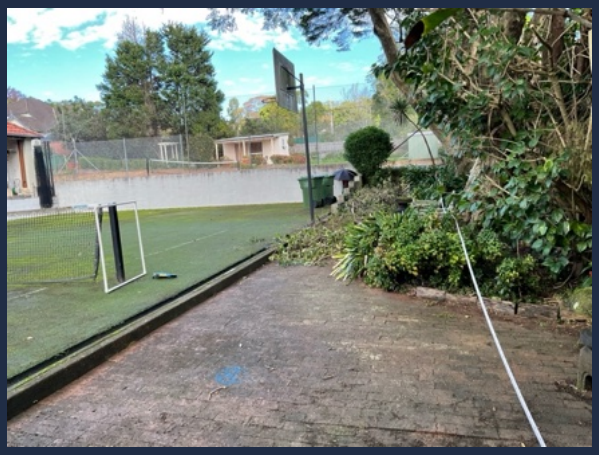
**Table 4-2 Photo-plate 2: BAM plot 2 and site images**



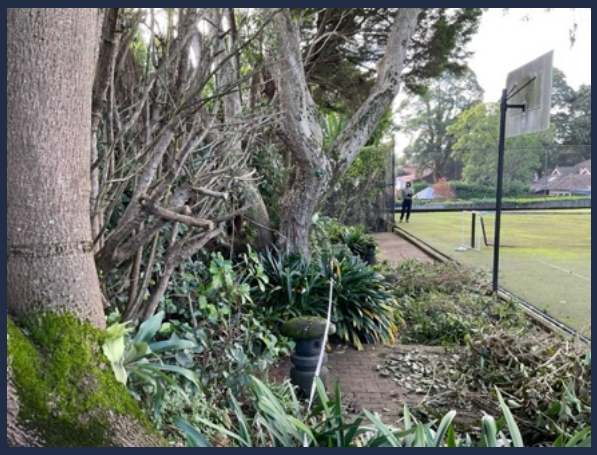
Centre of BAM plot 2 looking west



North side of BAM plot 2



South side of BAM plot 2



End of BAM plot 2 looking east

Context of the vegetation patch assessed within the BAM plot

Nature of the locality surrounding the BAM plot (residential housing/ Tennis Court)

## 4.2 Identification of Plant Community Types

Various attributes were considered in combination to assign vegetation to the best-fit PCT present within the subject property. This included dominant species in each stratum, relative abundance, community composition, soils and landscape position. Reference was made to the PCT descriptions in the BioNet Vegetation Classification.

The areas of native vegetation within the proposed works area were identified as being most closely characteristic of PCT 3136 – Blue Gum High Forest.

PCT 3136 – Blue Gum High Forest was assigned to BAM plot 1 for the following reasons:

- The plot is in the Sydney Basin IBRA region, and Cumberland IBRA subregion,
- The plot is in the Pennant Hills Ridges Mitchell Landscape and is within the Ku-ring-gai Council Local Government Area (LGA),
- The presence of the characteristic canopy species: *Syncarpia glomulifera* (Turpentine Tree),
- The presence of characteristic fern species: *Platycerium bifurcatum* (Elkhorn Fern),
- NSW Bionet Vegetation classification PCT filter tool matches the given search criteria of IBRA region, subregion and native species found in the survey,
- SEED Map shows PCT 3136 as present within approximately 280 metres east of the surveyed vegetation, in the locality of the subject property. This vegetation possesses a low to moderate level of connectivity with the surveyed vegetation.

PCT 3136 – Blue Gum High Forest was assigned to BAM plot 2 for the following reasons:

- The plot is in the Sydney Basin IBRA region, and Cumberland IBRA subregion,
- The plot is in the Pennant Hills Ridges Mitchell Landscape and is within the Ku-ring-gai Council Local Government Area (LGA),
- The presence of the characteristic canopy species: *Brachychiton acerifolius* (Illawarra Flame Tree)
- The presence of the characteristic shrub species: *Pittosporum undulatum* (Australian Cheesewood) and *Exocarpos cupressiformis* (Native Cherry),
- The presence of characteristic groundcover species: *Commelina cyanea* (Scurvy Weed),
- The presence of characteristic fern species: *Platycerium bifurcatum* (Elkhorn Fern),
- NSW Bionet Vegetation classification PCT filter tool matches the given search criteria of IBRA region, subregion and native species found in the survey,
- SEED Map shows PCT 3136 as present within approximately 280 metres east of the surveyed vegetation, in the locality of the subject property. This vegetation possesses a low to moderate level of connectivity with the surveyed vegetation.

**Table 4-3 Identified Plant Community Types**

| BAM Plot | PCT ID | PCT Name | Area within subject land (ha) |
|---|---|---|---|
| 1 | 3136 | Blue Gum High Forest | 0.022 |
| 2 | 3136 | Blue Gum High Forest | 0.023 |
| | | Total area | 0.045 |

When considering potential alternative PCTs, it is important to note that the canopy distance between BAM Plot 1 and BAM Plot 2 is approximately 8 metres. As a result, ESEA considers that the vegetation present within these plots is part of the same vegetation zone. Potential alternative PCTs that were considered and discounted include the following:

- PCT 3176 – Sydney Enriched Sandstone Moist Forest

*Syncarpia glomulifera* is listed as a dominant canopy species for PCT 3176 with a frequency of 76%. Similarly, *S. glomulifera* is a dominant canopy species for PCT 3136 with a frequency of 52%. *Brachychiton acerifolius* is also a characteristic species of PCT 3136 with a frequency of 30%. However, PCT 3176 only lists *B. acerifolius as having a frequency of 9%.* The shrub species *Pittosporum undulatum* is the dominant shrub species for PCT 3136 with a frequency of 87%, whilst *P. undulatum* only occurs in PCT 3176 at a frequency of 68%. Likewise, *Exocarpos cupressiformis* occurs within PCT 3136 at a frequency of 10%, which is marginally higher than PCT 3176 which lists *E. cupressiformis* as occurring at a frequency of 6%. Native groundcover for the vegetation in the BAM plots was limited to *Commelina cyanea.* This species occurs at a higher frequency of 33% in PCT 3136 as opposed to PCT 3176 which displays a frequency of 14%. Based on the above, the native vegetation within the subject site is more characteristic of PCT 3136 than PCT 3176.

- PCT 3262 – Sydney Turpentine Ironbark Forest

*Syncarpia glomulifera* is listed as a dominant canopy species for PCT 3136 with a frequency of 52%. Similarly, *S. glomulifera* is noted as the dominant canopy species for PCT 3262 with a frequency of 84%. *Brachychiton acerifolius* is also a characteristic canopy species of PCT 3136 with a frequency of 30%. In contrast, *B. acerifolius* is only listed as having a frequency of 9% for PCT3262. The shrub species *Pittosporum undulatum* is the dominant shrub species for both PCT 3136 and PCT 3262 with frequencies of 87% and 79% respectively. *Notably, Exocarpos cupressiformis* occurs at a higher frequency in PCT 3262 with a frequency of 28%. Whereas, PCT 3136 only lists the species as having a frequency of 10%. Despite this, the species of fern *Platycerium bifurcatum* was present on the subject site and occurs at a frequency of 2% in PCT 3136 but is absent from PCT 3262. Finally, the Groundcover species *Commelina cyanea* occurs at a frequency of 33% in PCT 3136, higher than that of PCT 3262 which only lists *C. cyanea* as having a frequency of 10%. Therefore, PCT 3262 can be discounted as a potential PCT for the vegetation within the subject property.

The potential alternative PCTs discussed above were chosen based on data taken from BioNet Vegetation Classification in conjunction with PCTs mapped in the locality of the subject property on SEED Portal.

### 4.2.1 PCT 3136 Blue Gum High Forest

**Table 4-4 PCT description**

| | |
|---|---|
| PCT ID | 3136 |
| PCT name | Blue Gum High Forest |
| Vegetation formation | KF_CH2B Wet Sclerophyll Forests (Shrubby sub-formation) |
| Vegetation class | North Coast Wet Sclerophyll Forests |
| Percent cleared value (%) | 99 |
| Extent within subject land (ha) | 0.045 |

## 4.3 Identification of Threatened Ecological Communities

PCT 3136 – Blue Gum High Forest may be associated with the following threatened ecological communities (TECs):

- Blue Gum High Forest in the Sydney Basin Bioregion (Critically Endangered, BC Act)
- Hygrocybeae Community of Lane Cove Bushland Park in the Sydney Basin Bioregion (Critically Endangered, BC Act)
- Blue Gum High Forest of the Sydney Basin Bioregion (Critically Endangered, EPBC Act)

In accordance with Section 4.2 of the BAM the identification of Threatened Ecological Communities (TECs) must be considered against the NSW Threatened Species Scientific Committee (the Committee) Final Determination for the TECs.

### 4.3.1 Blue Gum High Forest in the Sydney Basin Bioregion

Table 4-5 compares the vegetation within the proposed works area to the diagnostic features of Blue Gum High Forest in the Sydney Basin Bioregion under the BC Act.

**Table 4-5 Alignment with the TEC Blue Gum High Forest in the Sydney Basin Bioregion under the BC Act**

| Features | Relevance to subject property |
|---|---|
| All sites are within the Sydney Basin Bioregion. | Applicable: Subject property is within the Sydney Basin Bioregion. |
| Originally restricted to the ridgelines in Sydney's north from Crows Nest to Hornsby, and extending west along the ridges between Castle Hill and Eastwood. In 2000 there was less than 200 hectares remaining (about 4.5% of its original extent). It only occurs in small remnants of which the largest is less than 20 hectares. The remnants mainly occur in the Lane Cove, Willoughby, Ku-ring-gai, Hornsby, Baulkham Hills, Ryde and Parramatta local government areas. An example of Blue Gum High Forest can be seen at the Dalrymple-Hay Nature Reserve, St Ives. | Applicable: Subject property occurs in Lindfield, within the Ku-ring-gai Council Local Government Area. |
| The TEC is generally located at altitudes higher than 100 metres above sea level that receive high rainfall, generally more than 1100 mm per year. It is predominantly associated with deep soils derived from Wianamatta Shale though remnants may extend onto Hawkesbury Sandstone, the Mittagong formation or diatremes (localised intrusions of volcanic soils). | Not Applicable: Vegetation on the subject property is located at an elevation between 88 and 96 metres. NSW 'eSPADE' mapping in the locality of the subject property indicates that the presence of course sandy loam textures soils. Additionally, Soils Near Me NSW denotes that the subject property is situated in an area of Dermosols, under the Australian Soil Classification. Dermosols typically receive between 450 and 1350 mm of rainfall. |
| The tree canopy of the Blue Gum High Forest of the Sydney Basin Bioregion is dominated by *Eucalyptus pilularis* (blackbutt) and/or *E. saligna* (Sydney blue gum). Other canopy trees that may be present, but are not dominant, include: *Angophora costata* (smooth-barked apple, Sydney red gum, rusty gum) and *Eucalyptus paniculata* (grey ironbark). | Not Applicable: The subject property is highly degraded of a canopy stratum. None of the trees present in the subject property align with dominant tree canopy species characteristic of the TEC. |
| A relatively diverse stratum of small trees is usually present, including *Pittosporum undulatum* (Australian Cheesewood), *Elaeocarpus reticulatus* (blueberry ash), *Allocasuarina torulosa* (forest oak), | Applicable – Vegetation on the subject property comprises the characteristic shrub species *Pittosporum undulatum.* |

| | |
|---|---|
| *Acmena smithii* (lilly pilly) and *Ficus coronata* (sandpaper fig). Many shrub species are typically mesic, such as *Breynia oblongifolia* (coffee bush), *Pittosporum revolutum* (rough-fruited pittosporum), *Clerodendrum tomentosum* (hairy clerodendrum), *Notelaea longifolia f. longifolia* (mock olive), *Maytenus sylvestris* (narrow-leafed orangebark), *Polyscias sambucifolia subsp. A* (elderberry panax) and *Myrsine variabilis* (formerly Rapanea variabilis) (muttonwood). However, sclerophyllous shrub species, such as *Persoonia linearis* (narrow-leaved geebung) and *Leucopogon juniperinum*, become more frequent toward the drier shale/sandstone boundary. | |
| The ground stratum is often dense and contains a mixture of herb, grass and fern species including *Adiantum aethiopicum* (maidenhair fern), *Entolasia marginata* (bordered panic), *Lomandra longifolia* (spiny-headed mat-rush), *Calochlaena dubia* (common ground fern), *Dianella caerulea* (blue flax-lily), *Pseuderanthemum variabile* (pastel flower) and *Oplismenus imbecillis* (syn. *Oplismenus hirtellus* subsp. *imbecillis*). Vine species are also frequently present, in particular *Tylophora barbata* (bearded tylophora), *Eustrephus latifolia* (wombat berry), *Clematis aristata* (Australian clematis) and *Pandorea pandorana* (wonga wonga vine) (NSW NPWS, 2002). | Not Applicable – Vegetation on the subject property is limited to cultivated lawn and managed garden beds. As a result, the native ground stratum is highly degraded and no species characteristic of the TEC were found to be present on the subject property. |

Based on the above, the vegetation within the subject property does not satisfy the criteria set out by the NSW Threatened Species Scientific Committee (the Committee) Final Determination to be classified as the TEC Blue Gum High Forest in the Sydney Basin Bioregion under the BC Act.

### 4.3.2 Blue Gum High Forest of the Sydney Basin Bioregion

Under the Commonwealth EPBC Act, condition classes and thresholds provide guidance for when a patch of a potential TEC retains sufficient conservation values to be considered as a Matter of National Environmental Significance, as defined under the EPBC Act.

Although significantly degraded patches will not be a part of the ecological community listed under the EPBC Act, it is recognised that patches that do not meet the condition thresholds may still retain important natural values. Therefore, these patches should not be excluded from recovery and other management actions.

For Blue Gum High Forest of the Sydney Basin Bioregion, condition thresholds are outlined below:

Occurrences of the Blue Gum High Forest of the Sydney Basin Bioregion ecological community are considered to be part of the nationally listed ecological community if they are greater than one hectare in size and:

- have a canopy cover greater than 10%; or
- have a canopy cover less than 10% and occur in areas of native vegetation in excess of five hectares (TSSC, 2005).

Based on the condition thresholds described, patches of PCT 3136 within the subject property do not meet the key diagnostic condition thresholds set out by the Commonwealth Approved Conservation Advice (including listing advice) for Blue Gum High Forest of the Sydney Basin Bioregion. This was decided for the following reasons:

- Native vegetation on the subject property is 0.045 ha. This is less than the required size threshold.

Therefore, the vegetation within the subject property is not considered eligible for consideration as the threatened ecological community Blue Gum high Forest of the Sydney Basin Bioregion under the Commonwealth legislation.

### 4.3.3 Hygrocybeae Community of Lane Cove Bushland Park in the Sydney Basin Bioregion

The Hygrocybeae Community of Lane Cove Bushland Park is an assemblage of more than 20 species of fungi in the family Hygrophoraceae (Fungi, Basidiomycota, Agaricales, Hygrophoraceae).

ESEA's survey of the subject property did not identify any fungi species present.

Based on the above information, fungi on the subject property does not satisfy the criteria set out by the NSW Threatened Species Scientific Committee (the Committee) Final Determination to be classified as the TEC Hygrocybeae Community of Lane Cove Bushland Park in the Sydney Basin Bioregion under the BC Act.

## 4.4 Assessment of Vegetation Integrity

This assessment was conducted quantitatively with the use of two (2) BAM plots on the subject property, representative of one (1) vegetation zone present in the proposed works area. These plots were prepared in accordance with BAM Subsection 4.3.4 to quantify the condition attributes of the PCT and can be found in Appendix A of this report.

Irregular sized BAM plots were required to be used to encapsulate the native vegetation present within the subject site. These BAM plot dimensions were selected to include all native vegetation within each zone, whilst excluding areas of hardstand or planted garden beds. No external surrogate vegetation patches were noted within the surrounding area that could give a reasonable equivalent to the vegetation seen within the subject site.

Benchmark data from BioNet Vegetation Classification was used as described in BAM subsections 4.3.3 (5.) to compare with the subject property PCT.

**Table 4-6 Vegetation zone and patch size**

| Vegetation zone ID | PCT ID number and name | Condition / other defining feature | Area (ha) | Patch size class (select multiple if areas of native vegetation are discontinuous) | No. vegetation integrity plots required | No. vegetation integrity plots completed | No. vegetation integrity plots used in assessment | Plot IDs of vegetation integrity plots used in assessment |
|---|---|---|---|---|---|---|---|---|
| Zone 1 | PCT 3136 – Blue Gum High Forest | Poor condition – Minimal native understorey present | 0.045 | ☒ <5 ha<br>☐ 5–24 ha<br>☐ 25–100 ha<br>☐ >100 ha | 1 | 2 | 2 | BAM Plot 1<br>BAM Plot 2 |

**Table 4-7 Vegetation Integrity Score**

| Vegetation zone ID | Composition condition score | Structure condition score | Function condition score | Vegetation integrity score | Hollow bearing trees present? |
|---|---|---|---|---|---|
| Zone 1 | 1.8 | 41.7 | 9.5 | 9.0 | No |

# 5 HABITAT SUITABILITY FOR THREATENED SPECIES

## 5.1 Identification of Threatened Species for Assessment

Existing information was reviewed and a field survey including two (2) BAM plots were undertaken to assess habitat constraints for threatened species within the subject property.

### 5.1.1 Ecosystem credit species

Ecosystem credit species predicted to occur within the proposed works area are generated by the BAM-C following the input of vegetation integrity data and the PCTs identified within Section 4. Ecosystem credit species predicted to occur at the proposed works area, their associated habitat constraints, geographic limitations and sensitivity to gain class are included in Table 5-1. The relevant justification for the exclusion of ecosystem credit species is also included in Table 5-1.

### 5.1.2 Species credit species

Species credit species are threatened species for which vegetation surrogates and/or landscape features cannot reliably predict the likelihood of their occurrence or components of their habitat. These species are identified in the Threatened Biodiversity Profiles Data Collection (TBDC). A targeted survey or an expert report is required to confirm the presence of these species on the subject land. Alternatively, for a development activity, clearing, or biodiversity certification proposal, the proponent may elect to assume the species is present.

Species credit species that require further assessment on the subject property (i.e., candidate species), their associated habitat constraints, geographic limitations and sensitivity to gain class are included in Table 5-2.

### 5.1.3 Dual credit species

Dual credit species are threatened species that the TBDC identifies as both ecosystem credits and species credit species. Dual credit species are generally highly mobile species that rely on particular habitat components for breeding or require particular areas in the landscape important for their survival. For dual credit species, part of the habitat is assessed as a species credit. The remaining habitat components for the species are assessed as an ecosystem credit (e.g. foraging habitat).

## 5.2 Assessment of Threatened Species Likely to Occur within the Development Site

### 5.2.1 Predicted ecosystem credit species

**Table 5-1 Predicted ecosystem credit species**

| Common name | Scientific name | Listing status | | Dual credit species | Sources | Species retained for further assessment? | Reason for exclusion from further assessment | Vegetation zone ID species retained within, including PCT ID | Sensitivity to gain class |
|---|---|---|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | | | | |
| Regent Honeyeater (Foraging) | *Anthochaera phrygia* | Critically Endangered | Critically Endangered | Yes | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | High |
| Dusky Woodswallow | *Artamus cyanopterus cyanopterus* | Vulnerable | Not Listed | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | Moderate |
| Gang-gang Cockatoo (foraging) | *Callocephalon fimbriatum* | Endangered | Endangered | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | Moderate |
| South-eastern Glossy Black-Cockatoo (foraging) | *Calyptorhynchus lathami lathami* | Vulnerable | Vulnerable | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | No | BAM habitat constraint – Subject property does not contain any *Allocasaurina* and *Casaurina* species | | |

| Common name | Scientific name | Listing status | | Dual credit species | Sources | Species retained for further assessment | Reason for exclusion from further assessment | Vegetation zone ID species retained within, including PCT ID | Sensitivity to gain class |
|---|---|---|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | | | | |
| Speckled Warbler | *Chthonicola sagittata* | Vulnerable | Not Listed | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | High |
| Brown Treecreeper (eastern subspecies) | *Climacteris picumnus victoriae* | Vulnerable | Vulnerable | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | High |
| Varied Sittella | *Daphoenositta chrysoptera* | Vulnerable | Not Listed | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | Moderate |
| Spotted-tailed Quoll | *Dasyurus maculatus* | Vulnerable | Endangered | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | High |
| Black-necked Stork | *Ephippiorhynchus asiaticus* | Endangered | Not Listed | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | No | BAM habitat constraint – Subject property does not contain any swamps, shallows or open freshwater wetlands. Additionally, there are no lakes, estuaries or major water bodies within 300 m of the subject property. | | |

| Common name | Scientific name | Listing status | | Dual credit species | Sources | Species retained for further assessment | Reason for exclusion from further assessment | Vegetation zone ID species retained within, including PCT ID | Sensitivity to gain class |
|---|---|---|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | | | | |
| Little Lorikeet | *Glossopsitta pusilla* | Vulnerable | Not Listed | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | High |
| Painted Honeyeater | *Grantiella picta* | Vulnerable | Vulnerable | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | No | BAM habitat constraint – Subject property does not contain any Mistletoes at a density of greater than five Mistletoes per hectare. | | |
| White-bellied Sea-eagle (foraging) | *Haliaeetus leucogaster* | Vulnerable | Not Listed | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | High |
| White-throated Needletail | *Hirundapus caudacutus* | Vulnerable | Vulnerable | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | High |
| Black Bittern | *Ixobrychus flavicollis* | Vulnerable | Not Listed | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | No | BAM habitat constraint – Subject property does not contain any Land within 40 m of freshwater and estuarine wetlands, in areas of permanent water and dense vegetation | | |

| Common name | Scientific name | Listing status | | Dual credit species | Sources | Species retained for further assessment? | Reason for exclusion from further assessment | Vegetation zone ID species retained within, including PCT ID | Sensitivity to gain class |
|---|---|---|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | | | | |
| Swift Parrot (Foraging) | *Lathamus discolor* | Endangered | Critically Endangered | Yes | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | Moderate |
| Square-tailed Kite (foraging) | *Lophoictinia isura* | Vulnerable | Not Listed | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | Moderate |
| South-eastern Hooded Robin | *Melanodryas cucullata cucullata* | Endangered | Endangered | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | Moderate |
| Eastern Coastal Free-tailed Bat | *Micronomus norfolkensis* | Vulnerable | Not Listed | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | High |
| Little Bent-winged Bat (Foraging) | *Miniopterus australis* | Vulnerable | Not Listed | Yes | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | High |

| Common name | Scientific name | Listing status | | Dual credit species | Sources | Species retained for further assessment? | Reason for exclusion from further assessment | Vegetation zone ID species retained within, including PCT ID | Sensitivity to gain class |
|---|---|---|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | | | | |
| Large Bent-winged Bat (foraging) | *Miniopterus orianae oceanensis* | Vulnerable | Not Listed | Yes | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | High |
| Flame Robin | *Petroica phoenicea* | Vulnerable | Not Listed | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | Moderate |
| Grey-headed Flying Fox (foraging) | *Pteropus poliocephalus* | Vulnerable | Vulnerable | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | High |
| Superb Fruit-Dove | *Ptilinopus superbus* | Vulnerable | Not Listed | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | Moderate |
| Yellow-bellied Sheathtail-bat | *Saccolaimus flaviventris* | Vulnerable | Not Listed | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | High |

| Common name | Scientific name | Listing status | | Dual credit species | Sources | Species retained for further assessment? | Reason for exclusion from further assessment | Vegetation zone ID species retained within, including PCT ID | Sensitivity to gain class |
|---|---|---|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | | | | |
| Rosenberg's Goanna | *Varanus rosenbergi* | Vulnerable | Vulnerable | No | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 | High |

### 5.2.2 Candidate species credit species

**Table 5-2 Candidate species credit species**

| Common name | Scientific name | Listing status | | Sources | Species retained for further assessment? | Reason for exclusion from further assessment | Vegetation zone ID species retained within, including PCT ID |
|---|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | | |
| Regent Honeyeater (Breeding) | *Anthochaera phrygia* | Critically Endangered | Critically Endangered | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | No | BAM Habitat Constraint – Subject property is not within mapped important habitat for the species. | |
| Large-eared Pied Bat | *Chalinolobus dwyeri* | Endangered | Endangered | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | Yes | | Zone 1<br>PCT 3136 |
| Swift Parrot (Breeding) | *Lathamus discolor* | Endangered | Critically Endangered | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | No | BAM Habitat Constraint – Subject property is not within mapped important habitat for the species. | |
| Little Bent-winged Bat (Breeding) | *Miniopterus australis* | Vulnerable | Not Listed | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | No | BAM Habitat Constraint – Subject property is not near any cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding. | |
| Large Bent-winged Bat (Breeding) | *Miniopterus orianae oceanensis* | Vulnerable | Not Listed | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | No | BAM Habitat Constraint – Subject property is not near any cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding. | |
| Eastern Australian Underground Orchid | *Rhizanthella slateri* | Vulnerable | Endangered | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | No | BAM Habitat Constraint – ESEA's floristic surveys were conducted in May, outside of the recommended survey month. However, the habitat is degraded to the point that the species is unlikely to use the subject land. | |

| Common name | Scientific name | Listing status | | Sources | Species retained for further assessment? | Reason for exclusion from further assessment | Vegetation zone ID species retained within, including PCT ID |
|---|---|---|---|---|---|---|---|
| | | BC Act | EPBC Act | | | | |
| Scrub Turpentine | *Rhodamnia rubescens* | Critically Endangered | Critically Endangered | ☒ BAM-C<br>☐ TBDC<br>☐ Previous survey<br>☐ Current survey | No | BAM Habitat Constraint – The habitat is degraded to the point that the species is unlikely to use the subject land. | |

## 5.3 Threatened Species Surveys

Targeted threatened species surveys were undertaken within the proposed works area in accordance with relevant survey guidelines. These surveys were undertaken to confirm the inputs within the BAM-C. The locations of the BAM plot and targeted surveys are shown in Figure 5-1.

### 5.3.1 Flora

Due to the highly degraded nature of native vegetation within the subject property, no targeted flora surveys were conducted.

### 5.3.2 Fauna

One (1) candidate fauna species is considered likely to occur within the subject property.

- *Chalinolobus dwyeri* (Large-eared Pied Bat)

*Chalinolobus dwyeri* (Large-eared Pied Bat) is considered likely to occur within the subject property due to rocky cliff areas containing overhangs, escarpments, outcrops, or crevices, occurring within two kilometres of the proposed works area. These occur in Seven Little Australians Park and Lane Cove National Park.

For the purpose of this BDAR assessment, this species was assumed present, based on the availability of suitable habitat within the locality, and due to numerous previous sightings in very close proximity to the proposed works area. Due to these species being assumed present, no targeted surveys for candidate fauna species were conducted.


**Figure 5-1 BAM Plots and Floristic Survey Tracks**

## 5.4 Species Polygons

### 5.4.1 Large-eared Pied Bat species polygon

The following species polygon was generated based on guidelines set out by the '*Species Credit threatened bats and their habitats: NSW survey guide for the biodiversity assessment method*' (2018), in conjunction with the BioNet Species Atlas (2024).

All *Chalinolobus dwyeri* habitat on the subject land was mapped using high resolution aerial imagery and topographic maps. Potential roosting habitat features on the subject land were identified within 2 km of known caves, scarps, cliffs etc. The species polygon boundary was aligned with the associated PCT 3136 on the subject land, which was situated within 2 km of identified potential habitat features.

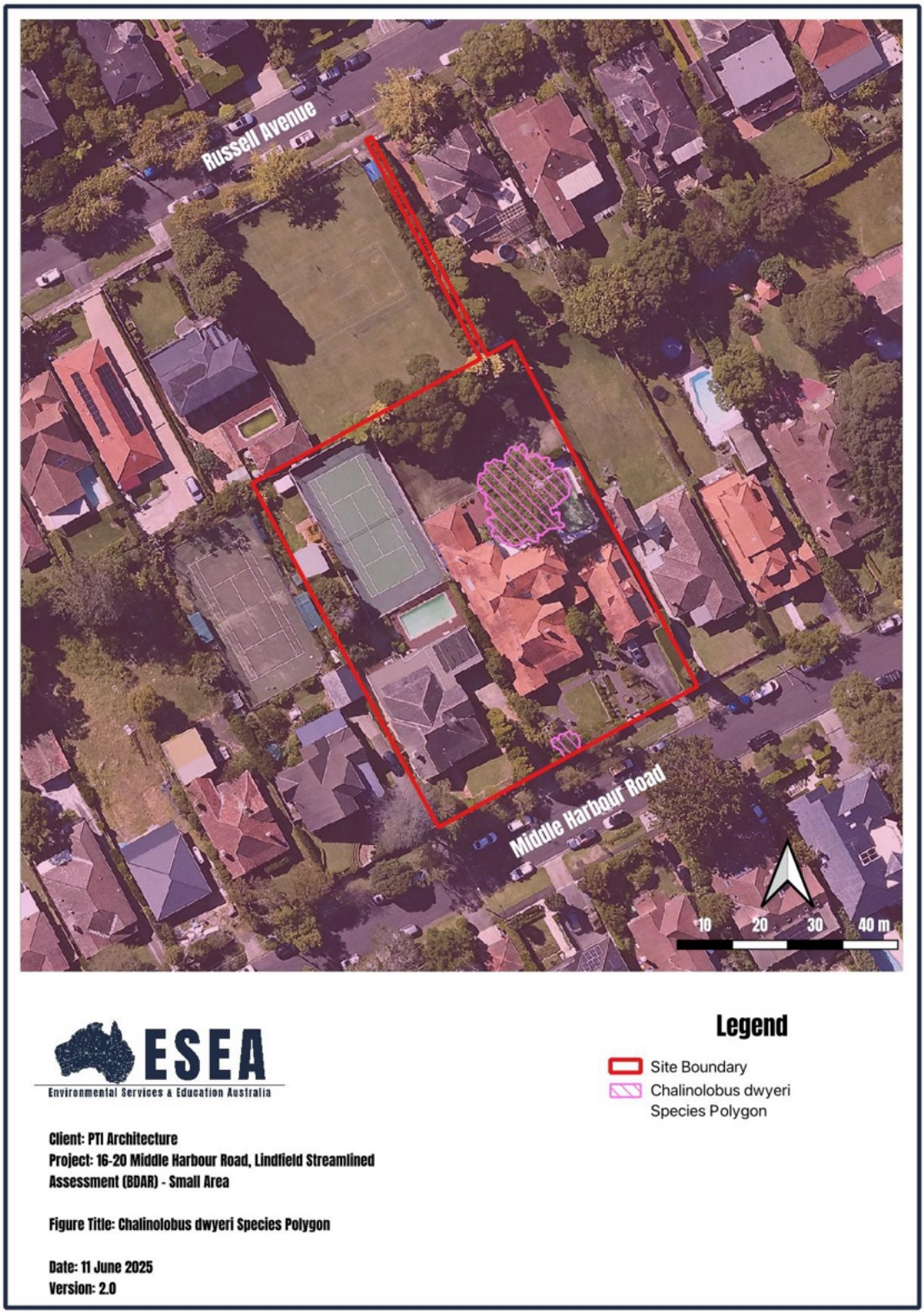



**Figure 5-2 Large-eared Pied Bat Species Polygon**

# 6 IDENTIFYING PRESCRIBED IMPACTS

There are no karst, caves, crevices, cliffs, rocks or other geological features of significance in the proposed works area. There are no human-made structures, water bodies or hydrological processes sustaining threatened entities present in the proposed works area.

There is no non-native vegetation providing important habitat for threatened species, and the proposed works area is not an area of significant habitat connectivity.

Based on the above, the proposed works is assessed as having no prescribed impacts on biodiversity.

# 7 AVOIDING AND MINIMISING IMPACTS ON BIODIVERSITY VALUES

## 7.1 Methods to Avoid Impacts on Biodiversity Values

### 7.1.1 Project location

The BAM requires locating and designing a project to avoid and minimise direct and indirect impacts on biodiversity values and prescribed biodiversity impacts. The proposed subdivision will involve the removal of approximately 0.022 ha of native vegetation from the subject property. Approximately 0.023 ha of native vegetation will be retained.

The vegetation to be removed is mainly comprised of PCT 3136 – Blue Gum High Forest mixed with planted non-native canopy species. The proposed works area has a footprint of approximately 0.296 ha, 0.022 ha of which comprises native vegetation.

The vegetation that will likely be removed as a result of the proposed works is degraded and restricted to managed garden beds. Much of the understory is dominated by non-native species. Trees in this vegetation zone were found to not display any significant habitat features such as tree hollows and stick nests. Additionally, no feed trees were identified.

Although the vegetation being removed has not been identified as a TEC, it displays moderate connectivity with a larger and higher quality expanse of the TEC in the locality, within 1 km of the subject property.

### 7.1.2 Project design

The proposed subdivision will involve the removal of approximately 0.022 ha of native vegetation from the subject property. Approximately 0.023 ha of native vegetation will be retained.

The proposed design plans and layouts have undergone iterative changes that have resulted in all native vegetation along the northern boundary being retained. Previous design revisions proposed the complete removal of all vegetation. These positive design changes have resulted in the retention of approximately 0.023 ha of native vegetation. These revisions demonstrate an attempt to avoid the removal of any native vegetation from the subject site. Environmental Services & Education Australia considers that the proponent has also demonstrated application of the “avoid, minimise, offset hierarchy” by proposing works in an area of Lindfield with minimal impacts for threatened entities in the locality. The impacted area within the subject property is largely of poor quality, with a low vegetation integrity score. It is dominated by non-native vegetation, exotic weed species, and existing residential structures.

Development of the public greenspace surrounding the proposed residential flat building can be designed to include native replanting that will provide amenity and biodiversity value to the site. This can occur in designated garden beds and around the periphery of the building. Native species replanting would also help to provide ground stabilisation, reduce high threat weed cover, and reduce weed regrowth.

### 7.1.3 Impact of proposed works

ESEA’s on-site survey established that there were no fauna habitat features such as hollows or stick nests present in any of the trees proposed to be removed.

The proposed construction works will involve direct impacts through the removal of all vegetation, comprising low-quality native canopy and highly degraded native ground stratum and midstratum vegetation. These impacts can be mitigated with a pre-clearing survey, erosion and sedimentation controls, and timing works to avoid critical life cycle events.

ESEA considers that the proposed construction works will have no likely impacts on the higher-quality vegetation situated north-east and south-west of the subject property on the peripheries of the BDAR assessment area. This includes the R2, R3 and R4 zoned residential lands surrounding subject property within the BDAR assessment area, in addition to Seven Little Australians Park, Sir Philip Game Reserve and Blue Gum Reserve which share moderate connectivity with the subject property. This is due to the fragmented and degraded nature of the proposed works area.

## 7.2 Mitigating and Managing Remaining Impacts

Measures proposed to mitigate and manage the impacts of the proposed development before, during and after construction are outlined in Table 7-1.

**Table 7-1 Mitigation and management measures**

| Measure | Risk before mitigation | Risk after mitigation | Action | Outcome | Timing | Responsibility |
|---|---|---|---|---|---|---|
| Time works to avoid critical life cycle events for native fauna such as breeding or nursing. | Moderate | Low | Vegetation clearing works should occur outside of the spring nesting season.<br><br>Prior to clearing works commencing, pre-clearing surveys to ensure fauna is not present should be conducted. | Impacts to fauna during nesting / nursing avoided. | During tree clearing works | Project manager / contractor |
| Implement clearing protocols including pre-clearing surveys and clearing supervision involving the presence of a trained ecologist / wildlife-handler during clearing events. | Moderate | Low | A suitably qualified project ecologist should be appointed to conduct pre-clearance survey of trees to be removed and identification/location of active nests. | Any fauna utilising habitat within the subject site will be identified and managed to ensure clearing works minimise the likelihood of injuring resident fauna. | During tree clearing works | Project manager / ecologist |
| Implement clearing protocols that identify and protect vegetation to be retained. | High | Low | Vegetation designated for retention should be marked within “No-Go” zones. These should be fenced off the works area and displayed with appropriate signage. | Protection of retained vegetation. | During clearing works | Project manager |
| Implement dust control measures | High | Low | Install dust screens. Cover loose material stockpiles. Limit air emissions, e.g. From construction equipment. | Limited air pollution | Throughout project life | Project manager |
| Install sediment barriers to control the release of sediment and sediment- | Moderate | Low | Install sediment barriers and erosion control during and post construction to | Control of erosion, sedimentation and runoff of contaminated | Throughout life of project | Project Manager |

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| laden runoff into the receiving environment. | | | prevent runoff into adjacent environments. Maintain controls throughout construction and undertake regular inspections. Detailed stormwater controls should be designed and implemented during the DA stage which manages quality and quantity of stormwater into the adjacent vegetation and aquatic habitats. Disturbed soil should be immediately stabilised with mulching, native seeding or erosion control mats. | substances into adjacent vegetation and waterbodies. | | |
| Time construction and operational activities to reduce impacts of noise. | Low | Very Low | Daily timing of construction activities is recommended in accordance with Table 1 of Interim Noise Guidelines (2009). | Noise impacts associated with the development will be managed to minimise disturbance to fauna during construction. | During construction | Project manager / contractor |
| Ensure appropriate daily / seasonal timing of construction and operational activities to reduce impacts of light spill. | Low | Very Low | Conduct construction works during daylight hours. Lights should operate on a timer system during construction. | Avoid light disturbance to native fauna during construction and operation. | Throughout life of project | Project manager / contractor |
| Implement hygiene protocols to prevent the spread of weeds or pathogens. | Medium | Low | Vehicles, machinery and building refuse should remain within the subject site and only be disposed of at an appropriate waste management facility. Weed management is to be undertaken where required. Vehicles should be washed down before entering and exiting the site to prevent the spread of weeds to or from the site. | Prevent spread of disease to/from the site. | During construction | Project manager / contractor |

| | | | | | | |
|---|---|---|---|---|---|---|
| Make provision for the ongoing maintenance of replanted native vegetation within the site | Medium | Low | Native vegetation replanting should occur within the open public amenity spaces. Works must ensure retained vegetation is not degraded over time as a result of weed incursion. | Ongoing maintenance of retained vegetation. | Following construction | Project manager |
| Ensure correct waste management and recycling | High | Moderate | Install waste management and correct recycling infrastructure. Implement correct waste management and recycling policy | Reduced landfill and improved sustainability outcomes | Throughout project life | Project manager |

## 7.3 Adaptive Management Strategy

Due to the small scale of the proposed vegetation removal, and due to the vegetation subject to this proposal having low vegetation integrity scores, adaptive management protocols are not considered necessary. Rather, mitigation measures have been suggested, and offsetting requirements have been applied to any unavoidable impacts.

# 8 ASSESSING THE IMPACTS OF THE PROPOSAL ON BIODIVERSITY VALUES

## 8.1 Impacts on Vegetation Integrity

The subject property area is approximately 0.385 ha. The proposed construction works have a footprint of approximately 0.296 ha, covering a majority of the subject property. Table 8-1 identifies impacts that require an offset (as per BAM Subsection 9.2.1(1.)).

**Table 8-1 Impacts that require an offset - ecosystem credits**

| Vegetation Zone | PCT name | TEC | Total area (ha) | Impact area (ha) | Current VI score | Future VI score | Change in VI score | Biodiversity risk weighting | Number of ecosystem credits required |
|---|---|---|---|---|---|---|---|---|---|
| Zone 1 | PCT 3136 – Blue Gum High Forest | N/A | 0.045 | 0.022 | 9.0 | 0 | -9.0 | 2.5 | 0 |

## 8.2 Impacts on Threatened Species

Table 8-2 identifies species credit offset requirements that are applicable to the proposed development.

**Table 8-2 Impacts that require an offset - species credits**

| Common name | Scientific name | BC Act status | EPBC Act status | Loss of habitat (ha) or individuals | Biodiversity risk weighting | Number of species credits required |
|---|---|---|---|---|---|---|
| Large-eared Pied Bat | *Chalinolobus dwyeri* | Endangered | Endangered | 0.022 | 3.00 | 1 |

## 8.3 Assessment of Indirect Impacts

**Table 8-3 Summary of residual indirect impacts**

| Indirect impact | Impacted entities | Extent | Frequency | Duration | Project phase/timing of impacts | Likelihood and consequences |
|---|---|---|---|---|---|---|
| Inadvertent impacts on adjacent habitat or vegetation | Adjacent vegetation and fauna utilising these habitats | Vegetation and habitat beyond the development footprint | During works | Short and long-term | Construction and operation | Assuming appropriate erosion and sediment control measures are implemented, the likelihood of erosion and sedimentation is likely to be low to moderate. |
| Reduced viability of adjacent habitat due to edge effects | Adjacent vegetation and fauna utilising these habitats | Vegetation and habitat beyond the development footprint | During works | Short and long-term | Construction and operation | Areas of adjoining vegetation may be subject to reduced viability due to edge effects. This is considered to be at a negligible scale due to the small size of the proposed development. |
| Reduced viability of adjacent habitat due to noise, dust or light spill | Habitat for locally occurring threatened fauna | Habitat adjacent to the development footprint | During works | Short-term | Construction | The subject property occurs within a residential suburb with highly fragmented patches of native vegetation.<br><br>The construction phase will likely cause more light spillage. However, by following the mitigation measures provided in this report, these impacts should be minimised. |
| Transport of weeds and pathogens from the site to adjacent vegetation | Adjacent vegetation and fauna utilising these habitats | Spread of weeds and pathogens to and from the subject land via seed dispersal from machinery and vehicles | Daily during works | Short-term | Construction | Increased weed cover within adjacent habitat. Weed management will be required during construction since the subject property has high threat weed species present. |
| Increased risk of starvation or | Habitat for locally occurring threatened fauna | Subject property | N/A | Long-term | Ongoing | The Impacted area has been assessed as providing potential habitat one species of threatened fauna. The surrounding locality contains many fragmented patches of comparable vegetation and therefore the species may also |

| | | | | | | |
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| exposure, and loss of shade or shelter | | | | | | be found existing nearby in areas not impacted by the proposed development.<br><br>The vegetation may provide some shade or shelter for native fauna however the loss of this is not likely to significantly affect native fauna species. |
| Loss of breeding habitat | N/A | N/A | N/A | Long-term | Ongoing | No breeding habitat is present in the impacted area. Therefore, the proposed development will not impact any breeding habitat. |
| Trampling of threatened flora species | Threatened flora species in and adjacent to the development footprint. | Subject property | During works | Short-term | Construction | Bulk earthworks are to be conducted site-wide. No threatened flora are considered likely to occur within the subject site. As such, the likelihood of trampling vegetation is low. |
| Inhibition of nitrogen fixation and increased soil salinity | Adjacent vegetation and fauna utilising these habitats | Subject land | Ongoing | Long-term | Construction, operation | The Impacted area occurs in a long-term residential property, with a highly degraded ecosystem, mostly covered in a mixture of planted and native midstratum species. In addition to limited native canopy cover as well as weeds.<br><br>Bulk earthworks across the subject property are considered unlikely to significantly impact nitrogen fixation or increase soil salinity. |
| Fertiliser drift | Adjacent vegetation and fauna utilising these habitats | Subject property | Duration of development | Long-term | Operation phase | This proposed development is unlikely to increase fertiliser drift in the locality. If the mitigation measures suggested are implemented, pollution should be minimised. |
| Rubbish dumping | Adjacent vegetation and fauna utilising these habitats | Subject property | During works | Short-term | Construction | Rubbish can shade plants (affecting health through reduced photosynthesis). |

| | | | | | | |
|---|---|---|---|---|---|---|
| Removal and disturbance of rocks, including bush rock | Fauna which may use rocks as habitat | Subject property | Ongoing | Long-term | Construction, operation | No rocks are present in the subject site, so this impact will not occur.<br><br>Tree protection zones will protect retained areas outside the subject land during and following development from impact. |
| Increase in predators | Ecosystem credit species confirmed for this proposal | Subject land | Ongoing | Long-term | Operation | The proposed development is unlikely to result in an increase in domestic predators. |
| Increase in pest animal populations | Ecosystem credit species confirmed for this proposal | Subject land | Ongoing | Long-term | Operation | Future development on the land is unlikely to provide any habitat or use for pest animal. |
| Changed fire regimes | Adjacent vegetation and fauna utilising these habitats | Subject property | Ongoing | Long-term | Operation | The proposed development would not change the bushfire regime of the locality or subject property. |
| Disturbance to specialist breeding and foraging habitat (e.g. beach nesting for shorebirds). | N/A | N/A | Ongoing | Long-term | Operation | No specialist breeding or foraging habitat is present in the impacted area; therefore no disturbance will be made. |

# 9 THRESHOLDS FOR ASSESSING AND OFFSETTING THE IMPACTS OF THE PROPOSAL

The subject property is mapped as possessing native vegetation characteristic of PCT 3136 – Blue Gum High Forest in a poor condition. The vegetation present does not meet the diagnostic features and condition thresholds to be considered a component of any Threatened Ecological Community (TEC) under the BC Act or EPBC Act.

The vegetation zone within the subject property has an area of 0.045 ha. The absence of several major canopy, midstratum, and ground stratum species has resulted in a vegetation integrity score of 9.0. Due to the low vegetation integrity score of this zone, any disturbances to the vegetation within this zone is not considered to be a significant enough impact to require any offsetting.

The proposed development involves the removal of all native trees on the subject property. The proposed construction of a residential flat building on the subject property will include bulk earthworks and ground disturbance, as well as potential stump grinding. As a result, native groundcover present on the subject property will likely be significantly affected. The proposed works have a footprint of approximately 0.296 ha, across the majority of the subject property.

The vegetation to be removed represents potential habitat for one (1) threatened fauna species that is considered highly likely to be present in the locality.

- *Chalinolobus dwyeri* (Large-eared Pied Bat)

The removal of native vegetation that may comprise potential suitable habitat for this species is likely to have a very minor negative impact. These impacts cannot be avoided, and as such, these impacts have been identified as impacts requiring offset, in accordance with Section 9.2 of the BAM.

*Chalinolobus dwyeri* (Large-eared Pied Bat) is a Serious and Irreversible Impact (SAII) Candidate Species, and as such has undergone further assessment, presented in Section 10.1.

No threatened populations will be impacted by the proposed works.

Bulk earthworks are likely to occur across the entirety of the subject property. However, areas outside of the vegetation zone comprise two (2) residential dwellings, hardstand areas, cultivated non-native lawns, two (2) swimming pools and two (2) tennis courts. As a result, no offsetting requirements are applicable to the areas within the subject property outside of the established vegetation zones.


**Figure 9-1 Impacts Requiring Offset and Areas Not Requiring Assessment**

# 10 APPLYING THE NO NET LOSS STANDARD

## 10.1 Serious and Irreversible Impacts

An impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of the threatened species or ecological community becoming extinct based on the following 4 principles set out in clause 6.7 of the *Biodiversity Conservation Regulation 2017* (NSW):

- The impact will cause a further decline of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline.
- The impact will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size.
- The impact is made on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution.
- The impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable.

The decision maker is responsible for deciding whether an impact is likely to be serious and irreversible. This decision is to be made in accordance with the principles set out in clause 6.7 of the *Biodiversity Conservation Regulation 2017*.

The vegetation within the subject property does not satisfies the criteria set out by the NSW Threatened Species Scientific Committee (the Committee) to be classified as the Threatened Ecological Community Blue Gum High Forest in the Sydney Basin Bioregion under the BC Act. In addition, the vegetation within the subject property does not satisfy the criteria to be listed as any TEC under the EPBC Act.

*Chalinolobus dwyeri* (Large-eared Pied Bat) is a Serious and Irreversible Impact (SAII) candidate species and is considered at risk of serious and irreversible impact as a result of the proposed vegetation removal works. An assessment of the species against the Serious and Irreversible Impact Assessment Criteria, as outlined in subsection 9.1.2 of the *Biodiversity Assessment Method 2020* has been conducted and is presented in Table 10-1 below:

**Table 10-1 Serious and Irreversible Impact Assessment for Chalinolobus dwyeri**

| Criteria | Description | Data / information | Data sources |
|---|---|---|---|
| 1.a. | Evidence of rapid decline (Principle 1, clause 6.7(2)(a) BC Regulation) presented by an estimate of the:<br>i. decline in population of the species in NSW in the past 10 years or three generations (whichever is longer), or<br>ii. decline in population of the species in NSW in the past 10 years or three generations (whichever is longer) as indicated by: an index of abundance appropriate to the species; decline in geographic distribution and/or habitat quality; exploitation; effect of introduced species, hybridisation, pathogens, pollutants, competitors or parasites | *Chalinolobus dwyeri* is threatened by habitat loss and fragmentation, adverse fire regimes, increased temperatures, increased frequency and severity of drought, and habitat disturbance by Feral Goats (*Capra hircus*). 'Clearing of native vegetation', 'High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition', 'Anthropogenic Climate Change', and 'Competition and habitat degradation by Feral Goats, *Capra hircus*' are listed as a Key Threatening Processes under the Act.<br><br>The generation length is estimated at 4–5.6 years. Therefore, the three-generation period for listing under Criterion 1 is 12–17 years, based on Criterion 1: the population size reduction criterion in the conservation advice for the species.<br><br>The population of large-eared pied bats has likely experienced population reduction over the past three generations due to ongoing habitat loss, habitat degradation, fragmentation and possibly introduced predators. However, due to lack of information on the number of mature individuals, subpopulations and roosts, it is difficult to estimate whether or not this reduction qualifies the species for listing under Criterion 1 (Woinarski et al. 2014).<br><br>However, there have been insufficient historical surveys of the Large-eared Pied Bat over the last 10 years. As a result, we cannot accurately quantify the decline of the species in the past decade. However, there is an inferred continuing decline in the number of mature individuals due to the threats.<br><br>There are no known extreme fluctuations in the distribution or number of mature individuals. However, the Committee considers that there is insufficient information to determine the eligibility of the species for listing in any category under criterion 1. As a result, any fluctuations in population size has not been able to be observed. | National recovery plan for the Large-eared Pied Bat Chalinolobus dwyeri. (2023).<br>.<br>Conservation Advice for *Chalinolobus dwyeri* (large-eared pied bat). (2023). |
| 1.b | Evidence of small population size (Principle 2, clause 6.7(2)(b) BC Regulation) presented by:<br>i. an estimate of the species' current population size in NSW, and<br>ii. an estimate of the decline in the species' population size in NSW in three years or one generation (whichever is longer), and | There is no robust estimate of the *Chalinolobus dwyeri* population size, though expert estimations of the overall population have ranged from 10,000 (Pennay & Thomson 2008) to 20,000 individuals (Woinarski et al. 2014). Notably, the number of mature individuals would be substantially lower. The species is naturally rare, and analyses have found that it accounts for less than 1% of all bats reported across its range (Pennay 2011). In the area with its highest recorded density compared to other species, it only accounted for 6% of observations (Pennay 2011). There are some accounts of subpopulation sizes for a number of sites, with the largest known maternity colonies containing 20–40 females (Pennay 2008; Woinarski et al. 2014). There may be as little as 10 subpopulations of this species present throughout the entirety of their distribution. However, this notion has been highly contested. | National recovery plan for the Large-eared Pied Bat Chalinolobus dwyeri. (2023).<br>.<br>Conservation Advice for Chalinolobus dwyeri (large-eared pied bat). (2023). |

| | | | |
|---|---|---|---|
| | iii. where such data is available, an estimate of the number of mature individuals in each subpopulation, or the percentage of mature individuals in each subpopulation, or whether the species is likely to undergo extreme fluctuations | The size of subpopulations is unknown. Woinarski et al. (2014) suggests that there are no more than 1,000 mature individuals per subpopulation, which is larger than the 100 individuals stated in the IUCN Guidelines. These subpopulations are found in large habitat patches that are considered large enough to support a viable population. | |
| 1.c | Evidence of limited geographic range for the threatened species (Principle 3, clause 6.7(2)(c) BC Regulation) presented by:<br>i. extent of occurrence<br>ii. area of occupancy<br>iii. ecologically distinct areas in which a single threatening event may rapidly affect all species occurrences),<br>iv. whether the species' population is likely to undergo extreme fluctuations | The large-eared pied bat *Chalinolobus dwyeri* was found to be Endangered in accordance with the following provisions in the *Biodiversity Conservation Regulation 2017*: Endangered under 4.3 (b)(d)(e i,ii,iii,iv) because: i) the geographic distribution of the species is highly restricted based on the number of known maternity roosts (<500 $km^2$ ) it occurs in 5 threat-defined locations; and there is an inferred continuing decline in the number of mature individuals as a result of the combined threats of habitat loss and fragmentation, adverse fire regimes, increased temperatures, increased frequency and severity of drought, and habitat disturbance by feral goats.<br><br>Continuing decline in the extent of occurrence (EOO), and area of occupancy (AOO), area, extent and quality of habitat and number of subpopulations is also inferred due to the loss of known roosting sites, ongoing habitat destruction and fragmentation, and the impacts of drought and bushfires.<br><br>The EOO for the current recorded *Chalinolobus dwyeri* distribution is 276,333 km2 (range 276,333–279,734 $km^2$) and the AOO is estimated to be <500$km^2$ (range 12-3,092 $km^2$) based on the number of maternity roosts. The EOO and AOO are inferred to be contracting due to ongoing loss of habitat through land clearing and loss of roosting sites.<br><br>*Chalinolobus dwyeri* is patchily distributed in central-eastern New South Wales and south-eastern and central Queensland, from the area bounded by Shoalwater Bay north of Rockhampton (QLD), south to Ulladulla, NSW (DERM 2011). The species' distribution is fragmented, as most individuals occur in small and relatively isolated subpopulations due to specific requirements for foraging and roosting habitat (Pennay 2020). Individuals have been recorded from sea level to nearly 1500 m above sea level at the top of Mt Kaputar in NSW (Pennay 2020). The main strongholds are in the Sydney Sandstone region, Pilliga region and Central Queensland Sandstone Belt (DERM 2011; Woinarski et al. 2014). The species occurs on many conservation reserves and public lands, including Pilliga National Park (NP), Coolah Tops NP, and Morton NP in NSW.<br><br>In NSW, maternity roosts occur in Ukerbarley State Conservation Area near Coonabarabran (though this site has not been occupied since 2019; M. Pennay in litt. July 2022), Woodsreef asbestos mine near Barraba, Pilliga National Park and Nature Reserve, Ophir reserve near Orange (M. Irvin in litt. September 2022), and potentially near Ulan (M. Pennay pers. comm. November 2022). | National recovery plan for the Large-eared Pied Bat Chalinolobus dwyeri. (2023).<br><br>Conservation Advice for Chalinolobus dwyeri (large-eared pied bat). (2023). |

| | | | |
|---|---|---|---|
| | | Notably, the species is not subject to extreme fluctuations (more than an order of magnitude) in EOO, AOO and number of subpopulations, locations or mature individuals. | |
| 1.d | Evidence that the species is unlikely to respond to management (Principle 4, clause 6.7(2)(d) BC Regulation) because:<br>i. known reproductive characteristics severely limit the ability to increase the existing population on, or occupy new habitat (e.g. species is clonal) on, a biodiversity stewardship site<br>ii. the species is reliant on abiotic habitats which cannot be restored or replaced (e.g. karst systems) on a biodiversity stewardship site, or<br>iii. life history traits and/or ecology is known but the ability to control key threatening processes at a biodiversity stewardship site is currently negligible (e.g. frogs severely impacted by chytrid fungus). | Current management schemes that have been implemented for the conservation of this species include: the protection of known and potential habitat from burning at too-frequent intervals, avoidance of damage to known roosting and maternity sites from mining activities and from recreational caving, reducing the use of pesticides, protecting known and potential forests and woodland habitat around cliffs and rock overhangs, and the control of goats to reduce disturbance to roosting sites.<br><br>However, the effectivity of these management schemes is limited by the reproductive characteristics of this species. Females most often have two young with the ratio of males to females being 1:1.<br><br>Over most of its range, the large-eared pied bat appears to roost predominantly in caves and overhangs in sandstone cliffs and forage in nearby high-fertility forest or woodland near watercourses (Pennay 2002; DECC 2007; Pennay 2008). The presence of suitable caves or overhangs may be more important than the precise geology, as bats have also been captured near rhyolite cliffs in south-east Queensland (M. Mathieson pers. comm. 2011; I. Gynther pers. comm. 2011). The occurrence of high-fertility forest or woodland near suitable roosting habitat is rare in the landscape, which implies that the species may always have been uncommon; however preferential clearing of fertile forests and woodlands has almost certainly reduced the amount of available habitat considerably (DECC 2007; Pennay 2008). Effects of reduced genetic diversity including inbreeding depression and reduced evolutionary adaptability makes the species more vulnerable. | National recovery plan for the Large-eared Pied Bat Chalinolobus dwyeri. (2023).<br><br>Conservation Advice for Chalinolobus dwyeri (large-eared pied bat). (2023). |
| 3.a | In relation to the impacts from the proposal on the species at risk of an SAII, the assessor must include data and information on: a. the impact on the species' population (Principles 1 and 2) presented by:<br>i. an estimate of the number of individuals (mature and immature) present in the subpopulation on the subject land (the site may intersect or encompass the subpopulation) and as a percentage of the total NSW population, and<br>ii. an estimate of the number of individuals (mature and immature) to be impacted by the proposal and as a percentage of the total NSW population, or iii. if the species' unit of measure is | There is a dearth of information on the specific population size of subpopulations of the species in the area. However, it is estimated that subpopulations can reach as large as 20-40 females in a maternity colony. It is estimated that there may be as little as 10 subpopulations of this bat species. However, Woinarski et al. (2014) has speculated that there are more.<br><br>Whilst potential roosting sites for the species may be present in the BDAR assessment area, particularly in rocky areas of Seven Little Australians Park, the proposed works are not likely to impact any significant habitat for the species in the area.<br><br>These works involve the removal of all vegetation on the subject property. This vegetation is highly degraded and does not provide adequate habitat or food resources for the species. Due to the highly developed residential nature of the locality, there is limited potential habitat for the species on the peripheries of the subject property and throughout the BDAR assessment area. As a result, we have deduced that the area of occupancy and extent of occurrence for the large-eared pied bat will not be impacted by the proposed works. | National recovery plan for the Large-eared Pied Bat Chalinolobus dwyeri. (2023).<br><br>Conservation Advice for Chalinolobus dwyeri (large-eared pied bat). (2023). |

| | | | |
|---|---|---|---|
| | area, provide data on the number of individuals on the site, and the estimated number that will be impacted, along with the area of habitat to be impacted by the proposal. | | |
| 3.b | Impact on geographic range (Principles 1 and 3) presented by:<br>i. the area of the species' geographic range to be impacted by the proposal in hectares, and a percentage of the total AOO, or EOO within NSW<br>ii. the impact on the subpopulation as either: all individuals will be impacted (subpopulation eliminated); | The species' entire geographic range spans an area of <500 km$^2$.<br><br>The term 'location' defines a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present. The size of the location depends on the area covered by the threatening event and may include part of one or many subpopulations. Where a taxon is affected by more than one threatening event, location should be defined by considering the most serious plausible threat (IUCN 2022). The number of locations could vary between 1–2, and > 10, depending on the threat considered. Given the possible range in the number of locations from 1–2 to > 10, the assessment uses a best estimate of 5 locations.<br><br>The IUCN Red List Guidelines state that 'A taxon can be considered to be severely fragmented if most (>50%) of its total area of occupancy is in habitat patches that are (1) smaller than would be required to support a viable population, and (2) separated from other habitat patches by a large distance relative to dispersal kernel of the species.' Known subpopulations of the bat species are isolated but are not located in inviably small patches and consist of >100 mature individuals. Therefore, the species is not considered to be severely fragmented.<br><br>Continuing decline in the EOO, AOO, area, extent and quality of habitat and number of subpopulations is also inferred due to the loss of known roosting sites, ongoing habitat destruction and fragmentation and the impacts of drought and bushfires. The loss of known roost sites includes recently observed losses, including one site in the Pilliga region and a maternity roost in the Ukerbarley/Coonabarabran area, which showed no sign of recent largeeared pied bat activity, despite previously reliable historical observations. Loss of roosting locations and habitat is likely to continue due to ongoing threats which have not ceased, suggesting the EOO, AOO, subpopulations and quality of habitat will continue to decline.<br><br>Despite this, the impacted area of native vegetation on the subject property covers an area of 0.022 ha. No roosting sites or potential habitat for the species was identified in this impacted area. Therefore, it is highly unlikely that the proposed works will contribute to the decline in the species EOO and AOO. | National recovery plan for the Large-eared Pied Bat Chalinolobus dwyeri. (2023).<br><br>Conservation Advice for Chalinolobus dwyeri (large-eared pied bat). (2023). |

The following tables present information required on the ecosystem and species credits and matching credit profiles. The BAM-C credit report identifies the numbers and classes of biodiversity credits required to be retired in accordance with the like-for-like requirements of the offset rules. The BDAR must be submitted to the decision-maker within 14 days of the date the BAM-C credit report is finalised. The full credit report is provided in Appendix B.

## 10.2 Ecosystem Credit Requirements

Table 10-2 outlines the ecosystem credit requirements to offset the impacts of the proposed works.

**Table 10-2 Impacts that require an offset - ecosystem credits**

| Vegetation Zone | PCT name | TEC | Total area (ha) | Impact area (ha) | Current VI score | Future VI score | Change in VI score | Biodiversity risk weighting | Number of ecosystem credits required |
|---|---|---|---|---|---|---|---|---|---|
| Zone 1 | PCT 3136 – Blue Gum High Forest | N/A | 0.045 | 0.022 | 9.0 | 0 | -9.0 | 2.5 | 0 |

## 10.3 Species Credit Requirements

One (1) candidate threatened species is associated with the subject property. Species credit requirements applicable to the proposed development are outlined in Table 10-3 below.

**Table 10-3 Impacts that require an offset - species impacts**

| Common name | Scientific name | BC Act status | EPBC Act status | Loss of habitat (ha) or individuals | Biodiversity risk weighting | Number of species credits required |
|---|---|---|---|---|---|---|
| Large-eared Pied Bat | *Chalinolobus dwyeri* | Endangered | Endangered | 0.022 | 3.00 | 1 |

# 11 SUMMARY

Environmental Services & Education Australia (ESEA) was engaged to produce a streamlined BDAR to meet the requirements of the Biodiversity Assessment Method 2020, in preparation for the proposed construction of a Residential Flat Building (RFB) at 16 - 20 Middle Harbour Road, Lindfield. The proposed works will likely include the removal of all trees on the subject property, including bulk earthworks.

Portions of the subject property occur within mapped Biodiversity Values areas. Works within these mapped areas trigger the Biodiversity Offsets Scheme (BOS) under the *Biodiversity Conservation Act 2016*, and as such a Biodiversity Development Assessment Report (BDAR) is required to assess the impacts of the proposed development on these portions of the site.

The subject property is approximately 0.385 ha and possesses 0.045 ha of native vegetation. Approximately 0.022 ha of the native vegetation will be removed as a result of the proposed construction works.

The proposed works meet the requirement for streamlined assessment for small area developments, as the proposed works do not exceed the maximum area clearing threshold of 1 ha for minimum lot sizes of ≤ 1 ha. Even though these are small areas of impact, the assessor must still apply the hierarchy of avoiding and minimising impacts on biodiversity before considering offsetting residual impacts.

The proposed works area contains one (1) distinct patches of remnant vegetation. These patches are mapped as PCT 0 – Exotic and Planted Vegetation under the NSW State Vegetation Type Mapping. However, floristic surveys conducted by ESEA (2025) identified that this vegetation is characteristic of PCT 3136 – Blue Gum High Forest. Therefore, the distribution of the PCT on the subject property was revised based on this ground truthing.

The vegetation present is a highly degraded representation of this PCT. One (1) distinct zone of the PCT was identified based on ESEA's surveys of the subject property. *Syncarpia glomulifera* was the only major canopy species and the midstratum was predominantly *Exocarpos cupressiformis.* within this PCT. The ground stratum was found to be highly degraded. Although, the fern species *Platycerium bifurcatum* was also found throughout the vegetation zone. Additionally, there are a number of planted non-native midstratum trees and shrubs that were found to be present throughout the planted garden beds within the subject property.

The vegetation present does not satisfy the criteria to be listed as any Threatened Ecological Community under the NSW *Biodiversity Conservation Act 2016* or Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Vegetation was assessed as possessing a vegetation integrity score of 9.0. The total vegetation integrity loss from the subject property will be -9.0 as a result of the proposed works. Therefore, a total of zero (0) ecosystem credits have been applied to the proposed development due to the highly degraded nature of the vegetation within the subject property.

The vegetation to be removed was found to exhibit potential habitat features for one (1) fauna species in the locality, the Large-eared Pied Bat (*Chalinolobus dwyeri*). Therefore, one (1) species credit has been applied to the proposed development to offset the impacts of the proposed works.

The proposed design plans and layouts have undergone iterative changes that have resulted in all native vegetation along the northern boundary being retained. These positive design changes have resulted in the retention of approximately 0.023 ha of native vegetation. These revisions demonstrate an attempt to avoid the removal of any native vegetation from the subject site. Environmental Services & Education Australia considers that the proponent has demonstrated application of the "avoid, minimise, offset hierarchy" by proposing works in an area of Lindfield with minimal impacts for threatened entities in the locality. The impacted area within the subject property is largely poor quality with a low vegetation integrity score, dominated by non-native vegetation and exotic weed species, and existing residential structures.

# 12 REFERENCES


- Advice to the Minister for the Environment, Heritage and the Arts from the Threatened Species Scientific Committee (the Committee) on an Amendment to the List of Threatened Ecological Communities under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). (n.d.). Accessed 15/05/2025. Available at: https://www.environment.gov.au/biodiversity/threatened/communities/pubs/112-listing-advice.pdf.
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- NSW Office of Environment & Heritage (2024) SEED Vegetation Mapping. Accessed 14/05/2025. Available at: https://www.seed.nsw.gov.au/
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# APPENDIX A FIELD SURVEY RAW DATA

Numbers [1–8] on this page correlate with the numbers and explanatory notes on page iii of the data sheet

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Site sheet #** | 1 of 4 | **Date** | 14/05/25 | **Survey name** | 20 Middle Harbour Road | | **Plot identifier** | BAM Plot 1 | |
| **Recorders** | CW, AS | | | **IBRA region** | Sydney Basin | | **Veg zone ID** | | |
| [1]**Datum** | | **Coordinate system** | □ Projected □ Geographic | **MGA zone** | 56 | [1]**X coordinate** 16828340 | [1]**Y coordinate** | -3978873 | |
| **Location description** | Biodiversity Value Mapped area | | | | | | | | |
| [1] **Plot dimensions** | 6m x 7m (whole vegetated area) | For composition & structure (400 m²): 20 m x 20 m<br>For function (1,000 m²): 20 m x 50 m | | [1] **Orientation of midline from 0 m point** | Magnetic 60° | | **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 m² plot) | | | **Structure** (400 m² plot) | | | **Function** (1,000 m² 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 |
| Total count of native plant species **(richness)** in each growth form group (not individual plants within each growth form) | Trees (TG) | 1 | Sum of [2] **foliage cover** of native plant species by growth form group | Trees (TG) | 80 | 80 + cm | Count 1 |
| | Shrubs (SG) | 0 | | Shrubs (SG) | 0 | 50–79 cm | Count (best practice)/tick. If [8]large tree benchmark size ≥50 cm, count nil |
| | Grasses etc. (GG) | 0 | | Grasses etc. (GG) | 0 | 30–49 cm | Count (best practice)/tick. If [8]large tree benchmark size ≥30 cm, count nil |
| | Forbs (FG) | 0 | | Forbs (FG) | 0 | 20–29 cm | Count (best practice)/tick. If [8]large tree benchmark size ≥20 cm, count nil |
| | Ferns (EG) | 1 | | Ferns (EG) | 1 | 10–19 cm | Count (best practice)/tick nil |
| | Other (OG) | 0 | | Other (OG) | 0 | 5–9 cm | Count (best practice)/tick nil |
| | | | | | | [4]Tree regeneration <5 cm | Tick nil |
| | | | Total high threat weed cover | | 0 % | [5] Length of fallen logs | Tally space nil Total 0 m m |
| | | | | | | [6] Hollow bearing trees | Tick nil |

| **Vegetation integrity - function** cont. (five 1 m²) **plots)** | [7] Litter cover (%) | **Bare ground cover (%)** | **Cryptogam cover (%)** | **Rock cover (%)** |
|---|---|---|---|---|
| Subplot score (% in each) | 2 2 c d e | 0 0 c d e | 0 0 c d e | 0 0 c d e |
| Average of the 5 subplots | 2 | 0 | 0 | 0 |

These attributes require consideration of site observations and may be completed after field work:

| | | | | | |
|---|---|---|---|---|---|
| **Vegetation class** | | [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 |
|---|---|---|
| Clearing (inc. logging) | | |
| Cultivation (inc. pasture) | | |
| Soil erosion | | |
| Firewood / CWD removal | | |
| Grazing (id. native/stock) | | |
| Fire damage | | |
| Storm damage | | |
| Weediness | | |
| Other | | |

Brief site description or other notes

| Emergents heights | | | Upper stratum heights | | | Middle stratum heights | | | Lower stratum heights | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Top | Mid | Bottom | Top | Mid | Bottom | Top | Mid | Bottom | Top | Mid | Bottom |
| 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 m² floristics plot: | Survey name | Plot identifier | Recorders |
|---|---|---|---|
| Date 14/05/25 | 20 Middle Harbour Road | BAM Plot 1 | CW, AS |

| GF code | | Species name<br>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 | Abund-ance | Voucher |
|---|---|---|---|---|---|---|
| TG | 1 | Syncarpia glomulifera | N | 80 | 1 | |
| GG | 2 | Sterotaphrum secondatum | | 95 | >10,000 | |
| OT | 3 | platycerium bifurcatum | N | 1 | 1 | |
| OT | 4 | Tillandsia usneoides | | 0.5 | 1 | |
| | 5 | | | | | |
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| | 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. **Voucher:** specimens collected for identification by a herbarium.

[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 …, 1,000, 2,000, 3,000 … (as integer values).

Numbers [1–8] on this page correlate with the numbers and explanatory notes on page iii of the data sheet

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Site sheet #** | 3 of 4 | **Date** | 14/05/25 | **Survey name** | 20 Middle Harbour Road | | **Plot identifier** | BAM Plot 2 | |
| **Recorders** | CW, AS | | | **IBRA region** | Sydney Basin | | **Veg zone ID** | | |
| [1]**Datum** | | **Coordinate system** | □ Projected □ Geographic | **MGA zone** | 56 | [1]**X coordinate** 16828339 | [1]**Y coordinate** | -3998843 | |
| **Location description** | Biodiversity Value Mapped area | | | | | | | | |
| [1] **Plot dimensions** | 22 x 3 m (whole vegetated area) | | For composition & structure (400 m²): 20 m x 20 m<br>For function (1,000 m²): 20 m x 50 m | | | [1] **Orientation of midline from 0 m point** | Magnetic 60° | **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 m² plot) | | Sum values | **Structure** (400 m² plot) | | Sum values (%) (may sum to >100%) | **Function** (1,000 m² plot) [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 |
|---|---|---|---|---|---|---|---|
| Total count of native plant species **(richness)** in each growth form group (not individual plants within each growth form) | Trees (TG) | 2 | Sum of [2] **foliage cover** of native plant species by growth form group | Trees (TG) | 65 | 80 + cm | Count 1 |
| | Shrubs (SG) | 2 | | Shrubs (SG) | 4 | 50–79 cm | Count (best practice)/tick. If [8]large tree benchmark size ≥50 cm, count Nil |
| | Grasses etc. (GG) | 0 | | Grasses etc. (GG) | 0 | 30–49 cm | Count (best practice)/tick. If [8]large tree benchmark size ≥30 cm, count Nil |
| | Forbs (FG) | 0 | | Forbs (FG) | 0 | 20–29 cm | Count (best practice)/tick. If [8]large tree benchmark size ≥20 cm, count Nil |
| | Ferns (EG) | 1 | | Ferns (EG) | 1 | 10–19 cm | Count (best practice)/tick Nil |
| | Other (OG) | 0 | | Other (OG) | 0 | 5–9 cm | Count (best practice)/tick Nil |
| | | | | | | [4]Tree regeneration <5 cm | Tick Nil |
| | | | Total high threat weed cover | | 0 % | [5]Length of fallen logs | Tally space Nil / Total 0 m m |
| | | | | | | [6]Hollow bearing trees | Tick Nil |

| **Vegetation integrity - function** cont. (five 1 m²) **plots)** | [7]Litter cover (%) | **Bare ground cover (%)** | **Cryptogam cover (%)** | **Rock cover (%)** |
|---|---|---|---|---|
| Subplot score (% in each) | a 60 b 40 c 70 d e | a 0 b 0 c 10 d e | a 0 b 0 c 0 d e | a 0 b 0 c 0 d e |
| Average of the 5 subplots | 57 % | 3 % | 0 % | 0 % |

These attributes require consideration of site observations and may be completed after field work:

| | | | | | |
|---|---|---|---|---|---|
| **Vegetation class** | | [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 |
|---|---|---|
| Clearing (inc. logging) | | |
| Cultivation (inc. pasture) | | |
| Soil erosion | | |
| Firewood / CWD removal | | |
| Grazing (id. native/stock) | | |
| Fire damage | | |
| Storm damage | | |
| Weediness | | |
| Other | | |

Brief site description or other notes

| Emergents heights | | | Upper stratum heights | | | Middle stratum heights | | | Lower stratum heights | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Top | Mid | Bottom | Top | Mid | Bottom | Top | Mid | Bottom | Top | Mid | Bottom |
| 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 m² floristics plot: | Survey name | Plot identifier | Recorders |
|---|---|---|---|
| Date 14 / 05 / 25 | 20 Middle Harbour Rd | BAM Plot 2 | CW, AS |

| GF code | | Species name<br>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 | Abund-ance | Voucher |
|---|---|---|---|---|---|---|
| FG | 1 | Clivia minata | | 10 | >100 | |
| FG | 2 | Agapanthus praecox | | 15 | >100 | |
| SG | 3 | Nandina domestica | | 2 | >100 | |
| SG | 4 | Hibiscus rosa-sinensis | | 1 | 1 | |
| TG | 5 | Pittosporum undulatum | N | 5 | 2 | |
| OT | 6 | Platycerium bifurcatum | N | 1 | >3 | |
| TG | 7 | Jacaranda mimosifolia | | 20 | 1 | |
| SG | 8 | Callistemon viminalis | N | 3 | 1 | |
| TG | 9 | Exocarpos cupressiformis | N | 60 | 3 | |
| FG | 10 | Commelina cyanea | N | 0.1 | >100 | |
| SG | 11 | Hydrangea macrophylla | | 1 | >3 | |
| FG | 12 | Liriope muscari | | 0.5 | >5 | |
| SG | 13 | Murraya paniculata | N | 1 | 1 | |
| OT | 14 | Tradescantia fluminensis | | 0.2 | 1 | |
| FG | 15 | Phyllanthus tenellus | | 0.2 | 1 | |
| GG | 16 | Ehrarta erecta | HTW | 2 | >100 | |
| TG | 17 | Brachychiton acerifolius | N | 2 | 1 | |
| | 18 | | | | | |
| | 19 | | | | | |
| | 20 | | | | | |
| | 21 | | | | | |
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| | 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. **Voucher:** specimens collected for identification by a herbarium.

[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 …, 1,000, 2,000, 3,000 … (as integer values).

# APPENDIX B BAM-C SUMMARY REPORT

# BAM Credit Summary Report

## Proposal Details

| | | |
|---|---|---|
| Assessment Id | Proposal Name | BAM data last updated * |
| 00057473/BAAS24031/25/00057474 | Streamlined BDAR for 16-20 Middle Harbour Road Lindfield | 28/10/2024 |
| Assessor Name | Report Created | BAM Data version * |
| Clayton M Woods | 11/06/2025 | Current classification (live - default) (80) |
| Assessor Number | BAM Case Status | Date Finalised |
| BAAS24031 | Open | To be finalised |
| Assessment Revision | BOS entry trigger | Assessment Type |
| 1 | BOS Threshold: Biodiversity Values Map | Part 4 Developments (Small Area) |

* 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 SAII | Ecosystem credits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blue Gum High Forest** | | | | | | | | | | | |
| 1 | 3136_Poor | Not a TEC | 9 | 9.0 | 0.02 | PCT Cleared - 99% | High Sensitivity to Gain | | | 2.50 | 0 |
| | | | | | | | | | | **Subtotal** | **0** |
| | | | | | | | | | | **Total** | **0** |

## 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 SAII | Species credits |
|---|---|---|---|---|---|---|---|---|---|
| ***Chalinolobus dwyeri / Large-eared Pied Bat ( Fauna )*** | | | | | | | | | |
| 3136_Poor | 9.0 | 9.0 | 0.02 | Biodiversity Conservation Act listing status | Species dependent on habitat attributes | Endangered | Endangered | True | 1 |
| | | | | | | | | **Subtotal** | **1** |

# BAM Biodiversity Credit Report (Like for like)

## Proposal Details

Assessment Id
00057473/BAAS24031/25/00057474

Proposal Name
Streamlined BDAR for 16-20 Middle Harbour Road Lindfield

BAM data last updated *
28/10/2024

Assessor Name
Clayton M Woods

Assessor Number
BAAS24031

BAM Data version *
Current classification (live - default) (80)

Proponent Names

Report Created
11/06/2025

BAM Case Status
Open

Assessment Revision
1

BOS entry trigger
BOS Threshold: Biodiversity Values Map

Assessment Type
Part 4 Developments (Small Area)

Date Finalised
To be finalised

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

## Potential Serious and Irreversible Impacts

| Name of threatened ecological community | Listing status | Name of Plant Community Type/ID |
|---|---|---|
| **Nil** | | |

| Species |
|---|
| **Chalinolobus dwyeri** / Large-eared Pied Bat |

# BAM Biodiversity Credit Report (Like for like)

## Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

| PCT |
|---|
| No Changes |

Predicted Threatened Species Not On Site

| Name |
|---|
| **Calyptorhynchus lathami lathami /** South-eastern Glossy Black-Cockatoo |
| **Ephippiorhynchus asiaticus /** Black-necked Stork |
| **Grantiella picta /** Painted Honeyeater |
| **Ixobrychus flavicollis /** Black Bittern |

## 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 |
|---|---|---|---|---|---|
| 3136-Blue Gum High Forest | Not a TEC | 0.0 | 0 | 0 | 0 |

# BAM Biodiversity Credit Report (Like for like)

**3136-Blue Gum High Forest**

**Like-for-like credit retirement options**

| Class | Trading group | Zone | HBT | Credits | IBRA region |
|---|---|---|---|---|---|
| North Coast Wet Sclerophyll Forests This includes PCT's: 3136 | North Coast Wet Sclerophyll Forests >=90% | 3136_Poor | No | 0 | Cumberland, Burragorang, Pittwater, Sydney Cataract, Wollemi and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |

## Species Credit Summary

| Species | Vegetation Zone/s | Area / Count | Credits |
|---|---|---|---|
| **Chalinolobus dwyeri** / Large-eared Pied Bat | **3136_Poor** | 0.0 | 1.00 |

## Credit Retirement Options

Like-for-like credit retirement options

**Chalinolobus dwyeri** / Large-eared Pied Bat

| Spp | IBRA subregion |
|---|---|
| **Chalinolobus dwyeri /** Large-eared Pied Bat | Any in NSW |

# BAM Biodiversity Credit Report (Variations)

## Proposal Details

**Assessment Id**

00057473/BAAS24031/25/00057474

Proposal Name

Streamlined BDAR for 16-20 Middle Harbour Road Lindfield

BAM data last updated *

28/10/2024

Assessor Name

Clayton M Woods

Assessor Number

BAAS24031

BAM Data version *

Current classification (live - default) (80)

Proponent Name(s)

Report Created

11/06/2025

BAM Case Status

Open

Assessment Revision

1

BOS entry trigger

BOS Threshold: Biodiversity Values Map

Assessment Type

Part 4 Developments (Small Area)

Date Finalised

To be finalised

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

## Potential Serious and Irreversible Impacts

| Name of threatened ecological community | Listing status | Name of Plant Community Type/ID |
|---|---|---|
| **Nil** | | |

| Species |
|---|
| **Chalinolobus dwyeri** / Large-eared Pied Bat |

## Additional Information for Approval

PCT Outside Ibra Added

None added

# BAM Biodiversity Credit Report (Variations)

PCTs With Customized Benchmarks

| PCT |
|---|
| No Changes |

Predicted Threatened Species Not On Site

| Name |
|---|
| **Calyptorhynchus lathami lathami /** South-eastern Glossy Black-Cockatoo |
| **Ephippiorhynchus asiaticus /** Black-necked Stork |
| **Grantiella picta /** Painted Honeyeater |
| **Ixobrychus flavicollis /** Black Bittern |

## 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 |
|---|---|---|---|---|---|
| 3136-Blue Gum High Forest | Not a TEC | 0.0 | 0 | 0 | 0.00 |

**3136-Blue Gum High Forest**

**Like-for-like credit retirement options**

| Class | Trading group | Zone | HBT | Credits | IBRA region |
|---|---|---|---|---|---|
| North Coast Wet Sclerophyll Forests This includes PCT's: 3136 | North Coast Wet Sclerophyll Forests >=90% | 3136_Poor | No | 0 | Cumberland,Burragorang, Pittwater, Sydney Cataract, Wollemi 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 |
|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| | Wet Sclerophyll Forests (Shrubby sub-formation) | Tier 1 | 3136_Poor | 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

| Species | Vegetation Zone/s | Area / Count | Credits |
|---|---|---|---|
| **Chalinolobus dwyeri** / Large-eared Pied Bat | **3136_Poor** | 0.0 | 1.00 |

## Credit Retirement Options

**Like-for-like options**

| | | | |
|---|---|---|---|
| **Chalinolobus dwyeri**/ Large-eared Pied Bat | Spp | IBRA region | |
| | **Chalinolobus dwyeri**/Large-eared Pied Bat | Any in NSW | |
| | **Variation options** | | |
| | Kingdom | Any species with same or higher category of listing under Part 4 of the BC Act shown below | IBRA region |
| | Fauna | Endangered | Cumberland, Burragorang, Pittwater, Sydney Cataract, Wollemi and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site. |

# BAM Vegetation Zones Report

## Proposal Details

Assessment Id
00057473/BAAS24031/25/00057474

Assessment name
Streamlined BDAR for 16-20 Middle Harbour Road Lindfield

BAM data last updated *
28/10/2024

Assessor Name
Clayton M Woods

Report Created
11/06/2025

BAM Data version *
Current classification (live - default) (80)

Assessor Number
BAAS24031

Assessment Type
Part 4 Developments (Small Area)

BAM Case Status
Open

Assessment Revision
1

BOS entry trigger
BOS Threshold: Biodiversity Values Map

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.

## Vegetation Zones

| # | Name | PCT | Condition | Area | Minimum number of plots | Management zones |
|---|---|---|---|---|---|---|
| 1 | 3136_Poor | 3136-Blue Gum High Forest | Poor | 0.02 | 1 | |

# BAM Candidate Species Report

## Proposal Details

| Assessment Id | Proposal Name | BAM data last updated * |
|---|---|---|
| 00057473/BAAS24031/25/00057474 | Streamlined BDAR for 16-20 Middle Harbour Road Lindfield | 28/10/2024 |
| **Assessor Name** | **Report Created** | **BAM Data version *** |
| Clayton M Woods | 11/06/2025 | Current classification (live - default) (80) |
| **Assessor Number** | **Assessment Type** | **BAM Case Status** |
| BAAS24031 | Part 4 Developments (Small Area) | Open |
| **Assessment Revision** | **BOS entry trigger** | **Date Finalised** |
| 1 | BOS Threshold: Biodiversity Values Map | 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 |
|---|---|---|
| ***Chalinolobus dwyeri*** Large-eared Pied Bat | Yes (assumed present) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |
| ***Rhodamnia rubescens*** Scrub Turpentine | No (surveyed) | ☐ Jan ☐ Feb ☐ Mar ☐ Apr ☑ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec<br>☐ Survey month outside the specified months? |

## Threatened species Manually Added

None added

# BAM Candidate Species Report

## Threatened species assessed as not on site

Refer to BAR for detailed justification

| Common name | Scientific name | Justification in the BAM-C |
|---|---|---|
| Eastern Australian Underground Orchid | Rhizanthella slateri | Habitat degraded |
| Large Bent-winged Bat | Miniopterus orianae oceanensis | Habitat constraints |
| Little Bent-winged Bat | Miniopterus australis | Habitat constraints |
| Regent Honeyeater | Anthochaera phrygia | Habitat constraints |
| Swift Parrot | Lathamus discolor | Habitat constraints |

# BAM Predicted Species Report

## Proposal Details

| Assessment Id | Proposal Name | BAM data last updated * |
|---|---|---|
| 00057473/BAAS24031/25/00057474 | Streamlined BDAR for 16-20 Middle Harbour Road Lindfield | 28/10/2024 |
| **Assessor Name** | **Report Created** | **BAM Data version *** |
| Clayton M Woods | 11/06/2025 | Current classification (live - default) (80) |
| **Assessor Number** | **Assessment Type** | **BAM Case Status** |
| BAAS24031 | Part 4 Developments (Small Area) | Open |
| **Assessment Revision** | **BOS entry trigger** | **Date Finalised** |
| 1 | BOS Threshold: Biodiversity Values Map | 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) |
|---|---|---|
| Brown Treecreeper (eastern subspecies) | Climacteris picumnus victoriae | 3136-Blue Gum High Forest |
| Dusky Woodswallow | Artamus cyanopterus cyanopterus | 3136-Blue Gum High Forest |
| Eastern Coastal Free-tailed Bat | Micronomus norfolkensis | 3136-Blue Gum High Forest |
| Flame Robin | Petroica phoenicea | 3136-Blue Gum High Forest |
| Gang-gang Cockatoo | Callocephalon fimbriatum | 3136-Blue Gum High Forest |
| Grey-headed Flying-fox | Pteropus poliocephalus | 3136-Blue Gum High Forest |
| Large Bent-winged Bat | Miniopterus orianae oceanensis | 3136-Blue Gum High Forest |
| Little Bent-winged Bat | Miniopterus australis | 3136-Blue Gum High Forest |
| Little Lorikeet | Glossopsitta pusilla | 3136-Blue Gum High Forest |

| | | |
|---|---|---|
| Regent Honeyeater | Anthochaera phrygia | 3136-Blue Gum High Forest |
| Rosenberg's Goanna | Varanus rosenbergi | 3136-Blue Gum High Forest |
| South-eastern Hooded Robin | Melanodryas cucullata cucullata | 3136-Blue Gum High Forest |
| Speckled Warbler | Chthonicola sagittata | 3136-Blue Gum High Forest |
| Spotted-tailed Quoll | Dasyurus maculatus | 3136-Blue Gum High Forest |
| Square-tailed Kite | Lophoictinia isura | 3136-Blue Gum High Forest |
| Superb Fruit-Dove | Ptilinopus superbus | 3136-Blue Gum High Forest |
| Swift Parrot | Lathamus discolor | 3136-Blue Gum High Forest |
| Varied Sittella | Daphoenositta chrysoptera | 3136-Blue Gum High Forest |
| White-bellied Sea-Eagle | Haliaeetus leucogaster | 3136-Blue Gum High Forest |
| White-throated Needletail | Hirundapus caudacutus | 3136-Blue Gum High Forest |
| Yellow-bellied Sheathtail-bat | Saccolaimus flaviventris | 3136-Blue Gum High Forest |

## Threatened species Manually Added

None added

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

| Common Name | Scientific Name | Plant Community Type(s) |
|---|---|---|
| Black Bittern | Ixobrychus flavicollis | 3136-Blue Gum High Forest |
| Black-necked Stork | Ephippiorhynchus asiaticus | 3136-Blue Gum High Forest |
| Painted Honeyeater | Grantiella picta | 3136-Blue Gum High Forest |
| South-eastern Glossy Black-Cockatoo | Calyptorhynchus lathami lathami | 3136-Blue Gum High Forest |

## 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 |
|---|---|---|
| Black Bittern | Ixobrychus flavicollis | Refer to BAR |
| Black-necked Stork | Ephippiorhynchus asiaticus | Refer to BAR |
| Painted Honeyeater | Grantiella picta | Refer to BAR |

| | | |
|---|---|---|
| South-eastern Glossy Black-Cockatoo | Calyptorhynchus lathami lathami | Refer to BAR |

# APPENDIX C SMALL AREA STREAMLINED BDAR CHECKLIST

**Table 12-1 Minimum information requirements for the Biodiversity Development Assessment Report: Streamlined assessment module – Small area**

| BAM reference | Information required | Report Section | Present |
|---|---|---|---|
| Chapter 2 Introduction<br><br>Chapter 3 Establishing site context | brief description of proposed development | 1.1 Development Overview | Yes |
| | identification of subject land boundary, including:<br>- operational footprint<br>- construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure | 1.1 Development Overview<br>1.2 Location | Yes |
| | general description of the subject land | 1.2 Location | Yes |
| | Sources of information used in the assessment, including reports and spatial data | 2 Information Sources | Yes |
| | Identification of assessment method applied (i.e. linear or site-based) | 1.3 Biodiversity Offsets Scheme entry | Yes |
| | Map of the subject land boundary showing the final proposal footprint, including the construction footprint for any clearing associated with temporary/ancillary construction facilities and infrastructure (if BDAR) | Figure 1.1 Site Map | Yes |
| Section 3.1 Identify landscape features<br><br>Section 3.2 Assess native vegetation cover<br><br>Appendix E: Ordering of waterways and riparian buffer distances | general description of subject land topographic and hydrological setting, geology and soils | Section 3.2 Site Context | Yes |
| | percent native vegetation cover in the assessment area (as described in BAM Subsection 3.2(4.) | 3.2.2 Native vegetation cover | Yes |
| | IBRA bioregions and subregions (as described in BAM Subsection 3.1.3(2.)) | 3.1.1 IBRA Subregion | Yes |
| | rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3(3–4.) and Appendix E) | Table 3-1 Landscape Assessment | Yes |
| | wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(4.)) | N/A | Yes |
| | connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5–6.)) | Table 3-1 Landscape Assessment | Yes |
| | areas of geological significance and soil hazard features (as described in BAM Subsections 3.1.3(7.) and 3.1.3(10.) | Table 3-2 Geology and soil properties relevant to the subject property | Yes |
| | areas of outstanding biodiversity value occurring on the subject land and assessment area (as described in BAM Subsection 3.1.3(8–9.)) | N/A | Yes |
| | Site Map<br>- boundary of subject land<br>- cadastre of subject land<br>- landscape features identified in BAM Subsection 3.1.3 | Figure 1-1 Site Map | Yes |

| | | | |
|---|---|---|---|
| | - areas of outstanding biodiversity value within the subject land | | |
| | Location Map<br>- digital aerial photography at 1:1,000 scale or finer<br>- boundary of subject land<br>- 1500 m buffer area or 500 m buffer for linear development<br>- landscape features identified in BAM Subsection 3.1.3<br>- additional detail (e.g. local government area boundaries) relevant at this scale<br>- areas of outstanding biodiversity value within the assessment area | Figure 3-1 Map of BDAR Assessment Area | Yes |
| | Landscape features identified in BAM Subsection 3.1.3 and to be shown on the Site Map and/or Location map include:<br>- IBRA bioregions and subregions<br>- rivers, streams and estuaries<br>- wetlands and important wetlands<br>- connectivity of different areas of habitat<br>- areas of geological significance and soil hazard features | Figure 3-1 Map of BDAR Assessment Area | Yes |
| Chapter 4 Assessing native vegetation, threatened ecological communities and vegetation integrity | Patch size (in accordance with BAM Subsection 4.3.2) | 3.2.3 Patch size | Yes |
| | Identification of the dominant PCT on the subject land and extent (ha) with justification of method used (existing information or plot-based survey data) | 4.2 Identification of Plant Community Types | Yes |
| | Identification of any TEC associated with the PCT (BAM Subsection 4.2.2) | 4.3 Identification of Threatened Ecological Communities | Yes |
| | Estimate of percent cleared value of dominant PCT (BAM Subsection 4.2.1(5.) | Table 4-4 PCT description | Yes |
| | Identification of any TEC on site that is not associated with the dominant PCT (Note: This TEC is required to be assessed and offset.) | N/A | Yes |
| | Equivalence with mapping units of previous vegetation maps reviewed as part of the assessment (i.e. equivalent mapping units) | N/A | Yes |
| | Vegetation integrity of the PCT(s) on the subject land as individual vegetation zones | 4.4 Assessment of Vegetation Integrity | Yes |
| | Justification for how this was determined (i.e. qualitatively by observing values for the condition attributes set out in Table 2 of the BAM or quantitatively by collecting field data for the condition attributes at a plot in accordance with BAM Subsection 4.3.4) | 4.4 Assessment of Vegetation Integrity. Raw field data sheets are provided in Appendix A. | Yes |

| | | | |
|---|---|---|---|
| | Use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsections 4.3.3(5.)) | 4.4 Assessment of Vegetation Integrity<br><br>8 Assessing the Impacts of the Proposal on Biodiversity Values. | Yes |
| | Where use of more appropriate local benchmark data is proposed (as described in BAM Subsection 1.4.2, BAM Subsection 4.3.3(5.) and BAM Appendix A):<br>- identify the PCT or vegetation class for which local benchmark data will be applied<br>- identify published sources of local benchmark data (if benchmarks obtained from published sources)<br>- describe methods of local benchmark data collection (if reference plots used to determine local benchmark data)<br>- provide justification for use of local data rather than BioNet Vegetation Classification benchmark values | N/A | Yes |
| | Map of native vegetation extent for the subject land (as described in BAM Section 3.1) | Figure 4-2 Native Vegetation Cover within Subject property | Yes |
| | Map of PCT/vegetation zones within the subject land (as described in BAM Section 4.2(1.) | Figure 4-1 Plant community type mapping | Yes |
| | Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCT boundaries | Figure 5-1 BAM Plot and Floristic Survey Tracks | Yes |
| | Map of TEC distribution on the subject land | Figure 4-2 Native Vegetation Cover within Subject property | Yes |
| | Map of patch size of native vegetation (as described in BAM Subsection 4.3.2) | Figure 3-1 Map of BDAR Assessment Area | Yes |
| | Table of current vegetation integrity scores for vegetation zones within the site including:<br>- composition condition score<br>- structure condition score<br>- function condition score | Table 4-7 Vegetation Integrity Score | Yes |
| | Report from BAM-C (Small area module) including vegetation integrity scores (BAM Section 4.4) | Appendix B | Yes |
| Chapter 5 Assessing the habitat suitability for threatened species<br><br>Section 9.1 Assessment for serious and irreversible impacts on biodiversity values | Describe the review of existing information and any field survey undertaken to assess habitat constraints and microhabitats for threatened species within the subject land | 5.1 Identification of Threatened Species for Assessment | Yes |
| | Determination of the suite of threatened species likely to occur on or use the proposed site according to Steps 1 and 2 in BAM Section 5.2 including species to be assessed for ecosystem credits and the list of species to be assessed for species credits | 5.1.1 Ecosystem credit species<br>5.1.2 Species credit species<br>5.1.3 Dual credit species<br>5.2.1 Predicted ecosystem credit species<br>5.2.2 Candidate species credit species | Yes |

| | | | |
|---|---|---|---|
| | List of ecosystem credit species derived from the TBDC (as described in BAM Subsections 5.2.1 and 5.2.2) with justification for the exclusion of any ecosystem credit species based on habitat constraints (as described in BAM Subsection 5.2.2) | 5.2.1 Predicted ecosystem credit species | Yes |
| | Identification of candidate species credit species that are at risk of an SAII and therefore, must be further assessed (BAM Section 9.1)<br>Note: Candidate species credit species that are not at risk of an SAII and not incidentally recorded on the subject land do not require further assessment | 5.2.2 Candidate species credit species | Yes |
| | For candidate species credit species that are at risk of an SAII, a description of the species, any habitat constraints or microhabitats associated with the species on the subject land and information used to create the species polygon/s in accordance with Steps 3 to 5 of BAM Section 5.2 including:<br>- justification for determining that a candidate species credit species at risk of an SAII is unlikely to have suitable habitat on the subject land or specific vegetation zone (based on a field assessment of the subject land and published literature or an expert report prepared in accordance with Box 3 of the BAM)<br>- determination of the presence of remaining candidate species credit species at risk of an SAII (by assuming presence, conducting a threatened species survey or an expert report).<br>Note: If the subject land is mapped on an important habitat map for a species, or for a component of its habitat, the subject land is considered to have suitable habitat for the species to be present.<br>- species polygons identifying the location and area of suitable habitat for each candidate threatened species at risk of an SAII that is recorded on the subject land and is measured by area, OR<br>- species polygons identifying the area of suitable habitat and targeted surveys identifying the count and location of individuals on the subject land for each candidate threatened flora species at risk of an SAII that is recorded on the | Section 10 Applying the no net loss standard | Yes |

| | | | |
|---|---|---|---|
| | subject land and is measured by count<br>- species polygons for each threatened species identified on the subject land that is not at risk of an SAII (i.e. incidentally observed during site visit) | | |
| | Determination of habitat condition within species polygon/s for each threatened species (measured by area) at risk of an SAII or incidentally observed during the site visit (Step 6 of BAM Section 5.2) | Section 10 Applying the no net loss standard | Yes |
| | For flora species credit species at risk of an SAII or incidentally observed during site visit, provide a count, or an estimation, of the number of individual plants present on the subject land (as described in BAM Subsection 5.2.5(4.)) | Section 10 Applying the no net loss standard | Yes |
| | Table showing ecosystem credit species in accordance with BAM Subsection 5.1.1, and:<br>- identifying any ecosystem credit species removed from the list of species on the basis of further assessment in accordance with BAM Subsections 5.2.2 and 5.2.3<br>- identifying the sensitivity to gain class of each species (BAM Section 5.4) | Table 5-1 Predicted ecosystem credit species | Yes |
| | Table detailing species credit species within the subject land at risk of an SAII (BAM Section 9.1) or incidentally observed during the site visit including any associated habitat feature/components and its abundance (flora)/extent of habitat (flora and fauna) and biodiversity risk weighting (BAM Sections 5.2–5.4) | Table 5-2 Candidate species credit species | Yes |
| | Map of species credit species records within the subject land and species polygons for flora and fauna species at risk of an SAII or incidentally observed during the site visit (as described in BAM Subsection 5.2.5(1–7.)) | Figure 5-2 Species Polygon – Large-eared Pied Bat | Yes |
| Chapter 6 Identifying prescribed additional biodiversity impacts | Identify potential prescribed biodiversity impacts on threatened entities, including:<br>- karst, caves, crevices, cliffs, rocks and other geological features of significance (as described in BAM Subsection 6.1.1)<br>- occurrences of human-made structures and non-native vegetation (as described in BAM Subsection 6.1.2)<br>- corridors or other areas of connectivity linking habitat for threatened entities (as described in BAM Subsection 6.1.3) | Section 6 - Identifying Prescribed Impacts | Yes |

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| | - water bodies or any hydrological processes that sustain threatened entities (as described in BAM Subsection 6.1.4)<br>- protected animals that may use the proposed wind farm development site as a flyway or migration route (as described in BAM Subsection 6.1.5) where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community (as described in BAM Subsection 6.1.6) | | |
| | Identify a list of threatened entities that may be dependent upon or may use habitat features associated with any of the prescribed impacts | N/A | Yes |
| | Describe the importance of habitat features to the species including, where relevant, impacts on life-cycle or movement patterns (e.g. Subsection 6.1.3) | N/A | Yes |
| | Where the proposed development is for a wind farm:<br>- identify a candidate list of protected animals that may use the development site as a flyway or migration route, including: resident threatened aerial species, resident raptor species and nomadic and migratory species that are likely to fly over the proposal area (as described in BAM Subsection 6.1.5)<br>- provide details of targeted survey for candidate species of wind farm developments undertaken in accordance with BAM Subsection 6.1.5(2–3.)<br>- predict the habitual flight paths for nomadic and migratory species likely to fly over the subject land and map the likely habitat for resident threatened aerial and raptor species (BAM Subsection 6.1.5(4.)) | N/A | Yes |
| | Map showing location of any prescribed impact features (i.e. karst, caves, crevices, cliffs, rocks, human-made structures, etc.) | N/A | Yes |
| | Maps of habitual flight paths for nomadic and migratory species likely to fly over the site and maps of likely habitat for threatened aerial species resident on the site (for wind farm developments only) | N/A | Yes |

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| Chapter 7 Avoiding or minimising impacts on biodiversity values | Demonstration of efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the proposal location in accordance with Chapter 7, including an analysis of alternative:<br>- modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology<br>- alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location<br>- alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site | 7.1.1 Project location | Yes |
| | Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design (as described in BAM Subsections 7.1.2 and 7.2.2 | 7.1.2 Project design | Yes |
| | Identification of any other site constraints that the proponent has considered in determining the location and design of the proposal (as described in BAM Subsection 7.2.1(3.) | N/A | Yes |
| | Table of measures to be implemented before, during and after construction to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility | Table 7-1 mitigation and management measures | Yes |
| | Map of final proposal footprint, including construction and operation | Figure 1-1 Site Map<br>Figure 1-2 Biodiversity Values Map | Yes |
| | Maps demonstrating indirect impact zones where applicable | N/A | Yes |
| Chapter 8 Assessing the impacts of the proposal on biodiversity values<br><br>Section 8.1 Assess direct impacts on native vegetation, threatened ecological communities, threatened species and their habitat<br><br>Section 8.2 Assess indirect impacts on native vegetation, threatened ecological communities, threatened species and their habitat | Determine the impacts on native vegetation and threatened species habitat, including:<br>- description of direct impacts of clearing of native vegetation, threatened ecological communities and threatened species habitat (as described in BAM Sections 8.1)<br>- description of the nature, extent, frequency, duration and timing of indirect impacts of the proposal (as described in BAM Subsection 8.2) | 8.1 Impacts on Vegetation Integrity<br><br>Table 8-3 Summary of Residual Indirect Impacts | Yes |
| | Assessment of prescribed biodiversity impacts (as described in BAM Section 8.3) including: | N/A | Yes |

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| | assessment of the nature, extent and duration of impacts on the habitat of threatened species or ecological communities associated with:<br>- karst, caves, crevices, cliffs, rocks and other features of geological significance<br>- human-made structures<br>- non-native vegetation<br>- connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range<br>- movement of threatened species that maintains their life cycle<br>- water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities | | |
| | assessment of the impacts of wind turbine strikes on protected animals | N/A | Yes |
| | assessment of the impacts of vehicle strikes on threatened species of animals or on animals that are part of a TEC | N/A | Yes |
| | Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts | Table 8-1 Impacts that require an offset – ecosystem credits | Yes |
| Chapter 8 Assessing the impacts of the proposal on biodiversity values<br><br>Section 8.4 Mitigate and manage impacts on biodiversity values<br><br>Section 8.5 Adaptive management for uncertain biodiversity impacts | Identification of measures to mitigate or manage impacts in accordance with the recommendations in BAM Subsections 8.4.1 and 8.4.2, including (as described in BAM Subsection 8.4.1(2.):<br>- techniques, timing, frequency and responsibility<br>- identify measures for which there is risk of failure<br>- evaluate the risk and consequence of any residual impacts<br>- document any adaptive management strategy proposed | Table 7-1 Mitigation and management measures | Yes |
| | Identification of measures for mitigating impacts related to:<br>- displacement of resident fauna (as described in BAM Subsection 8.4.1)<br>- indirect impacts on native vegetation and habitat (as described in BAM Subsection 8.4.1(3.)) | Table 7-1 Mitigation and management measures | Yes |

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| | - mitigating prescribed biodiversity impacts (as described in BAM Subsection 8.4.2) | | |
| | Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM Section 8.5) | 7.3 Adaptive management strategy | Yes |
| | Table of measures to be implemented before, during and after construction to mitigate and manage impacts of the proposal, including action, outcome, timing and responsibility | Table 7-1 Mitigation and management measures | Yes |
| Chapter 9 Thresholds for assessing and offsetting the impacts of development | Information from the TBDC and/or other sources to report on the current status of threatened species, threatened populations at risk of an SAII and TEC/s for the proposal | Table 10-1 Impacts that require an offset – ecosystem credits | Yes |
| | Report on impacts of the proposal on TEC/s in accordance with BAM Subsection 9.2.1 | Section 9 Thresholds for assessing and offsetting the impacts of the proposal | Yes |
| | Report on impacts of the proposal on threatened species and/or threatened populations at risk of an SAII in accordance with BAM Section 9.1 | Section 10 Applying the no net loss standard | Yes |
| | Identification of impacts requiring offset in accordance with BAM Section 9.2 | Table 8-1 Impacts that require an offset – ecosystem credits<br>Table 10- 4 Impacts that require an offset – species credits | Yes |
| | Identification of impacts not requiring offset in accordance with BAM Subsection 9.2.1(3.) | Section 8 Assessing the impact of the proposal on biodiversity values | Yes |
| | Identification of areas not requiring assessment in accordance with BAM Section 9.3 | Figure 9-1 Impact requiring offset and areas not requiring assessment | Yes |
| | Map showing the extent of TECs at risk of an SAII within the subject land | Figure 4-2 Native Vegetation Cover within Subject Property | Yes |
| | Map showing the location of threatened species at risk of an SAII within the subject land | Figure 5-2 Species Polygon – Large-eared Pied Bat | Yes |
| | Map showing location of:<br>- impacts requiring offset<br>- impacts not requiring offset<br>- areas not requiring assessment | Figure 9-1 Impact requiring offset and areas not requiring assessment | Yes |
| Chapter 10 Applying the no net loss standard | Description of the impact on PCTs/TECs | Section 8 Assessing the impact of the proposal on biodiversity values | Yes |
| | Description of the impact on threatened species at risk of an SAII or incidentally observed via site visit | Section 10 Applying the no net loss standard | Yes |
| | Number of ecosystem credits required for impacts on biodiversity values according to BAM Subsection 9 | Table 10-3 Impacts that require an offset – ecosystem credits | Yes |
| | Number of species credits required for impacts on biodiversity values according to BAM Subsection 10.1.3, including any species credit species that has been incidentally observed on the subject land<br>Note: Species credits for any species at risk of an SAII are calculated in the event that the decision-maker forms the | Table 10-4 Impacts that require an offset – species credits | Yes |

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| | opinion that the proposed impact is unlikely to be serious and irreversible and therefore can be offset. | | |
| | Identification of credit class for ecosystem credits and species credits according to BAM Section 10.2 (this can be generated from BAM-C) | Table 10-3 and Table 10-4 | Yes |
| | Table showing biodiversity risk weightings | Table 10-3 and Table 10-4 | Yes |
| | Table of BC Act listing status for PCTs and threatened species requiring offset | Table 10-3 and Table 10-4 | Yes |
| | Table of PCTs requiring offset and number of ecosystem credits required (Subsection 10.2.1) | Table 10-3 Impacts that require an offset – ecosystem credits | Yes |
| | Table of species at risk of an SAII or incidentally observed on site assessed for species credits and the number of credits required | Table 10-4 Impacts that require an offset – species credits | Yes |
| | BAM-C credit report | Appendix B | Yes |