



Department of Planning and Environment

# Biodiversity Assessment Report For a Planning Proposal at

LOT 3 DP 243518, 54 FERODALE RD

LOT 4 DP 243518, 52 FERODALE RD

LOT 5 DP 243518, 50 FERODALE RD

LOT 6 DP 243518, 48 FERODALE RD

LOT 7 DP 243518, 46 FERODALE RD

LOT 8 DP 243518, 754 MEDOWIE RD

## MEDOWIE

Prepared by Sarah Jones, BAAS18020







<b>Site Details:</b>	Various Lots at Ferodale Road, Medowie 2318			
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## Summary

### Development Description

Firebird ecoSultants Pty Ltd has been engaged by VC Management to provide an ecological assessment for a planning proposal regarding the following lots in Medowie, within the Port Stephens Local Government Area (LGA) (which are hereafter referred to collectively as 'the site'):

- Lot 3 DP 243518, 54 Ferodale Rd
- Lot 4 DP 243518, 52 Ferodale Rd
- Lot 5 DP 243518, 50 Ferodale Rd
- Lot 6 DP 243518, 48 Ferodale Rd
- Lot 7 DP 243518, 46 Ferodale Rd
- Lot 8 DP 243518, 754 Medowie Rd

The planning proposal seeks to amend the Port Stephens Local Environmental Plan (LEP) 2013 to rezone the site from RU2 Rural Landscape to R3 medium density residential and E1 local centre. The Lot 3 to Lot 8 DP 243518 is Development site. The site has been mapped in the Medowie Planning Strategy (PSC, 2016) as an area designated for residential development. Refer to Figure E-1.1 above.

The site is ~7.7 ha in size and is located in central Medowie. The site is currently zoned as RU2 Rural Landscape. The site consists of six lots. Each of these lots contains an existing dwelling and some cleared areas interspersed with native vegetation. The site is surrounded by both low density and rural residential areas and is also connected to large areas of native vegetation. The site falls within Hunter Water's Grahamstown Dam Drinking Water Special Area. Wetlands have been mapped in part of the site (see Figure E-1.2). A Flood Planning Area has been mapped through the site (see Figure E-1.3). An ephemeral watercourse runs through the site, through this Flood Planning Area.

The site is highly disturbed and predominantly consists of managed exotic grassland with scattered trees. The site lacks a mid-stratum due to the managed nature of the site. The sites ground cover consists of predominantly exotic ground cover species due to the constant management/ slashing of the site for both residential and bushfire purposes.

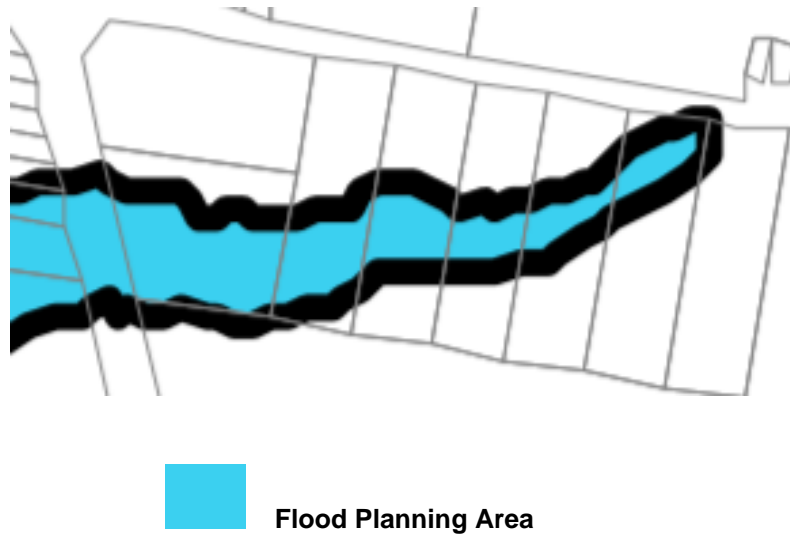
The site contains a mix of vegetation types. The south-western portion of the site most closely aligns with PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest whereas; the rest of the vegetation on the site in northern, eastern and central portion is classified as PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub. However, these PCT's are in very poor condition due to past and existing land use including the management of vegetation for bushfire purposes. Most of the area within the PCT 3436 has been categorised as excluded land under Local Land Services Act.

**Figure E-1: Medowie Strategy Map (2016) and Port Stephens LEP 2013**



**Fig E-1.1- Medowie Strategy Map (PSC, 2016)**

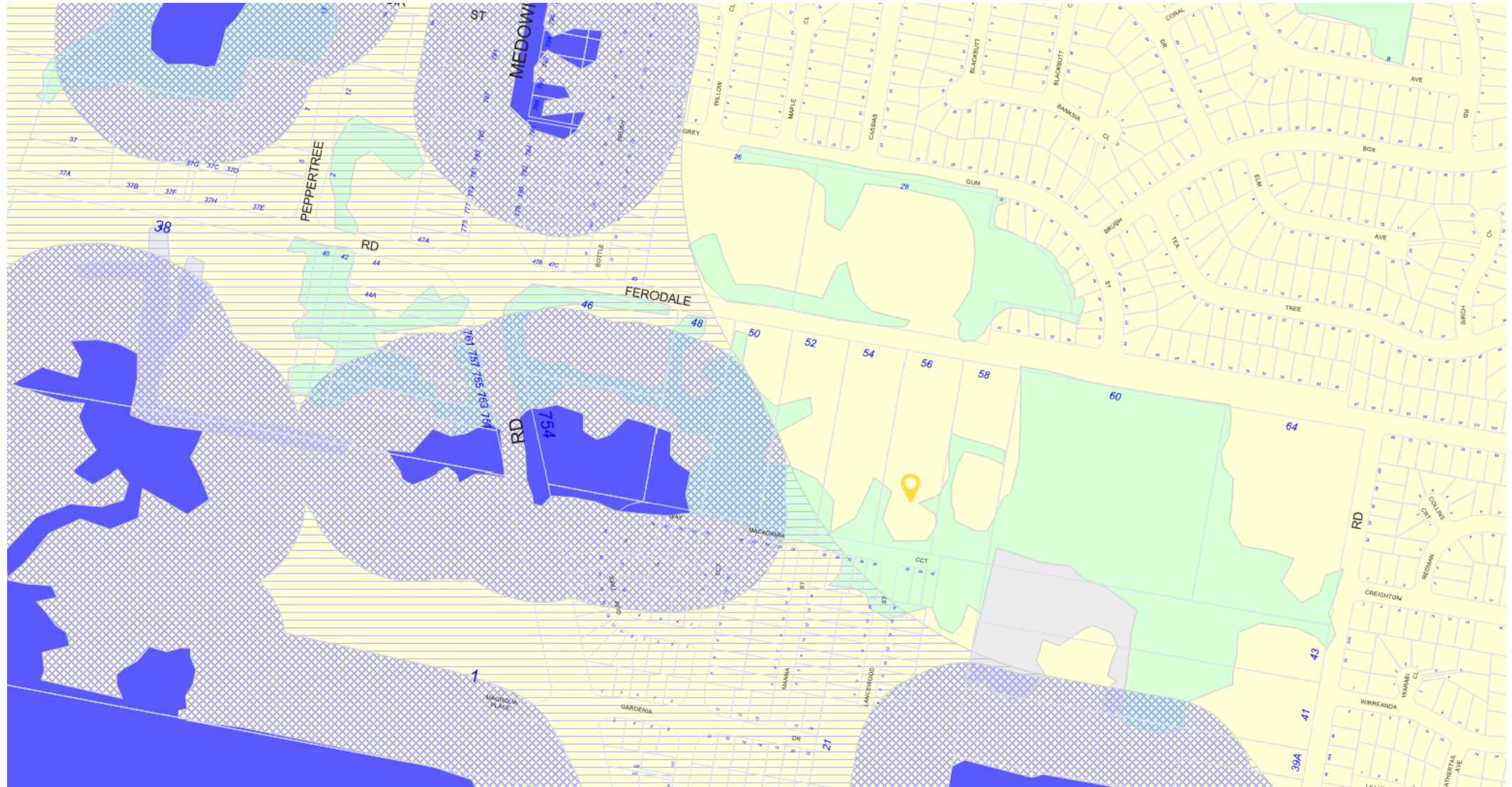
**Fig E-1.2- Wetlands (Port Stephens LEP 2013)**



**Fig E-1.3- Flood Planning (Port Stephens LEP 2013)**



Figure E-2: Mapping of Site under Koala Habitat Planning Map (2023)





One drainage canal occurs on site, which drains from the North-Eastern corner of the site to the South-Western corner of the site occurring within each lot located within the site.

The south-western corner of the site contains mapped biodiversity values; however, it does not contain areas of important habitat as mapped within the Biodiversity Assessment Method (BAM).

- The proposed operational footprint would include the same areas as the construction footprint indicated in Figure 1; that being the developed areas for the residential lots, site access and the APZs.

Refer to Appendix A for Site Plans.

### Habitat Assessment

The study area provides woodland and semi-arid grassland vegetation having scattered mature trees across the site whilst lacking a developed mid stratum and dominated by exotic species in the ground layer

The site contains two (2) primary Plant Community Types (PCT's) including:

- **PCT 3995** - Hunter Coast Paperbark-Swamp Mahogany Forest
- **PCT 3436** - Hunter Coast Sandy Creekflat Low Paperbark Scrub.

**PCT 3995** - Hunter Coast Paperbark-Swamp Mahogany Forest is associated with the threatened ecological communities. These being the BC Act listed Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions and EPBC Act listed Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland.

The following describes the habitat attributes of the study area;

- No *Allocasuarinas* or *Casuarinas* occur within the study area which are a food source for species such as *Calyptorhynchus lathami* (Glossy Black-Cockatoo) – as such, the site provides limited habitat for these species.
- No caves, tunnels, mines or culverts occur within the study area or the site
- No stick nests occur within the study area or the site at the time of surveys
- No flying fox camps occur within or near the site.

### Measures to avoid and minimise

The more intact vegetation within the southwestern section of the site will be retained for conservation purposes as this portion of the site has been mapped on the Biodiversity Values Map and is a TEC.





Avoidance and minimisation actions are outlined in Section 7.

### **Biodiversity Offsets Scheme (BOS) – Threshold Assessment**

Based on the supplied plans provided by VC Management, any future development based on the Concept Plans would enter into the Biodiversity Offset Scheme due to:

- The site containing mapped biodiversity values.
- The proposed development will impact 1.5 ha which exceeds the area clearing threshold of the site being 0.25ha.

### **Threatened Species**

Threatened species that require assessment are initially identified based upon the following criteria:

- the distribution of the species includes the IBRA subregion in which the subject land occurs
- the study area is within any geographic constraints of the distribution of the species within the IBRA subregion.
- the species is associated with any of the PCTs identified within the study area
- the native vegetation cover within an assessment area including a 1500m buffer around the study area is equal to or greater than the minimum required for the species.
- the patch size that each vegetation zone is part of is equal to or greater than the minimum required for that species.
- the species is identified as an ecosystem or species credit species in the Threatened Biodiversity Data Collection.

The process for identifying threatened species which meet the above criteria is completed through the BAM Calculator. The PCTs identified within the study area, patch sizes and native vegetation cover, as outlined in Section 3, were entered into the BAM Calculator and a preliminary list of threatened species were identified.

### **Impacts, including direct, indirect, prescribed, and serious and irreversible impacts (SAII)**

The site contains two (2) primary Plant Community Types (PCT's) including:

- **PCT 3995** - Hunter Coast Paperbark-Swamp Mahogany Forest
- **PCT 3436** - Hunter Coast Sandy Creekflat Low Paperbark Scrub.

**PCT 3995** - Hunter Coast Paperbark-Swamp Mahogany Forest is associated with the threatened ecological communities. These being the BC Act listed Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions and EPBC Act listed Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland.

The majority of the direct impacts from this proposal will predominantly impact PCT 3436, as vegetation clearing is to be conducted mostly within this PCT's on site, however it is



noted that said PCT's have been assessed in poor condition as they contain scattered trees with no mid stratum and a ground cover that is dominated by exotic ground cover species. PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest will be impacted by edge effects as this PCT is to be retained as part of development process. Edge effects are already impacting this PCT due to existing land use.

### **Serious and Irreversible Impacts**

The OEH (2017) *Guidance to Assist a Decision-maker to Determine a Serious and Irreversible Impact* lists the ecological communities and species that are 'potential serious and irreversible impact (SAIL) entities. There are no series and irreversible impact (SAIL) entities relevant to this assessment

### **Mitigation measures**

Mitigation measures are proposed to minimise potential impacts to the site's biodiversity values; these are summarised in Table 3-1. These include measures to be implemented in the pre-construction, construction and post-construction phases. It is considered that these measures would serve to minimise any potential direct or indirect impacts.



## Final Recommendations

**Table E1 Impacts that require an offset – ecosystem credits**

Vegetation zone	PCT	TEC/EC	Impact area (ha)	Number of ecosystem credits required
1	PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.	Not a TEC	1.35ha	21
2	PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest	Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions	0.16ha	3

**Table E2 Impacts that require an offset – species credits**

Common name	Scientific name	Loss of habitat (ha) or individuals	Number of species credits required
Koala	<i>Phascolarctos cinereus</i>	1.51	27





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## Shortened forms

APZ	Asset Protection Zone
BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BC Act	<i>Biodiversity Conservation Act 2016 (NSW)</i>
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
EC	Ecological Community listed under the EPBC Act
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)</i>
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EEC	Endangered Ecological Community
HTW	High Threat Weed
IBRA	Interim Biogeographic Regionalisation for Australia
LLS Act	<i>Local Land Services Act 2013 (NSW)</i>
MNES	Matters of National Environmental Significance
NPW Act	<i>National Parks and Wildlife Act 1974 (NSW)</i>
NSW	New South Wales
PCT	Plant Community Type
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	<i>State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 (NSW)</i>



## Declarations

### i. 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: 28/05/2025

BAM Assessor Accreditation no: BAAS18020

This BDAR has been prepared to meet the requirements of BAM 2020. Appendix A provides an assessment of compliance with the minimum information requirements outlined in BAM Appendix K.

### ii. Details and experience of author/s and contributors

#### Authors and contributors

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Kurtis Mumford	N/A	Ecologist/ Bushfire Planner	Author/Fieldwork	B.Envs.Sc. (Environmental Science)
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### iii. 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: 28/05/2025

BAM Assessor Accreditation no: BAAS 18020



# Stage 1: Biodiversity assessment

## 1. Introduction

Firebird ecoSultants Pty Ltd has been engaged by VC Management, to provide a Biodiversity Assessment Report (BAR) for a future residential subdivision ('the proposal') and associated infrastructure at 46 to 54 Ferodale Road, Medowie 2318 (Lot's 3-8 DP243518) if the land is rezoned. The planning proposal seeks to amend the Port Stephens Local Environmental Plan (LEP) 2013 to rezone the site from RU2 Rural Landscape to R3 medium density residential and E1 local centre.

See Figure 1 for Site Map and Figure 2 for the Site Location. This BDAR has been prepared to satisfy the requirements of the Biodiversity Conservation Act 2016 (BC Act). This assessment has been undertaken in accordance with the Biodiversity Assessment Method 2020.

### 1.1 Proposed development

#### 1.1.1 Development overview

The planning proposal seeks to amend the Port Stephens LEP 2013 to rezone the site from RU2 Rural Landscape to R3 medium density residential and E1 local centre. The Lot 3 to Lot 8 DP 243518 is Development site. This would ultimately pave the way for residential and commercial development within the site. The site has been mapped in the Medowie Planning Strategy (PSC, 2016) as an area designated for residential development. Refer to Figure E-1.1 above.

If the rezoning of the land occurs then a concept plan has been prepared that provided development space for the construction of 108 dwellings as well as associated infrastructure such as site access, services, and asset protection zones (APZ).

The development footprint spans the majority of the site, with a wildlife corridor that crosses the development and links habitat from the south-west portion to the eastern boundary of the development. The wildlife corridor to be maintained at an APZ standard mitigating the risk of bushfire hazard. The area of retention totals ~0.77ha which include the vegetation in south-west portion (754 Medowie Road).

The proposed development footprint is indicated in Figure 1. It totals an area of ~7.7ha of land/vegetation and encompasses the following areas:

- The designated area for residential lots, building envelopes, proposed commercial development and site access (7.7 ha)
- The proposed operational footprint would include the same areas as the construction footprint indicated in Figure 1; that being the developed areas for the residential lots and site access and the APZs.

Refer to Figure 1 for Site Map and Figure 2 for Location Map.



### 1.1.2 Location

The site is ~7.7 ha in size and is located in central Medowie. The site is zoned as RU2 Rural Landscape. The site is highly disturbed and predominantly consists of managed exotic grassland with scattered trees. The site lacks a mid-stratum due to the managed nature of the site. The sites ground cover consists of predominantly exotic ground cover species due to the constant management/ slashing of the site for existing land use and for bushfire management.

The site contains a mix of vegetation types. The south-western portion of the site most closely aligns with PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest whereas; the rest of the vegetation on the site in northern, eastern and central portion is classified as PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub. However, these PCT's are in very poor condition due to past and existing land use including the management of vegetation for bushfire purposes. Most of the area within the PCT 3436 has been categorised as excluded land under Local Land Services Act.

One drainage canal being formed by urban runoff occurs on site, which drains from the North-Eastern corner of the site to the South-Western corner of the site occurring within each lot located within the site.

The south-western corner of the site contains mapped biodiversity values; however, it does not contain areas of important habitat as mapped within the Biodiversity Assessment Method (BAM). The majority of this mapped area has been avoided for and will be retained.

Refer to Figure 1 for Site Map and Figure 2 for Location Map.

### 1.1.3 Proposed development and the subject land

The planning proposal seeks to amend the Port Stephens LEP 2013 to rezone the site from RU2 Rural Landscape to R3 medium density residential and E1 local centre. This would ultimately pave the way for residential development in the site. The Lot 3 to Lot 8 DP 243518 is Development site. The site has been mapped in the Medowie Planning Strategy (PSC, 2016) as an area designated for residential development. Refer to Figure E-1.1 above.

The study area is the area of land within the site that has been assessed in this report, which is the area of vegetation within the site that is relevant to this BDAR i.e., the area of vegetation within or potentially impacted by the construction and operational footprint. Land within the site that is not considered to be impacted by the proposal (either directly or indirectly) is considered to be outside the study area. In this case however, the entire site was surveyed.

### 1.1.4 Other documentation

This report has been written in conjunction with the Bushfire Report.

## 1.2 Biodiversity Offsets Scheme entry

The proposed development area is mapped on the Biodiversity Values Map. In addition, the proposed clearing exceeds the minimum clearing threshold of the area which is 2,500m<sup>2</sup>. Therefore, any future residential development will require entry into the Biodiversity Offset Scheme.



### 1.3 Excluded impacts

The vegetation within the south westerns section of the site will be excluded.

Clause 6.8(3) of the BC Act specifies that the BAM is to exclude the assessment of the impacts of any clearing of native vegetation and loss of habitat on category 1-exempt land (as defined in Part 5A of the LLS Act), other than prescribed impacts (as defined in clause 6.1 of the Biodiversity Conservation Regulation 2017 (BC Regulation)). Prescribed impacts must therefore be assessed for category 1-exempt land.

### 1.4 Matters of national environmental significance

A review was conducted using the Commonwealth Department of Environment and Energy (DEE), EPBC Act Protected Matters Search Tool. From this review it was shown that within a 10km buffer of the site 181 Matters of National Environmental Significance were recorded within the 10km buffer zone.

#### 1.4.1 Database Searches

The following database searches were undertaken, in order to compile a list of threatened flora and fauna species predicted to occur in the area:

- Review of threatened fauna and flora records within a 10 km radius of the site, contained in the OEH Atlas of NSW Wildlife (NSW BioNet).
- Review of the MNES records within a 10 km radius of the site, using the Commonwealth Department of Environment and Energy (DEE), EPBC Act Protected Matters Search Tool.

### 1.5 Information sources

Information sources reviewed included, but were not limited to:

- Aerial Photograph Interpretation (API)
- Relevant guidelines, including:
  - OEH *Biodiversity Assessment Method*, 2020
  - NSW *survey guide to Surveying Threatened Plants and their habitats* (DPIE, 2020)
  - 'Species credit' *threatened bats and their habitats: NSW survey guide for the Biodiversity Assessment Method* (OEH, 2018)
  - NSW *Survey Guide for Threatened Frogs: A guide for the survey of frogs and their habitats for the Biodiversity Assessment Method* (DPI&E, 2020)
  - *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (Department of Environment and Conservation (DEC), 2004)
- Environmental / planning reports relevant to the site / area, including: *Port Stephens Local Environmental Plan 2013*
  - *Port Stephens Council Development Control Plan 2014*
  - *Port Stephens LEP 2013*;
  - *Medowie Planning Strategy* (PSC, 2016); and
  - *Port Stephens CKPoM* (PSC, 2002).
  - Online tools and resources, including:
  - BAM Calculator (OEH, 2020)



- BioNet Vegetation Classification (OEH, 2020)
- BioNet Threatened Biodiversity Data Collection (OEH, 2020)
- Directory of Important Wetlands in Australia (Department of Environment and Energy (DEE), 2010)
- NSW Scientific Committee Final Determinations (NSW Scientific Committee various dates)
- Commonwealth Threatened Species Scientific Committee (TSSC) Final Determinations for threatened species (TSSC Various Dates)
- OEH Threatened Species, Populations and Ecological Communities website
- Commonwealth DEE Species, Profile and Threats Database
- PlantNET NSW (Botanic Gardens Trust, 2018).

## **2. Methods**

### **2.1 Site context methods**

#### **2.1.1 Landscape features**

Landscape features of the site have been determined by the following: On-site inspection for occurring landscape features. On-site landscape features found to be occurring on site include One drainage canal occurs on site, this has been created by urban stormwater which drains from the North-Eastern corner of the site to the South-Western corner of the site occurring within each lot located within the site. As well as the Western portion of the site being recorded as Flood prone land. The vegetation to be retained in the south-western portion on lot 8 will provide the corridor for the movement of fauna in along the western portion of the proposal towards the southern areas of intact vegetation towards Richardson Road. The concept plan has also been designed to consider a wildlife corridor for improved wildlife connectivity east and west across the development site and maintaining existing koala feed trees where possible. Moreover, the rest of the site has vegetation in poor condition with few scattered trees and no mid stratum.

- This section details the landscape features occurring on the Subject Land or within the assessment area (i.e., a 1.5km buffer) surrounding the Subject Land.

#### **2.1.2 Native vegetation cover**

The site contains ~3.4 ha of native vegetation. The extent of native vegetation relevant to this BDAR (i.e., the area of native vegetation within or potentially impacted by the construction and operational footprint) is ~1.5ha with 0.86 ha of this to be retained; see Figure 7 for the native vegetation extent within the site.



## **2.2 Native vegetation, threatened ecological communities and vegetation integrity methods**

### **2.2.1 Existing information**

Plant Community Type/s (PCTs) on the site were identified according to the NSW PCT classification described in the BioNet Vegetation Classification.

### **2.2.2 Mapping native vegetation extent**

A patch is defined in the BAM as an area of intact native vegetation that occurs on the subject land. The patch may extend onto adjoining land beyond the footprint of the subject land, and for woody ecosystems, includes native vegetation separated by  $\leq 100$  metres from the next area of intact native vegetation. For non-woody vegetation, this gap is reduced to  $\leq 30$  metres. Intact vegetation must contain all structural layers (strata) characteristic of the PCT. Plot data should not be solely relied upon when determining whether vegetation is intact. If all structural growth form groups expected to exist within the community are present within the vegetation zone and/or adjoining off-site native vegetation, then the vegetation meets the definition of intact. For example, if all structural growth form groups except the shrub layer are present in the plots but species that belong to the shrub growth form group occur elsewhere within the vegetation zone, then the shrub growth form group is present, and the vegetation is intact.

### **2.2.3 Plot-based vegetation survey**

Plot-based floristic vegetation surveys were undertaken within each PCT area in accordance with s.5.2.1.9 of the BAM on 21<sup>st</sup> November 2022 and 29<sup>th</sup> April 2025. The 50 m x 20 m plots were sampled for the presence of flora species; see Figure 6 for the plot locations undertaken within the impacted PCTs (the study area) and see Appendix I for photos. The plots were carefully examined to identify all flora species present. This search continued until it was confident that all flora species within the plots were detected. Data collected for each species included:

- Stratum and layers in which each species occurs;
- Growth form for each species;
- Scientific and common name for each species;
- Percentage foliage cover (PFC) across the plot, of each species rooted in or overhanging the plot; and
- Abundance rating for each species.

Plant Community Type/s (PCTs) on the site were identified according to the NSW PCT classification described in the BioNet Vegetation Classification. Two (2) native PCTs have been identified within the site; these PCTs are described below. See Figure 6 for the plot locations undertaken within the impacted PCTs (the study area) and see Appendix I for photos.

10 (1m x 1m) Grassland quadrats were also undertaken on the 20<sup>th</sup> July 2023 to record the extent of native/exotic ground cover found within the site.

### **2.2.4 Vegetation integrity survey**

For the purposes of the BAM, a vegetation zone is an area of native vegetation on the site that is the same PCT and has a similar broad condition state. The site's impacted PCTs have been divided into several vegetation zones (as detailed in Table 2-4) (see Appendix I





for photos). A patch size area has been assigned to each vegetation zone, as a class (as detailed in Table 4-3). See Appendix I for photos of each vegetation zone.

The site's impacted PCTs have been categorised into vegetation zones (as detailed in Table 4-3) (see Appendix I for photos). A patch size area has been assigned to the vegetation zone, as a class (as detailed in Table 4-3).

### *Vegetation Integrity Scores*

Each vegetation zone identified on the site has been surveyed to obtain a quantitative measure for each zone, of the composition, structure and function attributes listed in Table 3 of the BAM. These attributes are listed below:

- Growth form groups used to assess composition and structure:
  - Tree
  - Shrub
  - Grass and grass like
  - Forb
  - Fern
  - Other
- Attributes used to assess function:
  - Number of large trees
  - Tree regeneration
  - Tree stem size class
  - Total length of fallen logs
  - Litter cover
  - High threat exotic vegetation cover
  - Hollow-bearing trees

Plot-based surveys were conducted, in accordance with s.5.3.4 of the BAM on 21<sup>st</sup> November 2022 by one (1) ecologist and 29<sup>th</sup> April 2025 by two (2) ecologists. Survey plots were established around a central 50m transect and included:

- One 400 m<sup>2</sup> (20 m x 20 m) plot to assess the composition and structure attributes listed above.
- One 1000 m<sup>2</sup> (20 m x 50 m) plot to assess the function attributes: number of large trees, stem size class, tree regeneration and length of logs.
- Five 1 m<sup>2</sup> sub-plots to assess average litter cover (and other optional groundcover components).

As the site has been highly modified and now contains a mixture of exotic and native groundcovers Appendix A – Method for calculating native vegetation extent in grassland areas that contain a mix of native and exotic species in disturbed plant community types of the document Reviewing Biodiversity Values Map and Threshold Tool area clearing threshold results (DP&E, 2023) has been used.

In accordance with Appendix A – Method for calculating native vegetation extent in grassland areas that contain a mix of native and exotic species in disturbed plant community types of the document Reviewing Biodiversity Values Map and Threshold Tool area clearing threshold results (DP&E, 2023) the field assessment has shown that less than 15% of the ground cover within the sites grassy is native therefore this area is assessed as non-native vegetation and is not included in Native Vegetation Extent (NVE).

As the vegetation clearing is > than 0.25ha and the area of native clearing is approximately 1.51ha, a BDAR would be required for any future subdivision as a result of the rezoning. The



area of native vegetation includes all native canopy cover including the drip line assessment in accordance with Appendix A – Method for calculating native vegetation extent in grassland areas that contain a mix of native and exotic species in disturbed plant community types of the document Reviewing Biodiversity Values Map and Threshold Tool area clearing threshold results (DP&E, 2023) has determined that under 15% of ground cover species are native. Ten (1m x 1m) Grassland quadrats were undertaken on the 20<sup>th</sup> July 2023 to record the extent of native/exotic ground cover found within the site. The lot size associated with the Lots (Lot 3 DP 243518 Lot 4 DP 243518, Lot 5 DP 243518, Lot 6 DP 243518, Lot 7 DP 243518, Lot 8 DP 243518), have a maximum clearing limit of 0.25 ha. Therefore, the proposal does meet the clearing threshold and the criteria for entry into the BOS is triggered.

- The subject land is not identified on the BVM as containing threatened species or communities with potential for SAIL.
- As per table 12 of BAM (2020) the maximum area clearing limit of native vegetation associated with the minimum lot size under the small area development module is ≤1 ha.

**Table 1-1: Native grassland assessment**

Plot (1mx1m)	Native grassland (%)	Exotic grassland (%)
1	1.1	98.9
2	1.8	98.2
3	58.1	41.9
4	0	100
5	1	99
6	0	100
7	0	100
8	0	100
9	0.97	99.03
10	0	100
Total	1.12	99.88
Average	0.112	99.888

See previous Figure 6 for plot locations. Vegetation survey data is provided in Appendix E.

## 2.3 Threatened flora survey methods

### 2.3.1 Review of existing information

Threatened species that require assessment are initially identified based upon the following criteria:





- the distribution of the species includes the IBRA subregion in which the subject land occurs
- the study area is within any geographic constraints of the distribution of the species within the IBRA subregion.
- the species is associated with any of the PCTs identified within the study area
- the native vegetation cover within an assessment area including a 1500m buffer around the study area is equal to or greater than the minimum required for the species.
- the patch size that each vegetation zone is part of is equal to or greater than the minimum required for that species.
- the species is identified as an ecosystem or species credit species in the Threatened Biodiversity Data Collection.

The process for identifying threatened species which meet the above criteria is completed through the BAM Calculator. The PCTs identified within the study area, patch sizes and native vegetation cover, as outlined in Section 3, were entered into the BAM Calculator and a preliminary list of threatened species were identified.

### 2.3.2 Habitat constraints assessment

There are no habitat constraints listed for the *Angophora inopina* (Charmhaven Apple), *Callistemon linearifolius* (Netted Bottle Brush), *Eucalyptus parramattensis* subsp. *decadens*, *Grevillea parviflora* subsp. *parviflora* (Small-flower Grevillea), *Rhodamnia rubescens* (Scrub Turpentine), *Rhodomyrtus psidioides* (Native Guava) and *Syzygium paniculatum* Magenta Lilly Pilly. As such these species have been included in the further assessment.

There are no habitat constraints listed for *Asperula asthenes* (Trailing Woodruff), *Pterostylis chaetophora* and *Tetralthea juncea* (Black-eyed Susan), however the site's habitat is degraded to a level that it is unlikely to support these species. As such these species has been excluded from the further assessment.

The habitat constraints listed for *Diuris parecox* (Rough Doubletail) include geographic limitations of areas within the Newcastle LGA, as the site is not found within this LGA, this species has not been listed as a species for further assessment.

### 2.3.3 Field surveys

Targeted species surveys have been undertaken for some of the candidate species credit species in accordance with section 5.3 of the BAM.

The following Table 2-1 identifies whether each of the confirmed candidate species are present or absent, based on the results of the targeted surveys (or assumed presence where targeted surveys have not been undertaken); The following sections 2.4.4.1 to 2.4.4.6 outline the survey effort and results for each species. Table 2-17 shows the weather conditions for each day during the survey effort.



**Table 2-1: Presence or Absence of Candidate Flora Species**

Species Presence	Confirmed presence
<b><i>Angophora inopina</i></b> Charmhaven Apple	No-Surveyed
<b><i>Callistemon linearifolius</i></b> Netted Bottle Brush	No-Surveyed
<b><i>Eucalyptus parramattensis</i> subsp. <i>decadens</i></b> <i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>	No-Surveyed
<b><i>Grevillea parviflora</i> subsp. <i>parviflora</i></b> Small-flower Grevillea	No-Surveyed
<b><i>Rhodamnia rubescens</i></b> Scrub Turpentine	No-Surveyed
<b><i>Rhodomyrtus psidioides</i></b> Native Guava	No-Surveyed
<b><i>Syzygium paniculatum</i></b> Magenta Lilly Pilly	No-Surveyed

### 2.3.4 Targeted surveys for *Angophora inopina* (Charmhaven Apple), *Rhodamnia rubescens* (Scrub Turpentine), *Rhodomyrtus psidioides* (Native Guava), *Syzygium paniculatum* (Magenta Lilly Pilly), *Callistemon linearifolius* (Netted Bottle Brush), *Eucalyptus parramattensis* subsp. *decadens*, *Grevillea parviflora* subsp. *Parviflora* (Small-flower Grevillea)

#### Areas of Potential Habitat in the Site:

*Angophora inopina* (Charmhaven Apple), *Rhodamnia rubescens* (Scrub Turpentine), *Rhodomyrtus psidioides* (Native Guava), *Syzygium paniculatum* (Magenta Lilly Pilly), *Callistemon linearifolius* (Netted Bottle Brush), *Eucalyptus parramattensis* subsp. *decadens*, *Grevillea parviflora* subsp. *Parviflora* (Small-flower Grevillea),

**Table 2-2: Potential Habitat on the Site for *Angophora inopina* (Charmhaven Apple), *Callistemon linearifolius* (Netted Bottle Brush), *Eucalyptus parramattensis* subsp. *Decadens* *Grevillea parviflora* subsp. *Parviflora* (Small-flower Grevillea)**

PCT	Vegetation Zone (VZ)	Potential Habitat?
<b>PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.</b>	Poor	Yes
<b>PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest</b>	Poor	Yes



### Survey Timing:

The TBCD specifies the appropriate times/months to survey for the above Flora Species as follows.

*Angophora inopina* (Charmhaven Apple), *Eucalyptus parramattensis* subsp. *Decadens*, *Rhodamnia rubescens* (Scrub Turpentine), all are able to be surveyed Year-round.

*Callistemon linearifolius* (Netted Bottle Brush); January, October, November, December.

*Grevillea parviflora* subsp. *Parviflora* (Small-flower Grevillea); August, September, October, November.

*Syzygium paniculatum* (Magenta Lilly Pilly); April, May, June

See **Table 2-3** for dates that these species were surveyed on.

**Table 2-3 Survey Effort:**

Species	Date Surveyed
<i>Angophora inopina</i> (Charmhaven Apple)	01/08/2023 02/05/2025
<i>Callistemon linearifolius</i> (Netted Bottle Brush)	
<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>	
<i>Grevillea parviflora</i> subsp. <i>Parviflora</i> (Small-flower Grevillea)	
<i>Rhodamnia rubescens</i> (Scrub Turpentine)	
<i>Rhodomyrtus psidioides</i> (Native Guava)	
<i>Syzygium paniculatum</i> (Magenta Lilly Pilly)	20/06/2023 01/08/2023 02/05/2025

### Survey Effort:

#### • Field Transect Surveys

The entirety of the site was systematically traversed by two ecologists to determine the presence of candidate flora species.

Although *Callistemon linearifolius* (Netted Bottle Brush) was surveyed outside its specified months no callistemons were present on-site during survey periods as such it was deemed this species would not occur on-site, as any resulting callistemon species could be sampled and sent to the National Herbarium of NSW for identification.

### Results:

No target flora species were recorded on site despite sufficient survey effort.



## 2.4 Threatened fauna survey methods

### 2.4.1 Review of existing information

The following database searches were undertaken, in order to compile a list of threatened flora and fauna species predicted to occur in the area:

Review of threatened fauna and flora records within a 10 km radius of the site, contained in the OEH Atlas of NSW Wildlife (NSW BioNet).

Review of the MNES records within a 10 km radius of the site, using the Commonwealth Department of Environment and Energy (DEE), EPBC Act Protected Matters Search Tool.

### 2.4.2 Habitat constraints assessment

The Southern Myotis (*Myotis macropus*) are a dual Species and Ecosystem Credit Species (species credit species for breeding habitat). The habitat constraint listed for Southern Myotis (*Myotis Macropus*) species in the Threatened Biodiversity Data Collection (habitat constraint: hollow bearing trees, within 200m of riparian zone /other, includes rivers, creeks billabongs, lagoons, dams and other waterbodies on within 200m of the site) are present within the Study Area. As such, this species was determined as a candidate species.

The habitat constraint listed for Little Bentwing-bat (*Miniopterus australis*) species and Little Bentwing-bat (*Miniopterus australis*) in the Threatened Biodiversity Data Collection (habitat constraint: cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding) are not present within the Study Area. As such, these species were determined as unlikely to occur within the Development Site (for breeding habitat) and was ruled out as a candidate species.

### 2.4.3 Field surveys

Targeted species surveys have been undertaken for some of the candidate species credit species in accordance with section 5.3 of the BAM.

The following Table 2-6 identifies whether each of the confirmed candidate species are present or absent, based on the results of the targeted surveys (or assumed presence where targeted surveys have not been undertaken); The following sections 2.4.4.1 to 2.4.4.6 outline the survey effort and results for each species. Table 2-5 shows the weather conditions for each day during the survey effort.

**Table 2-6: Presence or Absence of Candidate Fauna Species**

Species Presence	Confirmed presence
<b><i>Callocephalon fimbriatum</i></b> Gang-gang Cockatoo	No-Surveyed
<b><i>Calyptorhynchus lathami lathami</i></b> Glossy Black-Cockatoo	No-Surveyed
<b><i>Haliaeetus leucogaster</i></b> White-bellied Sea-Eagle	No-Surveyed
<b><i>Hieraaetus morphnoides</i></b> Little Eagle	No-Surveyed
<b><i>Lophoictinia isura</i></b> Square-tailed Kite	No-Surveyed
<b><i>Ninox connivens</i></b> Barking Owl	No-Surveyed



<b><i>Ninox strenua</i></b> Powerful Owl	No-Surveyed
<b><i>Petauroides volans</i></b> Southern Greater Glider	No-Surveyed
<b><i>Petaurus norfolcensis</i></b> Squirrel Glider	No-Surveyed
<b><i>Phascogale tapoatafa</i></b> Brush-tailed Phascogale	No-Surveyed
<b><i>Phascolarctos cinereus</i></b> Koala	Yes-Assumed present
<b><i>Tyto novaehollandiae</i></b> Masked Owl	No-Surveyed

#### 2.4.3.1 Koala Assessment

The targeted survey found no direct or indirect (e.g. scats and scratch marks on trees) evidence of *P. cinereus* (Koala) in the site; however, a search of the Atlas of NSW Wildlife database indicated that there are a high number of *P. cinereus* (Koala) records in the area. Most nearby records date back to the 1980s and early 1990s and around 190 records found within last 18 years with the latest record found in July 2024; however, there are some records, including the 2021 record along the south-western boundary, a 2017 record just external to the site's southern boundary and a 2013 record just external to the site's western boundary.

Two Preferred Koala Feed Tree species (as defined by the Port Stephens CKPoM (PSC, 2002) were recorded in the site; these include *E. tereticornis* (Forest Red Gum) and *E. robusta* (Swamp Mahogany). Both species were concentrated within the site's PCT 1564 and PCT 1649. Only very occasional *E. tereticornis* (Forest Red Gum) were observed in the site's PCT 1619.

Based on the Lunney et al. (1998) vegetation associations/habitat categories, it is concluded that the site would contain a mix of Preferred Koala Habitat (and associated 100 m buffer), Marginal Habitat and Mainly Cleared land.

- PCT 3436 Blackbutt – Hunter Coast Sandy Creekflat Low Paperbark Scrub  
**MARGINAL HABITAT**
- PCT 3995 Hunter Coast Paperbark-Swamp Mahogany Forest - **PREFERRED HABITAT**

Figure E-2 provides a map of *P. cinereus* (Koala) habitat in the site, based on this assessment.

Koalas prefer areas that have:

- at least 30% of total canopy trees that are preferred food trees (McAlpine *et al.* 2007)
- non-eucalypt trees and shrubs for shelter and other behavioural purposes; plants with dense foliage help koalas stay cool in summer (Mitchell 2015)
- young and old food trees, with most trees having a diameter at breast height between 26 and 80 centimetres (Department of Environment and Climate



- Change 2008); koalas prefer resting in larger trees, but will eat foliage from young trees
- water nearby (Smith et al. 2013) to provide trees with higher leaf moisture and water to drink
  - a minimum habitat patch size of 2 hectares, although larger than 50–100 hectares is preferable to support a sustainable population (McAlpine et al. 2007); these values can vary greatly depending on the quality of the habitat and the region.
  - good connectivity to other habitat patches, however this is not always necessary as koalas can cover distances of several kilometres across open ground.
  - quality habitat adjacent to preferred feed tree patches that includes rainforest, non-eucalypt swamp forests, wetlands, heathlands, grasslands, open paddocks and cropland without scattered eucalypts to provide for movement and connectivity across the landscape, places of refuge in time of heatwave and fire, and in some cases non-eucalypt food (OEH 2018a)

Given the above information from the Koala Habitat Revegetation Guidelines (DIPE, 2020), it is considered that the site does not offer the preferred areas for Koalas. This being the patch size of the vegetation is less than 3ha, and ideally, patches of habitat should be 50–100 hectares or more in size. If a habitat patch is smaller than this, but well-connected to other patches (less than 100 metres apart) then the total area of the connected patches should be larger than 100 hectares (McAlpine et al. 2007). The vegetation within the site has already been exposed to edge impacts and under scrubbing and removal of canopy vegetation for bushfire purposes by the current land use. There is not a good connection through the site for Koala movement as the site has already been severed through surrounding roads and adjoining residential development. Furthermore, the site's vegetation may contribute to a tenuous connectivity in the Medowie area. However, there is an approved development proposed immediately to the east of the site (Lot 2 DP 595923) for an extension of Wirreanda Public School to provide for increased population in the Medowie area; due to the development of 'The Gardens Medowie' Estate, with these ongoing developments the site no longer functions effectively as a corridor. Furthermore, regardless of whether or not there is a future extension to the school the site has not been marked as a corridor.

An assessment under the *EPBC Act Referral Guidelines for the Vulnerable Koala* (Commonwealth of Australia, 2014) has been undertaken. These guidelines encourage the assessment of significant impacts on the *P. cinereus* (Koala), through the assessment of habitat critical to the survival of *P. cinereus* and actions that interfere substantially with the recovery of *P. cinereus*. The Koala Habitat Assessment Tool (Table 4 of Commonwealth of Australia, (2014)) was utilised and it was determined that site's habitat would constitute 'critical koala habitat', as defined under the EPBC Act. However, assessment under the EPBC Act Referral Guidelines for *Phascolarctos cinereus* (Koala) concluded that the proposal would not interfere substantially with the recovery of the koala in areas of habitat critical to the survival of the koala.



**Table 2-7: Assessment of the site's habitat, using the Koala Habitat Assessment Tool in EPBC Act Referral Guidelines for the Vulnerable Koala (Commonwealth of Australia, 2014).**

Attribute	Score	Habitat Appraisal	
Koala Occurrence	+1 (medium) No Evidence of one or more koalas within 2 km of the edge of the impact area within the last 5 years.  Two records of koala have been found towards the southwest of the site in 2021 (at 721 Medowie Road Medowie)	Desktop	The targeted survey found no direct or indirect (e.g. scats and scratch marks on trees) evidence of koalas on the site.
		On Ground	A search of the Atlas of NSW Wildlife database showed a 2017 record, immediately south of the site.
Vegetation Composition	+2 (high) Has forest or woodland with 2 or more known koala food tree species.	Desktop	The <i>Koala Habitat Planning Map (Medowie and Tilligerry)</i> (PSC, 2007) identifies part of the site as Preferred Koala Habitat (as defined by the CKPoM (PSC, 2002)).
		On Ground	Two Preferred Koala Feed Trees (as defined by the CKPoM (PSC, 2002)) (being <i>E. tereticornis</i> (Forest Red Gum) and <i>E. robusta</i> (Swamp Mahogany)), were recorded on the site. <i>E. tereticornis</i> (Forest Red Gum) heavily dominates some parts of the site.
Habitat Connectivity	+2 (high) The area is part of a contiguous landscape $\geq 500$ ha.	The site's habitat is connected to large areas of bushland, including Medowie SCA (in the north and east) and Tilligerry SCA (in the south).	
Key Existing Threats	+1 (medium) Evidence of infrequent or irregular koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for koala occurrence.	Dogs are already common in the area and a dog was observed in the site, during the field survey. Occasional incidents of koala mortality from vehicles and dogs occur in the general Port Stephens area.	
Recovery Value	0 (Low) Habitat is unlikely to be important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1.	The site allows for only a tenuous corridor and has not been mapped as a 'Habitat Corridor'.  The genetic and disease status of the koalas present in the study area is not known. The site is unlikely to be an important breeding area.	
<b>Total</b>	<b>6</b>	<b>Habitat critical to the survival of the koala</b>	



**Table 2-8: Assessment of the Proposal under EPBC Act Referral Guidelines for *Phascolarctos cinereus* (Koala)**

Does your impact area contain habitat critical to the survival of the koala (habitat score $\geq 5$ )?	YES
Do the area(s) proposed to be cleared contain known koala food trees?	YES  The proposed rezoning would lead the removal of a portion of the site's koala feed trees, however, a patch of vegetation to the south-western of the site (mapped as having Biodiversity Values) is to be retained.
Are you proposing to clear $\leq 2$ ha of habitat containing known koala food trees in an area with a habitat score of 5?	NO  The planning proposal seeks to rezone the site from RU2 Rural Landscape to R3 medium density residential and E1 local centre. This would ultimately pave the way for residential development in the site. The proposal would clear $\leq 2$ ha of habitat containing known koala food trees.
Could your action interfere substantially with the recovery of the koala in areas of habitat critical to the survival of the koala (i.e. introducing vehicle strike, barriers etc.)?	NO*  It is considered that threats such as vehicle strike and dog attack already occur in the area. The proposal would not interfere substantially with the recovery of the koala in areas of habitat critical to the survival of the koala.
<b>REFERRAL NOT RECOMMENDED - Low risk of resulting in significant impact*</b>	

### ***Pteropus poliocephalus* (Grey-headed Flying-Fox)**

This species is commonly observed foraging in the Medowie area; a search of the Atlas of NSW Wildlife database (BioNet) indicates that there are a high number of *P. poliocephalus* (Grey-headed Flying-Fox) records in the area. No communal roost sites are known from the site or immediate surrounding areas. The nearest colony camps are approximately 5 km west (at Moffats Swamp) and approximately 6 km west (at Raymond Terrace) (GeoLink, 2013).

The species is likely to forage in the site. Regardless, the proposal would remove a minor portion of vegetation, which is highly unlikely to have a significant impact. It is considered that the proposal is unlikely to have a significant impact on *P. poliocephalus* (Grey-headed Flying-Fox).

### **Endangered species – significant impact criteria**

In accordance with the Significant Impact Criteria defined in DoE (2013), an action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:





- lead to a long-term decrease in the size of a population
- reduce the area of occupancy of the species
- fragment an existing population into two or more populations
- adversely affect habitat critical to the survival of a species
- disrupt the breeding cycle of a population
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat
- introduce disease that may cause the species to decline, or
- interfere with the recovery of the species.

### **Lathamus discolor (Swift Parrot)**

*L. discolor* (Swift Parrot) exists as a single population of less than 2000 birds (Threatened Species Scientific Committee, 2016). It breeds in Tasmania from September to January and migrates to the Australian south-east mainland between February and October (OEH, 2019a). On the mainland it occurs in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as *Eucalyptus robusta* (Swamp Mahogany), *Corymbia maculata* (Spotted Gum), *C. gummifera* (Red Bloodwood), *E. tereticornis* (Forest Red Gum), *E. sideroxylon* (Mugga Ironbark), and *E. albens* (White Box) (OEH, 2019a). Commonly used lerp infested trees include *E. microcarpa* (Inland Grey Box), *E. moluccana* (Grey Box), *E. pilularis* (Blackbutt), and *E. melliodora* (Yellow Box) (OEH, 2019a). The site contains *Corymbia gummifera* (Spotted Gum), *E. pilularis* (Blackbutt) and *Eucalyptus tereticornis* (Forest Red Gum) tree.

On the mainland, *L. discolor* (Swift Parrot) would mainly be found west of the Great Dividing Range, and records in the local area are extremely rare. A search of the OEH *Atlas of NSW Wildlife* (BioNet) indicates that there are no records within 10 km of the site. In addition to this, the site does not occur in a mapped important area for *L. discolor* (Swift Parrot).

It would be very rare for *L. discolor* (Swift Parrot) to occur within or near the site. Removal of a portion of the site's vegetation is unlikely to have a significant effect on *L. discolor* (Swift Parrot). It is considered that the proposal is unlikely to have a significant impact on *L. discolor* (Swift Parrot).

### **Migratory species – significant impact criteria**

In accordance with the Significant Impact Criteria defined in DoE (2013), an action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:



- *substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species*
- *result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or*
- *seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.*

### **Ardea ibis (Cattle Egret)**

*A. ibis* (Cattle Egret) can occur in tropical and temperate grasslands, wooded lands and terrestrial wetlands. It typically forages in moist, low-lying poorly drained pastures with an abundance of high grass and is particularly common in grazing environments, where it consumes the ticks of livestock (DEE, 2020). Roosting habitat is usually in trees or amongst ground vegetation in or near lakes and swamps. In NSW, breeding occurs in large colonies, from October to January, at a relatively small number of sites within the species' range. These sites are usually wooded swampy vegetation, where nests are built in the middle to upper branches of inundated trees (DEE, 2020).

*A. ibis* (Cattle Egret) is widespread and common. Two major distributions have been located: from north-east Western Australia to the Top End of the Northern Territory and around south-east Australia. In south-east Australia it is found from Bundaberg, inland to Roma, Thargominda, and then down through Inverell, Walgett, Nyngan, Cobar, Ivanhoe, Balranald to Swan Hill, and then west to Pinnaroo and Port Augusta (Marchant & Higgins, 1990 in DEE, 2020). The south-east Australian population typically migrates from breeding colonies in south-east Queensland and north-east NSW to spend winter in either south-east Australia or New Zealand. Breeding colony sites are typically along the central east coast from about Newcastle to Bundaberg. It also breeds in major inland wetlands in north NSW (notably the Macquarie Marshes) (DEE, 2020).

*A. ibis* (Cattle Egret) is commonly recorded in the Port Stephens area and the site contains potential habitat. Regardless, the proposal would remove a small portion of potential foraging habitat, which is unlikely to have a significant impact. As this species is able to utilise (and in fact may prefer) man-made foraging habitats (i.e. pastures), the loss of potential foraging habitat is rarely a threatening factor in eastern Australia. Rather, impacts to breeding colony sites would be far more important. There are no known breeding colony sites near the site.

It is considered that the proposal is unlikely to have a significant impact on *A. ibis* (Cattle Egret).

### **Hirundapus caudacutus (White-throated Needletail)**

*H. caudacutus* (White-throated Needletail) is an aerial species (where it forages for aerial insects) and because of this, conventional foraging habitat descriptions are inapplicable. It is however, mostly recorded above wooded areas including open forest and rainforest, and may also fly between trees or in clearings, below the canopy. It can also occur over heathland, and sometimes (but less often) over



grasslands, swamps, sandy beaches and around coastal cliffs (DEE, 2020). *H. caudacutus* (White-throated Needle-tail) typically roosts in trees in forests and woodlands, amongst dense foliage and occasionally hollows. It breeds in Asia, in wooded lowlands and sparsely vegetated hills, as well as mountains covered with coniferous forests (DEE, 2020).

*H. caudacutus* (White-throated Needle-tail) breeds in Asia and spends the non-breeding season in Australasia, mainly in Australia. It is widespread throughout eastern and south-eastern Australia. In NSW, it occurs in all coastal regions and extends inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains (DEE, 2020).

There are occasional BioNet records of *H. caudacutus* (White-throated Needle-tail) within 10 km of the site; although, due to the aerial habits of this species, records are likely to be underestimated. The species is likely to at least occasionally forage above the site. Regardless, the proposal would remove a minor portion of highly degraded vegetation, which is highly unlikely to have a significant impact.

It is considered that the proposal is unlikely to have a significant impact on *H. caudacutus* (White-throated Needle-tail).

### ***Rhipidura rufifrons* (Rufous Fantail)**

*R. rufifrons* (Rufous Fantail) mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts; usually with a dense shrubby understorey often including ferns. It occasionally occurs in secondary regrowth, following logging or disturbance in forests or rainforests. It is also recorded from parks and gardens when on passage (DEE, 2020).

*R. rufifrons* (Rufous Fantail) occurs in northern and eastern coastal Australia, being more common in the north (DEE, 2020). Breeding populations occur from about the South Australia-Victoria border, through south and central Victoria, on and east of the Great Divide in New South Wales (NSW), and north to about the NSW-Queensland border (DEE, 2020).

There are occasional BioNet records of *R. rufifrons* (Rufous Fantail) within 10 km of the site and the site may contain potential habitat. Regardless, the proposal would remove a minor portion of vegetation, which is highly unlikely to have a significant impact.

It is considered that the proposal is unlikely to have a significant impact on *R. rufifrons* (Rufous Fantail).

### **EPBC Act Assessment Conclusion**

Based on the above assessment, it is considered the proposal would be unlikely to significantly impact on any MNES under the EPBC Act.



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## Consideration of Strategic Planning Guidelines

There are three primary local planning guidelines applicable to the site, being the Medowie Place Plan (PSC, 2023), Medowie Strategy (PSC, 2016) and the Port Stephens CKPoM (PSC, 2002).

### Medowie Planning Strategy

The site occurs within a rural residential release area in the *Medowie Planning Strategy*, Strategy Map (PSC, 2016). This mapped rural residential release (see previous Figure E-1.1 above). PSC (2016) states that the intended land use zone in residential release areas is R2 Low Density Residential.

### Port Stephens Comprehensive Koala Plan of Management

In accordance with *State Environmental Planning Policy (SEPP) No. 44 - Koala Habitat Protection*, PSC has prepared a CKPoM (PSC, 2002). This means that rather than assessing the presence of “potential” or “core” *Phascolarctos cinereus* (Koala) habitat as defined under SEPP No. 44, the Performance Criteria for Rezoning/Development Applications of the CKPoM must be addressed.

The Performance Criteria for rezoning requests apply only to circumstances where a request is made of PSC to rezone land. Consideration is to be given to the following matters when assessing rezoning requests including any amendment to the Port Stephens LEP. Prior to approving any such rezoning proposal, Council is to take into consideration the likely impacts of the development made possible by the rezoning, including environmental impacts on both the natural and built environment, and social and economic impacts on the locality. In particular Council should be satisfied that the rezoning would:

**a) *not result in development within areas of Preferred Koala Habitat or defined Habitat Buffers***

The planning proposal seeks to amend the Port Stephens LEP 2013 to rezone the site from RU2 Rural Landscape to R3 medium density residential and E1 local centre. This would ultimately pave the way for residential development in the site and would lead to development within areas of Preferred Koala Habitat. The concept plan has been designed to consider a wildlife corridor for improved wildlife connectivity through the development and maintaining existing koala feed trees where possible. The wildlife corridor is to be maintained at an APZ standard to mitigate bushfire hazard. Furthermore, no koalas or activity of koalas have been recorded within the site and the site is not mapped as a koala corridor. Please refer to Figure 2-1

**b) *allow for only low impact development within areas of Supplementary Koala Habitat and Habitat Linking Areas;***

N/A

**c) *minimise the removal of any individuals of preferred koala food trees, wherever they occur on the site; and***



The concept plan has been designed to consider a wildlife corridor for improved wildlife connectivity through the development and maintaining existing koala feed trees where possible. The wildlife corridor is to be maintained at an APZ standard to mitigate bushfire hazard. Furthermore, no koalas or activity of koalas have been recorded within the site and the site is not mapped as a koala corridor. Please refer to Figure 2-1

- d) ***not result in development which would sever koala movement across the site. This should include consideration of the need for maximising tree retention on the site generally and for minimising the likelihood of impediments to safe/unrestricted koala movement.***

The concept plan has been designed to consider a wildlife corridor for improved wildlife connectivity through the development and maintaining existing koala feed trees where possible. The wildlife corridor is to be maintained at an APZ standard to mitigate bushfire hazard. Furthermore, no koalas or activity of koalas have been recorded within the site and the site is not mapped as a koala corridor. Please refer to Figure 2-1

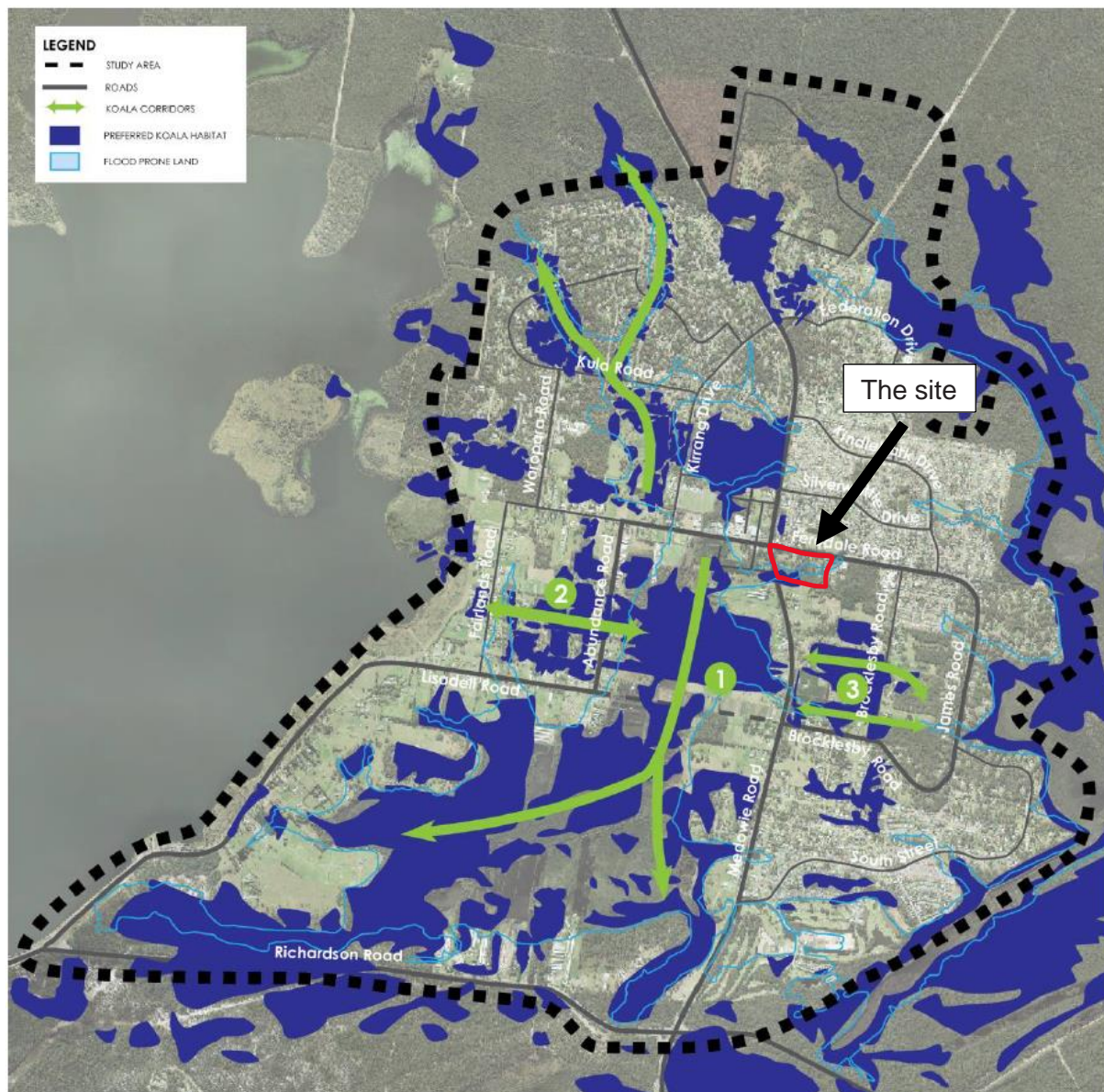
The site's vegetation may contribute to a tenuous connectivity in the Medowie area. However, there is an ear-marked development proposed immediately to the east of the site (Lot 2 DP 595923) for an extension of Wirreanda Public School to provide for the increased population in the Medowie area; there is also an approved development immediately to the south of the site 'The Gardens Medowie' Estate. With these developments occurring to the east and south of the site, the site would no longer function as an effective corridor. The concept plan has been designed to consider a wildlife corridor for improved wildlife connectivity through the development and maintaining existing koala feed trees where possible. The wildlife corridor is to be maintained at an APZ standard to mitigate bushfire hazard.

The preferred Koala feed trees including *Eucalyptus tereticornis* (forest red Gum) and *Eucalyptus robusta* (Swamp Mahogany) are proposed for planting within the vegetated drainage corridor. Additional plantings are also proposed which will help to increase vegetation cover to facilitate koala movements. Koalas have been found to preferentially select trees not just for food but also for their cover and/or shelter. Sluiter *et al.* (2002) found that koalas in the Campbelltown area were located in Turpentine (*Syncarpia glomulifera*), but there was no evidence of browsing this species from analysis of leaf cuticle fragments in collected faecal pellets.

In response to PSC RFI issued December 2023, VC Management engaged Steven Ward EMM Consulting to provide technical advice to update the concept plan to include a riparian corridor that would provide connectivity for the Koala. Refer to Appendix J for Medowie Koala Letter & Koala Corridor Assessment recommendations.



Figure 2-1: Habitat and Key Corridors as identified in the Medowie Planning Strategy (PSC, 2016)





#### 2.4.4 Targeted surveys for Large Forest Owls; *Ninox strenua* (Powerful Owl), *Ninox connivens* (Barking Owl) and *Tyto novaehollandiae* (Masked Owl)

##### Areas of Potential Habitat in the Site:

The survey effort section details the areas of potential habitat on the site for *Ninox strenua* (Powerful Owl), *Ninox connivens* (Barking Owl) and *Tyto novaehollandiae* (Masked Owl).

**Table 2-9: Potential Habitat on the Site for *Ninox strenua* (Powerful Owl), *Ninox connivens* (Barking Owl) and *Tyto novaehollandiae* (Masked Owl)**

PCT	Vegetation Zone (VZ)	Potential Habitat?
PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub	Poor	Yes
PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest	Poor	Yes

##### Survey Timing:

The TBCD specifies the appropriate times/months to survey for the above Owls, these months include; May, June, July, August. As such these species of Owls were targeted for surveys during these months. See **Table 2-10** for dates that these species were surveyed on.

**Table 2-10 Survey Effort:**

Species	Date Surveyed
<i>Ninox strenua</i> (Powerful Owl)	31/07/2023
<i>Ninox connivens</i> (Barking Owl)	01/08/2023
<i>Tyto novaehollandiae</i> (Masked Owl)	02/08/2023
	03/08/2023

##### Survey Effort:

- **Stag watching and quiet listening** – Stag watching and quiet listening was undertaken on four (4) separate nights, with larger hollows begins surveyed to detect the presence of threatened Owl species. The hollows were observed for the signs of breeding by the owl species during many of the site visits undertaken in the site.

Results – No targeted owl species were seen or heard.





• **Call Playback Surveys** – Targeted call-playback surveys were undertaken for each owl species over two (2) separate nights. This survey method was only used over two (2) nights to limit the risk of potentially disrupting the breeding behaviour of any potentially occurring owls. The call playback method is also known to be unreliable because owls may choose to not respond to the call playback. If owls do respond to call playback the results are potentially misleading because the calls have drawn the bird into or near the site, thus giving misleading results as to the bird's home base.

Results – No targeted owl species were seen or heard.

• **Nocturnal Spotlighting** – The entire site was traversed during night hours on four (4) separate occasions. The purpose of this survey effort was to search for individuals within the site using a hand-held spotlight.

Results – No targeted owl species were seen or heard.

#### Results:

No targeted owl species were seen or heard despite sufficient survey efforts.

#### 2.4.5 Targeted survey for arboreal mammals (excluding microbats); *Petauroides Volans* (Southern Greater Glider), *Petaurus norfolcensis* (Squirrel Glider), *Phascogale tapoatafa* (Brush-tailed Phascogale).

#### Areas of Potential Habitat in the Site:

The survey effort section details the areas of potential habitat on the site for *Petauroides Volans* (Southern Greater Glider), *Petaurus norfolcensis* (Squirrel Glider), *Phascogale tapoatafa* (Brush-tailed Phascogale).

Table 2-11: Potential Habitat on the Site for *Petaurus norfolcensis* (Squirrel Glider), *Phascogale tapoatafa* (Brush-tailed Phascogale).

PCT	Vegetation Zone (VZ)	Potential Habitat?
<b>PCT 3436</b> - Hunter Coast Sandy Creekflat Low Paperbark Scrub	Poor	Yes
<b>PCT 3995</b> - Hunter Coast Paperbark-Swamp Mahogany Forest	Poor	Yes



### Survey Timing:

The TBCD specifies the appropriate times/months to survey for the above arboreal mammals, the species *Petauroides Volans* (Southern Greater Glider), *Petaurus norfolcensis* (Squirrel Glider) can be surveyed year-round where-as, *Phascogale tapoatafa* (Brush-tailed Phascogale); January, February, March, April, May, June, December.

As such targeted surveys were conducted during the specified months. See **Table 2-12** for dates that these species were surveyed on.

**Table 2-12 Survey Effort:**

Species	Date Surveyed
<b>Spotlighting/Stag watching</b>	
<i>Petaurus norfolcensis</i> (Squirrel Glider)	31/07/2023
<i>Petauroides Volans</i> (Southern Greater Glider)	01/08/2023
	02/08/2023
	03/08/2023
<b>Camera Trapping</b>	
<i>Phascogale tapoatafa</i> (Brush-tailed Phascogale)	29/04/2025 – 27 May 2025

### Survey Effort:

- **Stag watching** – Stag watching was undertaken on four (4) separate nights (see **table 2-5** for surveyed dates), with suitable stags/ hollows being monitored for emergent movement of targeted species from dusk until nightfall.

Results – No targeted species were seen or heard.

- **Nocturnal Spotighting** – The entire site was traversed during night hours on four (4) separate nights (see **table 2-10** for surveyed dates). The purpose of this survey effort was to search for individuals within the site using a hand-held spotlight.

Results – No targeted species were seen or heard.

### Results:

No targeted arboreal mammal species were seen during targeted species surveys despite suitable survey practices

No threatened species has been recorded in the camera photos.



## 2.4.7 Targeted survey for Avian species; *Callocephalon fimbriatum* (Gang-gang Cockatoo), *Calyptorhynchus lathmi* (Glossy Black-Cockatoo), *Haliaeetus leucogaster* (White-bellied Sea-Eagle), *Hieraaetus morphnoides* (Little Eagle) and *Lophoictinia isura* (Square-tailed Kite)

### Areas of Potential Habitat in the Site:

The survey effort section details the areas of potential habitat on the site for *Callocephalon fimbriatum* (Gang-gang Cockatoo), *Calyptorhynchus lathmi* (Glossy Black-Cockatoo), *Haliaeetus leucogaster* (White-bellied Sea-Eagle), *Hieraaetus morphnoides* (Little Eagle) and *Lophoictinia isura* (Square-tailed Kite).

**Table 2-13: Potential Habitat on the Site for *Callocephalon fimbriatum* (Gang-gang Cockatoo), *Calyptorhynchus lathmi* (Glossy Black-Cockatoo), *Haliaeetus leucogaster* (White-bellied Sea-Eagle), *Hieraaetus morphnoides* (Little Eagle) and *Lophoictinia isura* (Square-tailed Kite).**

PCT	Vegetation Zone (VZ)	Potential Habitat?
PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.	Poor	Yes
PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest	Poor	Yes

### Survey Timing:

The TBCD specifies the appropriate times/months to survey for the avian species these months include;

*Callocephalon fimbriatum* (Gang-gang Cockatoo): January, October, November, December

*Calyptorhynchus lathmi* (Glossy Black-Cockatoo): January, February, March, April, May, June, July, August, September

*Haliaeetus leucogaster* (White-bellied Sea-Eagle): July, August, September, October, November, December

*Hieraaetus morphnoides* (Little Eagle): August, September, October

*Lophoictinia isura* (Square-tailed Kite): January, October, November, December

As such targeted surveys were conducted during the specified months. See **Table 2-14 survey effort** for dates that these species were surveyed on.

**Table 2-14 Survey Effort:**

Species	Date Surveyed
<b>Diurnal/Dusk Bird Watching</b>	
<i>Callocephalon fimbriatum</i> (Gang-gang Cockatoo)	09/11/2019 10/11/2019



	11/11/2019 13/11/2019
<i>Calyptorhynchus lathmi</i> (Glossy Black-Cockatoo)	31/07/2023 01/08/2023 02/08/2023 03/08/2023
<i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle) <i>Hieraaetus morphnoides</i> (Little Eagle)	01/08/2023 02/08/2023 03/08/2023
<i>Lophoictinia isura</i> (Square-tailed Kite)	09/11/2019 10/11/2019 11/11/2019 13/11/2019

#### Survey Effort:

• **Diurnal Bird Surveys** – The site was traversed during the day, monitoring large mature trees for sign of nesting or perching by predatory bird species. Time was also spent listening out for possible calls of adult and juvenile individuals.

Results – No species were recorded

• **Dusk Bird Surveys** – Large hollow bearing trees with large hollows for cockatoo species were monitored in the hours leading up to dusk for signs of roosting threatened avian species

Results – No species were recorded

#### Results:

No targeted avian species were sighted or heard on site during targeted species surveys despite suitable survey practices/effort.

### 2.4.8 Targeted survey for threatened Microbat; *Myotis macropus* (Southern myotis)

#### Areas of Potential Habitat in the Site:

Table 2-15: Potential Habitat on the Site for Amphibians; *Myotis macropus* (Southern myotis)

PCT	Vegetation Zone (VZ)	Potential Habitat?
PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.	Poor	Yes
PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest	Poor	Yes



### Survey Timing:

Species Name	Times/Months to Survey
<i>Myotis Macropus</i> (Southern myotis)	February 2020

See **Table 2-16 survey effort** for dates that these species were surveyed on.

**Table 2-16 Survey Effort:**

Species	Date Surveyed
<i>Myotis Macropus</i> (Southern myotis)	11/02/2020 12/02/2020 13/02/2020

### Survey Effort:

**Bat Call Detection** – One (1) ANABT recorders were deployed on-site to detect potential calls for the Southern Myotis, these detectors were one site for a period of three (3) nights from the 11-13/02/2020.

### Results:

Despite sufficient survey effort the Southern Myotis was not recorded as present on-site during time of survey. The Bat call analysis resulted in the recording of multiple species on-site these species include; definite calls of *Austronomus australis*, *Miniopterus australis*, either *Mormopterus (ozimops) ridei* or *Mormopterus norfolkensis* and probable calls of *Vespadelus vulturnus*.

### Further Assessment of Candidate Species

N/A

## 2.5 Weather conditions

**Table 2-17: Environmental conditions during threatened species surveys**

Date	Purpose	Conditions
09/11/2019	Diurnal bird watching	12.3 - 21.3°C/ 0mm
10/11/2019	Diurnal bird watching	9.8 – 23.9°C/ 0mm
11/11/2019	Diurnal bird watching	11.3 – 26.5°C/ 0mm
13/11/2019	Diurnal bird watching	13.2 – 23.9°C/ 0mm
31/07/2023	Spotlighting/ Stag watching	9.3 - 23°C/ 0mm
01/08/2023	Spotlighting/ Stag watching	6.1 – 20.7°C/ 0mm



02/08/2023	Spotlighting/ Stag watching	5 - 23°C/ 0mm
03/08/2023	Spotlighting/ Stag watching	5.8 - 21°C/ 0mm
02/05/2025	Flora transects	13.0 – 20.3°C/ 16.8 mm

## 2.6 Limitations

Due to the highly degraded nature of the site species were unable to be surveyed as a multitude of habitat features were not present for certain species see table 5-2/5-3 for justifications of confirmed candidate species.

## Licensing

Research was conducted under the following licences:

- NSW National Parks and Wildlife Service Scientific Investigation Licence SL100533;
- Animal Research Authority (Trim File No: TRIM 11/5655) issued by NSW Department of Primary Industries; and
- Animal Care and Ethics Committee Certificate of Approval (Trim File No: TRIM 11/5655) issued by Department of Primary Industries.

## 3. Site context

### 3.1 Assessment area

The study area is the area of land within the site that has been assessed in this report, which is the area of vegetation within the site that is relevant to this BDAR i.e., the area of vegetation within or potentially impacted by the construction and operational footprint. Land within the site that is not considered to be impacted by the proposal (either directly or indirectly) is considered to be outside the study area. In this case however, the entire site as surveyed.

### 3.2 Landscape features

Landscape features identified within the subject land and assessment area are shown on Figure 1 Site Map and Figure 2 Location Map, respectively. A discussion of relevant patch landscape features is provided below.

#### 3.2.1 IBRA bioregions and IBRA subregions

Dominant landscape forms have been used to divide Australia into bioregions. The site is within the NSW North Coast IBRA bioregion and the Karuah Manning IBRA subregion. The Upper Hunter IBRA subregion occurs close to the site, with the nearest adjacent subregion boundary being approximately ~5 km north of the site. See previous Figure 2 for the IBRA regions/subregions within 1.5 km of the site.



### **3.2.2 Rivers, streams, estuaries, and wetlands**

An ephemeral drainage line runs through the site. A pond occurs along the drainage line in the eastern end of the site. This pond contains a dense Typha reed bed. (In accordance with the Strahler stream ordering system in Appendix 3 of the BAM).

### **3.2.3 Habitat connectivity**

The site's vegetation may contribute to a tenuous connectivity in the Medowie area. However, there was an ear-marked development proposed immediately to the east of the site (Lot 2 DP 595923) for an extension of Wirreanda Public School to provide for increased population in the Medowie area; due to the new development of 'The Gardens Medowie' Estate, with these ongoing developments the site no longer functions effectively as a corridor. Furthermore, regardless of the whether or not there is a future extension to the school the site has not been marked as a corridor, with connectivity provided in an east / west direction through Medowie by Koala Corridor 3 shown below in Figure 2-1. As such, the proposal would not sever local connectivity in these directions. The Medowie Village concept plan has been designed to consider a wildlife corridor for improved wildlife connectivity through the development and maintaining existing koala feed trees where possible. The wildlife corridor is to be maintained at an APZ standard to mitigate bushfire hazard.

### **3.2.4 Karst, caves, crevices, cliffs, rocks, or other geological features of significance**

No karst, caves, crevices, or cliffs were located on the site or within a 1,500 m buffer around the site.

### **3.2.5 Areas of outstanding biodiversity value**

Under the BC Act, the Minister for the Environment may declare Areas of Outstanding Biodiversity Value (AOBV). These are special areas that contain irreplaceable biodiversity values that are considered important to NSW, Australia or globally. No listed AOBV occur within the site or within a 1,500 m buffer around the site.

### **3.2.6 NSW (Mitchell) landscape**

Mitchell Landscapes are used to describe areas in NSW in a broad sense and group together areas with relatively homogenous geomorphology, soils and broad vegetation types and are mapped at a scale of 1:250000. The subject site is within the Newcastle Coastal Ramp landscape. This landscape region has an estimated cleared fraction of 0.54.

### **3.2.7 Additional landscape features identified in SEARs**

N/A

### **3.2.8 Soil hazard features**

No soil hazards were identified on the site, however acid sulphate soil risk mapping from eSPADE (NSW Soil and Land information) shows soil hazards within 250m of the site.





### 3.3 Native vegetation cover

All areas of native vegetation cover, within the site and within a 1,500 m buffer area surrounding the site, have been mapped; see Figure 8. It is estimated, from this mapping, that the native vegetation cover would be 30%.

**Table 3-1: Native vegetation cover in the assessment area**

<b>Assessment area (ha)</b>	~7.7ha
<b>Total area of native vegetation cover (ha)</b>	~2.38ha
<b>Patch Size</b>	100%
<b>Class (0-10, &gt;10-30, &gt;30-70 or &gt;70%)</b>	>30%



## 4. Native vegetation, threatened ecological communities and vegetation integrity

### 4.1 Native vegetation extent

Refer to Figure 8 Native vegetation extent

#### 4.1.2 Areas that are not native vegetation

Ten (10) 1x1m Grassland Plots were conducted on 20<sup>th</sup> July 2023 by two (2) ecologists, these plots determined the sites ground stratum consists of predominantly exotic introduced species of grasses and weeds, therefore the majority of the ground over within the site has been classified as non-native vegetation. Using Method A (add in from beginning) Quadrat field assessment method, it was determined that native ground cover makes up less than 15% total groundcover within the site, as such this sites groundcover has been assessed as non-native.

### 4.2 Plant community types

#### 4.2.1 Identifying Plant Community Types

*Review of Existing Information*

**Table 4-1 Review of Existing Information on the Site's PCTs**

<b>Vegetation Mapping Project</b>	<b>Response</b>
<b>NSW State Vegetation Type Map</b>	Two PCT's have been mapped within the site:
	<ul style="list-style-type: none"><li>• PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest</li><li>• PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.</li></ul>

##### 4.2.2.1 PCT overview

**Table 4-2 Plant Community Types within the site that are impacted by the proposal**

<b>PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest</b>	
<b>PCT ID</b>	PCT 3995
<b>PCT name</b>	PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest
<b>Vegetation formation</b>	Forested Wetlands
<b>Vegetation class</b>	Coastal Swamp Forests
<b>Per cent cleared value (%)</b>	61%

<b>Extent within subject land (ha)</b>	0.86ha
<b>Justification for PCT selection</b>	The site's vegetation consists of species such as <i>Melaleuca quinquinerva</i> , <i>Angophora costata</i> , <i>E. tereticornis</i> , <i>Imperata cylindrica</i> , <i>Geitonoplesium cymosum</i> and <i>Lomandra longifolia</i> which are the characteristics of this PCT, however, the site's vegetation is in degraded state.
<b>PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub</b>	
<b>PCT ID</b>	PCT 3436
<b>PCT name</b>	Hunter Coast Sandy Creekflat Low Paperbark Scrub
<b>Vegetation formation</b>	Dry Sclerophyll Forests (Shrub/grass sub-formation)
<b>Vegetation class</b>	Hunter-Macleay Dry Sclerophyll Forests
<b>Per cent cleared value (%)</b>	52%
<b>Extent within subject land (ha)</b>	1.52ha
<b>Justification for PCT selection</b>	The site's vegetation consists of species such as <i>Angophora costata</i> , <i>Eucalyptus resinifera</i> , <i>E. tereticornis</i> , <i>Melaleuca quinquinerva</i> , <i>Breynia oblongifolia</i> , <i>Microlaena stipoides</i> , <i>Entolasia stricta</i> , <i>Imperata cylindrica</i> and <i>Lomandra longifolia</i> which are the characteristics of this PCT, however, the site's vegetation is in highly degraded state.

#### 4.2.2.2 Condition states

Each PCT within the site has been assessed as being in poor condition this is due to each PCT lacking in a mid and ground stratum, a grassland assessment was undertaken on the 16/12/2023, 17/12/2023, 20/07/2023 and 29/04/2023 which determined the sites ground cover predominantly consists of non-native species. Each PCT also only consists of scattered trees this is due to the management and clearing of the site for bushfire purposes.

#### 4.2.2.5 Alignment with EPBC Act listed ECs

N/A

### 4.3 Threatened ecological communities

- PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest
- PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.

PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest is associated with the threatened ecological communities. These being the BC Act listed Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions and EPBC Act listed Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland.



## 4.4 Vegetation zones

For the purposes of the BAM, a vegetation zone is an area of native vegetation on the site that is the same PCT and has a similar broad condition state. The site's impacted PCTs have been divided into two vegetation zones (as detailed in Table 4-3) (see Appendix I for photos). A patch size area has been assigned to each vegetation zone, as a class (as detailed in Table 4-3). See Appendix I for photos of each vegetation zone.

**Table 4-3 Vegetation zones and patch sizes**

PCT	Vegetation Zone (VZ) Name	Vegetation Zone Description	Patch Size Class
PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.	VZ 1: Poor	PCT 3436 has been classed as being in poor condition this is due to having a scattered canopy cover of mature trees whilst lacking a functioning mid stratum, this vegetation zone also has a groundcover that predominantly consists of exotic ground cover species.	101
PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest	VZ2: Poor	PCT 3995 has been classed as being in poor condition this is due to having a scattered canopy cover of mature trees whilst lacking a functioning mid stratum, this vegetation zone also has a groundcover that predominantly consists of exotic ground cover species.	101

## 4.5 Vegetation integrity (vegetation condition)

### 4.5.1 Vegetation integrity survey plots

Each vegetation zone identified on the site has been surveyed to obtain a quantitative measure for each zone, of the composition, structure and function attributes listed in Table 3 of the BAM. These attributes are listed below:

- Growth form groups used to assess composition and structure:

- Tree
- Shrub
- Grass and grass like
- Forb
- Fern
- Other

- Attributes used to assess function:

- Number of large trees
- Tree regeneration
- Tree stem size class
- Total length of fallen logs
- Litter cover
- High threat exotic vegetation cover
- Hollow-bearing trees

Plot-based surveys were conducted, in accordance with s.5.3.4 of the BAM on 21<sup>st</sup> November 2022 by one (1) ecologist and 29<sup>th</sup> April 2025 by two (2) ecologists. Survey plots were established around a central 50m transect and included:

- One 400 m<sup>2</sup> (20 m x 20 m) plot to assess the composition and structure attributes listed above.
- One 1000 m<sup>2</sup> (20 m x 50 m) plot to assess the function attributes: number of large trees, stem size class, tree regeneration and length of logs.
- Five 1 m<sup>2</sup> sub-plots to assess average litter cover (and other optional groundcover components).

10 (1m x 1m) Grassland quadrats were also undertaken on the 20<sup>th</sup> July 2023 to record the extent of native/ exotic ground cover found within the site.

See previous Figure 6 for plot locations. Plot data is provided in Appendix E. Table 4-4 details the Vegetation Integrity Score.

#### 4.5.2 Scores

**Table 4-4 Vegetation Integrity Score**

PCT	Vegetation Zone (VZ)	Composition Score	Structure Condition Score	Function Condition Score	Vegetation Integrity Score
PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.	VZ 1: Poor	55.4	63	13.1	35.7
PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest	VZ 2: Poor	26.5	31.8	42.8	33

#### 4.5.3 Use of benchmark data

**Table 4-5: Zone Composition Benchmark Data:**

PCT or vegetation class	Tree	Shrub	Grass & Grass like	Forb	Fern	Other
PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.	5	12	11	11	2	5
PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest	4	9	8	6	2	5

**Table 4-6: Zone Structure Benchmark Data:**

PCT or vegetation class	Tree	Shrub	Grass & Grass like	Forb	Fern	Other
PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.	55	34	66	8	1	4
PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest	26	19	52	3	2	3

**Table 4-7: Zone Function Benchmark Data:**

PCT or vegetation class	Number of Large Trees	Litter Cover	Length of Fallen Logs	Stem size class	Tree regeneration <5cm diameter	High Threat Weed Cover
PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.	3	65	45	4	Present	-
PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest	5	44	44	4	Present	-





## 5. Habitat suitability for threatened species

### 5.1 Identifying Threatened Species for Assessment

Threatened species that require assessment are initially identified based upon the following criteria:

- the distribution of the species includes the IBRA subregion in which the subject land occurs
- the study area is within any geographic constraints of the distribution of the species within the IBRA subregion.
- the species is associated with any of the PCTs identified within the study area
- the native vegetation cover within an assessment area including a 1500m buffer around the study area is equal to or greater than the minimum required for the species.
- the patch size that each vegetation zone is part of is equal to or greater than the minimum required for that species.
- the species is identified as an ecosystem or species credit species in the Threatened Biodiversity Data Collection.

The process for identifying threatened species which meet the above criteria is completed through the BAM Calculator. The PCTs identified within the study area, patch sizes and native vegetation cover, as outlined in Section 3, were entered into the BAM Calculator and a preliminary list of threatened species were identified.

### 5.2 Identification of threatened species for assessment

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

Ecosystem Credit Species	Habitat Constraints	Veg Zone - Confirmed Predicted Species	Justification when not confirmed for a Veg Zone	BC Act listing	EPBC Act listing
<i>Anthochaera phrygia</i> Regent Honeyeater (Foraging)	-	3436_Poor 3995_Poor	N/A	CE	CE
<i>Artamus cyanopterus</i> <i>cyanopterus</i> Dusky Woodswallow	-	3436_Poor 3995_Poor	N/A	V	-



<b><i>Botaurus poiciloptilus</i></b> Australasian Bittern	3995_Poor • Waterbodies; Brackish freshwater wetlands or	3995_Poor	N/A	E	E
<b><i>Calidris canutus</i></b> Red Knot (Foraging)	-	3995_Poor	N/A	-	E
<b><i>Calidris ferruginea</i></b> Curlew Sandpiper (Foraging)	-	3995_Poor	N/A	CE	CE
<b><i>Calidris tenuirostris</i></b> Great Knot (Foraging)	-	3995_Poor	N/A	V	V
<b><i>Callocephalon fimbriatum</i></b> Gang-gangCockatoo (Foraging)	-	3436_Poor 3995_Poor	N/A	E	E
<b><i>Calyptrorhynchus lathami lathami</i></b> South-eastern Glossy Black-Cockatoo (Foraging)	3436_Poor Other; Presence of Allocasuarina and casuarina species 3995_Poor Other; Presence of Allocasuarina and casuarina species	3436_Poor 3995_Poor	No casuarinas and Allocasuarina are on the site.	V	V
<b><i>Charadrius leschenaultii</i></b> Greater Sand-plover (Foraging)	• -	3995_Poor	No Mistletoes species present in this PCT.	V	V
<b><i>Charadrius mongolus</i></b> Lesser Sand-plover (Foraging)	-	3995_Poor	The site is not within 1 km of rivers, lakes, large dams or creeks, wetlands and coastlines. Although there are dams in the local area, these are small farm dams only.	V	E



<b><i>Chthonicola sagittata</i></b> Speckled Warbler	-	3436_Poor	N/A	V	-
<b><i>Circus assimilis</i></b> Spotted Harrier	-	3436_Poor 3995_Poor	N/A	V	-
<b><i>Climacteris picumnus victoriae</i></b> Brown Treecreeper (eastern subspecies)	-	3436_Poor 3995_Poor	N/A	V	V
<b><i>Daphoenositta chrysoptera</i></b> Varied Sittella	-	3436_Poor 3995_Poor	N/A	V	-
<b><i>Dasyurus maculatus</i></b> Spotted-tailed Quoll	-	3436_Poor 3995_Poor	N/A	V	E
<b><i>Ephippiorhynchus asiaticus</i></b> Black-necked Stork	3436_Poor  Swamps;Shallow, open freshwater or saline wetlands or shallow edges of deeper wetlands within 300m of these swamps  Waterbodies;Shallow lakes, lake margins and estuaries within 300m of these waterbodies 3995_Poor  Swamps;Shallow, open freshwater or saline wetlands or shallow edges of deeper wetlands within 300m of these swamps  Waterbodies;Shallow lakes, lake margins and estuaries within 300m of these waterbodies	3436_Poor 3995_Poor	N/A	E	-



<b><i>Falco subniger</i></b> Black Falcon	-	3436_Poor 3995_Poor	N/A	V	-
<b><i>Falsistrellus tasmaniensis</i></b> <b><i>Eastern False Pipistrelle</i></b>	-	3436_Poor  3995_Poor	N/A	V	-
<b><i>Glossopsitta pusilla</i></b> Little Lorikeet	-	3436_Poor 3995_Poor	N/A	V	-
<b><i>Grantiella picta</i></b> Painted Honeyeater	3995_Poor Mistletoes present at a density of greater than five mistletoes per hectare	3995_Poor	No mistletoes are present on the site	V	V
<b><i>Haliaeetus leucogaster</i></b> White-bellied Sea Eagle (Foraging)	3436_Poor <ul style="list-style-type: none"><li>Within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines</li></ul> 3995_Poor Within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines	3436_Poor 3995_Poor	N/A	V	-
<b><i>Hieraaetus morphnoides</i></b> Little Eagle (Foraging)	-	3436_Poor 3995_Poor	N/A	V	-
<b><i>Hirundapus caudacutus</i></b> White-throated Needletail	-	3436_Poor 3995_Poor	N/A	V	V
<b><i>Ixobrychus flavicollis</i></b> Black Bittern	3436_Poor Waterbodies; Land within 40 m of freshwater and estuarine wetlands, in areas of permanent water	3436_Poor 3995_Poor	N/A	V	-



	and dense vegetation  <i>3995_Poor</i> Waterbodies; Land within 40 m of freshwater and estuarine wetlands, in areas of permanent water and dense vegetation				
<b><i>Lathamus discolor</i></b> Swift Parrot (Foraging)	-	3436_Poor 3995_Poor	N/A	E	CE
<b><i>Limicola falcinellus</i></b> Broad-billed Sandpiper (Foraging)		3436_Poor	N/A	V	-
<b><i>Limosa lapponica baueri</i></b> <i>Bar-tailed Godwit (baueri)</i> (Foraging)	-	3995_Poor	N/A	-	V
<b><i>Lophoictinia isura</i></b> Square-tailed Kite (Foraging)	-	3436_Poor 3995_Poor	N/A	V	-
<b><i>Melanodryas cucullata cucullata</i></b> Hooded Robin (south-eastern form)	-	3995_Poor	N/A	E	E
<b><i>Melithreptus gularis gularis</i></b> Black-chinned Honeyeater (eastern subspecies)	-	3436_Poor	N/A	V	-
<b><i>Micronomus norfolkensis</i></b> Eastern Coastal Free-tailed Bat	-	3436_Poor 3995_Poor	N/A	V	-
<b><i>Miniopterus australis</i></b> Little Bentwing-bat (Foraging)	-	3436_Poor 3995_Poor	N/A	V	-



<b><i>Miniopterus orianae oceanensis</i></b> Large Bentwing-bat (Foraging)	-	3436_Poor 3995_Poor	N/A	V	-
<b><i>Neophema pulchella</i></b> Turquoise Parrot	-	3436_Poor	N/A	V	-
<b><i>Pandion cristatus</i></b> Eastern Osprey (Foraging)	-	3436_Poor 3995_Poor	N/A	V	-
<b><i>Petaurus australis</i></b> Yellow-bellied Glider	-	3436_Poor	N/A	V	V
<b><i>Petroica boodang</i></b> Scarlet Robin	-	3436_Poor	N/A	V	-
<b><i>Petroica phoenicea</i></b> Flame Robin	-	3436_Poor	N/A	V	-
<b><i>Pomatostomus temporalis temporalis</i></b> Grey-crowned Babbler (Eastern subspecies)	-	3436_Poor 3995_Poor	N/A	V	-
<b><i>Pseudomys novaehollandiae</i></b> New Holland Mouse	-	3436_Poor	N/A	-	V
<b><i>Pteropus poliocephalus</i></b> Grey-headed Flying-fox (Foraging)	-	3436_Poor 3995_Poor	N/A	V	V
<b><i>Rostratula australis</i></b> Australian Painted Snipe	-	3995_Poor	N/A	E	E
<b><i>Saccolaimus flaviventris</i></b> Yellow-bellied Sheath-tail-bat	-	3436_Poor	N/A	V	-
<b><i>Scoteanax rueppellii</i></b> Greater Broad-nosed Bat	-	3436_Poor 3995_Poor	N/A	V	-



<b><i>Xenus cinereus</i></b> Terek Sandpiper (Foraging)	-	3995_Poor	N/A	V	V
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### 5.1.2 Species credit species

Species credit species (or candidate species) are those where the likelihood of occurrence of the species or elements of suitable habitat for the species, cannot be confidently predicted by vegetation surrogates and landscape features and can be reliably detected by survey. The TBDC has identified several candidate species as requiring assessment, for the proposal; these are listed in Table 5-2. Table 5-3 also provides an assessment of habitat suitability for candidate species, in accordance with s.6.4 of the BAM.

**Table 5-2: Predicted Flora species credit species**

Species Credit Species	Habitat Constraints / Geographic Limitations	Habitat Degraded	Confirmed Candidate Species for Further Assessment	Justification
<b><i>Angophora inopina</i></b> Charmhaven Apple	Nil	-	Yes	N/A
<b><i>Asperula asthenes</i></b> Trailing Woodruff	Nil	Yes	No	<b>Habitat Degraded:</b> Due micro habitat constraints and the degraded nature of the site as well as previous flora surveys in 2019 not detecting the species on site, it was determined that this species would not need to be surveyed further as it is highly unlikely that this species will occur.
<b><i>Callistemon linearifolius</i></b> Netted Bottle Brush	Nil	-	Yes	N/A
<b><i>Diuris praecox</i></b> Rough Doubletail	Nil	-	• Newcastle LGA	<b>Geographic Limitation Present:</b> Site is not located within the Newcastle LGA





<b><i>Eucalyptus parramattensis</i> subsp. <i>decadens</i></b> <i>Eucalyptus parramattensis</i> subsp. <i>Decadens</i>	Nil	-	Yes	N/A
<b><i>Grevillea parviflora</i> subsp.</b> Small-flower grevillea	Nil	-	Yes	N/A
<b><i>Pterostylis chaetophora</i></b> Pterostylis chaeterophora	Nil	Yes	No	<b>Habitat Degraded:</b> Due micro habitat constraints and the degraded nature of the site it was determined that this species would not need to be surveyed further as it is highly unlikely that this species will occur.
<b><i>Rhodamnia rubescens</i></b> Scrub Turpentine	Nil	-	Yes	N/A
<b><i>Rhodomyrtus psidioides</i></b> Native Guava	Nil	-	Yes	N/A
<b><i>Syzygium paniculatum</i></b> Magenta Lilly Pilly	Nil	-	Yes	N/A
<b><i>Tetratheca juncea</i></b> Black-eyed Susan	Nil	Yes	No	<b>Habitat Degraded:</b> Due micro habitat constraints and the degraded nature of the site it was determined that this species would not need to be surveyed further as it is highly unlikely that this species will occur.



**Table 5-3: Predicted Fauna species credit species**

Species Credit Species	Habitat Constraints / Geographic Limitations	Habitat Degraded	Confirmed Candidate Species for Further Assessment	Justification
<i>Anthochaera phrygia</i> Regent Honeyeater (Breeding)	<ul style="list-style-type: none"> <li>As per Important Habitat map</li> </ul>	-	No	<b>Habitat constraints not present:</b> The study area is not within or near a mapped area of important habitat for this species.
<i>Burhinus grallarius</i> Bush Stone-curlew	<ul style="list-style-type: none"> <li>Fallen/standing dead timber including logs</li> </ul>	-	No	<b>Habitat constraints not present:</b> The study area does not contain standing or fallen logs.
<i>Calidris canutus</i> Red Knot (Breeding)	<ul style="list-style-type: none"> <li>Other</li> <li>As per Important Habitat map</li> </ul>	-	No	<b>Habitat constraints not present:</b> The study area is not within or near a mapped area of important habitat for this species.
<i>Calidris ferruginea</i> Curlew Sandpiper (Breeding)	<ul style="list-style-type: none"> <li>Other</li> <li>As per Important Habitat map</li> </ul>	-	No	<b>Habitat constraints not present:</b> The study area is not within or near a mapped area of important habitat for this species.
<i>Calidris tenuirostris</i> Great Knot (Breeding)	<ul style="list-style-type: none"> <li>Other</li> <li>As per Important Habitat map</li> <li>within 5 km of coast or tidal influenced water bodies</li> </ul>	Yes		<b>Habitat degraded:</b> Habitat is degraded to a point in which it is no longer viable for this species.
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo (Breeding)	<ul style="list-style-type: none"> <li>Hollow bearing trees</li> <li>Eucalypt tree species with hollows at least 3 m above the ground and with hollow diameter of 7 cm or larger</li> </ul>	-	Yes	<b>Habitat constraints present:</b> This study area has Hollow bearing trees and eucalypt tree species with hollows greater than 7 cm in diameter present.
<i>Calyptrorhynchus lathamii</i> Glossy Black-Cockatoo (Breeding)	<ul style="list-style-type: none"> <li>Hollow bearing trees</li> </ul>	-	Yes	<b>Habitat constraints present:</b> This study area has hollow bearing trees and living or dead trees with hollows greater than 15 cm in



	<ul style="list-style-type: none"> <li>Living or dead tree with hollows greater than 15 cm diameter and higher than 8m above the ground</li> </ul>			diameter and greater than 8m above the ground present.
<b><i>Cercartetus nanus</i></b> Eastern Pygmy-possum	Nil	Yes	No	<b>Habitat degraded:</b> Habitat is degraded to a point in which it is no longer viable for this species, however Elliot trapping did occur on site and this specie was not recorded.
<b><i>Chalinolobus dwyeri</i></b> Large-eared Pied Bat	<ul style="list-style-type: none"> <li>Cliffs</li> <li>Within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels</li> </ul>	-	No	<b>Habitat constraints not present:</b> This study area is not within or near cliffs or within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels.
<b><i>Charadrius mongolus</i></b> <b><i>Lesser Sand-plover</i></b> <b>(Breeding)</b>	<ul style="list-style-type: none"> <li>Other</li> <li>As per Important Habitat map</li> </ul>	-	No	<b>Habitat constraints not present:</b> The study area is not within or near a mapped area of important habitat for this species.
<b><i>Crinia tinnula</i></b> Wallum Froglet	Nil	Yes	No	<b>Habitat degraded:</b> On site drainage has been formed due to urban runoff and is considered degraded habitat for this species due to proximity of urban built environment, as such this species would be unlikely to occur as appropriate breeding habitat is not found within the site's boundaries. BioNet atlas search shows closest record of this species is >2km to the East of the site recorded in 1999.
<b><i>Dromaius novaehollandiae</i> - <i>endangered population</i></b> Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	<ul style="list-style-type: none"> <li>Port Stephens LGA</li> </ul>	Yes	No	<b>Habitat constraints not present:</b> The site is degraded to a level that will not be suitable habitat for this species, site is within an urban area with little to no habitat corridor movement, therefore it is highly unlikely that this species will be found within the site.



<b><i>Haliaeetus leucogaster</i></b> White-bellied Sea Eagle (Breeding)	<ul style="list-style-type: none"> <li>Living or dead mature trees within suitable vegetation within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines</li> </ul>	-	No	<b>Habitat constraints not present:</b> The study area is not within 1km of a river, lake large dam or creek. A man-made water retention basin lies >450m to the South-West of the site however this water retention basin is not large enough
<b><i>Hieraaetus morphnoides</i></b> Little Eagle (Breeding)	<ul style="list-style-type: none"> <li>Nest trees - live (occasionally dead) large old trees within vegetation)</li> </ul>	-	Yes	<b>Habitat constraints present:</b> This study area does contain.  Nest trees - live (occasionally dead) large old trees within vegetation)
<b><i>Hoplocephalus stephensii</i></b> Stephens' Banded Snake	<ul style="list-style-type: none"> <li>Hollow bearing trees;Or within 500 m of this habitat</li> <li>Other;Within 500 m of aboreal vine tangles</li> <li>Fallen/standing dead timber including logs;Or within 500 m of this habitat</li> </ul>	Yes	No	<b>Degrade Habitat:</b> Sites habitat is degraded with minimal hollow bearing trees; The species uses very old primary forest with many large old hollow bearing trees. Habitat needs to be well connected and geographically large. Juveniles and subadults will regularly inhabit small hollows, while adults are usually found in larger hollows. The species reproduces usually triennially or less often, never annually. As such it is highly unlikely that this species will occur on site.
<b><i>Lathamus discolor</i></b> Swift Parrot (Breeding)	<ul style="list-style-type: none"> <li>Other</li> <li>As per Important Habitat Map</li> </ul>	-	No	<b>Habitat constraints not present:</b> The study area is not within or near a mapped area of important habitat for this species.
<b><i>Litoria aurea</i></b> Green and Golden Bell Frog	<ul style="list-style-type: none"> <li>Semi-permanent/ephemeral wet areas</li> <li>Within 1km of wet areas Swamps</li> <li>Within 1km of swamp Waterbodies</li> <li>Within 1km of waterbody</li> </ul>	Yes	No	<b>Habitat degraded:</b> On site drainage has been formed due to urban runoff and is considered degraded habitat for this species due to proximity of urban built environment, as such this species would be unlikely to occur as appropriate breeding habitat is not found within the site's boundaries. BioNet atlas



				search shows no records of this species within a 10km buffer of the site.
<b><i>Lophoictinia isura</i></b> Square-tailed Kite (Breeding)	<ul style="list-style-type: none"> <li>Other</li> <li>Nest trees</li> </ul>	-	Yes	<b>Habitat constraints present:</b> This study area contains nest trees.
<b><i>Miniopterus australis</i></b> Little Bentwing-bat (Breeding)	<ul style="list-style-type: none"> <li>Caves</li> <li>Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave'</li> <li>observation type code 'E nest-roost'</li> <li>with numbers of individuals &gt;500</li> <li>or from the scientific literature</li> </ul>	-	No	<b>Habitat constraints not present:</b> This study area does not contain cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave'. No observation type code 'E nest-roost'.
<b><i>Miniopterus orianae oceanensis</i></b> Large Bent-winged Bat (Breeding)	<ul style="list-style-type: none"> <li>Caves</li> <li>Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave'</li> <li>observation type code 'E nest-roost'</li> <li>with numbers of individuals &gt;500</li> </ul>	-	No	<b>Habitat constraints not present:</b> This study area does not contain cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave'. No observation type code 'E nest-roost'.
<b><i>Myotis macropus</i></b> Southern Myotis	<ul style="list-style-type: none"> <li>Hollow bearing trees</li> <li>Within 200 m of riparian zone</li> <li>Bridges, caves or artificial structures within 200 m of riparian zone</li> <li>This includes rivers, creeks, billabongs, lagoons, dams and other waterbodies on or within 200m of the site</li> </ul>	-	No	<b>Habitat constraints not present:</b> small pond lies to the south-West at a distance of 200 m from the site, however no hollow bearing trees within this distance are to be removed as part of the development as such habitat features on site will not be impacted by the proposal.



Barking Owl (Breeding)	<ul style="list-style-type: none"> <li>Hollow Bearing trees</li> <li>'Living or dead trees with hollows greater than 20cm diameter and greater than 4m above the ground.</li> </ul>	-	Yes	<b>Habitat constraints present:</b> The site contains hollow bearing trees with hollows greater than 20cm diameter and that occur 4m above the ground.
<i>Ninox strenua</i> Powerful Owl (Breeding)	<ul style="list-style-type: none"> <li>Hollow bearing trees</li> <li>Living or dead trees with hollow greater than 20cm diameter</li> </ul>	-	Yes	<b>Habitat constraints present:</b> The site contains hollow bearing trees with hollows greater than 20cm diameter and that occur 4m above the ground.
<i>Pandion cristatus</i> Eastern Osprey (Breeding)	<ul style="list-style-type: none"> <li>Presence of stick-nests in living and dead trees (&gt;15m) or artificial structures within 100m of a floodplain for nesting)</li> </ul>	-	No	<b>Habitat constraints not present:</b> The study area does not contain stick nests.
<i>Petauroides volans</i> Southern Greater Glider	<ul style="list-style-type: none"> <li>Nil</li> </ul>	-	Yes	-
<i>Petaurus norfolcensis</i> Squirrel Glider	<ul style="list-style-type: none"> <li>Nil</li> </ul>	-	Yes	-
<i>Petrogale penicillata</i> Brush-tailed Rock-wallaby	<ul style="list-style-type: none"> <li>Land within 1km of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or cliff lines.</li> <li>Other</li> </ul>	-	No	<b>Habitat constraints not present:</b> The study site is not located within 1km of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or cliff lines.
<i>Phascogale tapoatafa</i> Brush-tailed Phascogale	<ul style="list-style-type: none"> <li>Hollow bearing trees</li> </ul>	-	Yes	-
<i>Phascolarctos cinereus</i> Koala (Breeding)	<ul style="list-style-type: none"> <li>Presence of Koala use trees – refer to Survey Comments field in TBDC</li> </ul>	-	Yes	<b>Habitat Constraint Present:</b> Koala feed trees are present on-site.
<i>Planigale maculata</i> Common Planigale	<ul style="list-style-type: none"> <li>Nil</li> </ul>	Yes	No	<b>Habitat degraded:</b> The habitat within the site is at a degraded level in which this species would not be able to utilise the site as habitat, an OEH BioNet Atlas search within 10km of the site has shown that no records of this



				species has been recorded within 10km of the site.
<b><i>Pteropus poliocephalus</i></b> Grey-headed Flying-fox (Breeding)	<ul style="list-style-type: none"> <li>Other</li> <li>Breeding camps</li> </ul>	-	No	<b>Habitat constraints not present:</b> The study area does not contain any breeding camps.
<b><i>Tyto novaehollandiae</i></b> Masked Owl (Breeding)	<ul style="list-style-type: none"> <li>Hollow bearing trees</li> <li>Living or dead trees with hollows greater than 20cm diameter that occurs &gt;4 metres above the ground</li> </ul>	-	Yes	<b>Habitat constraints present:</b> The study area does contain hollow bearing trees, living or dead trees with hollows greater than 20cm diameter.
<b><i>Uperoleia mahonyi</i></b> Mahony's Toadlet	<ul style="list-style-type: none"> <li>Nil</li> </ul>	Yes	No	<b>Habitat degraded:</b> On site drainage has been formed due to urban runoff and is considered degraded habitat for this species due to proximity of urban built environment, as such this species would be unlikely to occur as appropriate breeding habitat is not found within the site's boundaries. Closest historical record of this species near the site occurs >2km to the South of the site recorded in 2020.
<b><i>Vespadelus troughtoni</i></b> Eastern Cave Bat	<ul style="list-style-type: none"> <li>Caves; Within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, crevices or boulder piles, or within two kilometres of old mines, tunnels, old buildings or sheds."</li> </ul>		No	<b>Habitat constraints not present:</b> The study area does not contain caves or is within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, crevices or boulder piles, or within two kilometres of old mines, tunnels, old buildings or sheds."

### 5.3 Presence of candidate species credit species

**Table 5-4 Determining the presence of candidate flora species credit species on the subject land**

Species Presence	Confirmed presence
<b><i>Acacia bynoeana</i></b> Bynoe's Wattle	No-Surveyed
<b><i>Angophora inopina</i></b> Charmhaven Apple	No-Surveyed
<b><i>Callistemon linearifolius</i></b> Netted Bottle Brush	No-Surveyed
<b><i>Corybas dowlingii</i></b> Red Helmet Orchid	No-Surveyed
<b><i>Cynanchum elegans</i></b> White-flowered Wax Plant	No-Surveyed
<b><i>Eucalyptus camfieldii</i></b> Camfield's Stringybark	No-Surveyed
<b><i>Grevillea parviflora subsp. parviflora</i></b> Small-flower Grevillea	No-Surveyed
<b><i>Melaleuca groveana</i></b> Grove's Paperbark	No-Surveyed
<b><i>Pomaderris queenslandica</i></b> Scant Pomaderris	No-Surveyed
<b><i>Rhodamnia rubescens</i></b> Scrub Turpentine	No-Surveyed
<b><i>Rhodomyrtus psidioides</i></b> Native Guava	No-Surveyed
<b><i>Rutidosia heterogama</i></b> Heath Wrinklewort	No-Surveyed

**Table 5-5 Determining the presence of candidate fauna species credit species on the subject land**

Species Presence	Confirmed presence
<b><i>Callocephalon fimbriatum</i></b> Gang-gang Cockatoo	No-Surveyed
<b><i>Calyptorhynchus lathamii</i></b> Glossy Black-Cockatoo	No-Surveyed
<b><i>Haliaeetus leucogaster</i></b> White-bellied Sea-Eagle	No-Surveyed
<b><i>Hieraaetus morphnoides</i></b> Little Eagle	No-Surveyed
<b><i>Lophoictinia isura</i></b> Square-tailed Kite	No-Surveyed
<b><i>Myotis Macropus</i></b> Southern Myotis	No-Surveyed
<b><i>Ninox connivens</i></b> Barking Owl	No-Surveyed



<b><i>Ninox strenua</i></b> Powerful Owl	No-Surveyed
<b><i>Petauroides volans</i></b> Southern Greater Glider	Results are awaited
<b><i>Petaurus norfolcensis</i></b> Squirrel Glider	Results are awaited
<b><i>Phascogale tapoatafa</i></b> Brush-tailed Phascogale	No-Surveyed
<b><i>Phascolarctos cinereus</i></b> Koala	Yes-Assumed present
<b><i>Tyto novaehollandiae</i></b> Masked Owl	No-Surveyed

## 5.4 Threatened species surveys

Table 5-6 Threatened species surveys for candidate flora species credit species on the subject land

Common name	Scientific name	Threatened flora species surveys			Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (transects or grids)	Timing of survey – within recommended period? (BAM-C / TBDC)		Effort (hours & no. people)	
Charmhaven Apple	<b><i>Angophora inopina</i></b>	Parallel field-transverse method	<input checked="" type="checkbox"/> Yes 01/08/2023 8.00 AM – 10.00 AM 02/05/2025 9.00 AM – 12.00 PM	<input type="checkbox"/> No <Dates & times>	2 hours, 2 People	No
Netted Bottle Brush	<b><i>Callistemon linearifolius</i></b>	Parallel field-transverse method	<input type="checkbox"/> Yes <Dates & times>	<input checked="" type="checkbox"/> No 01/08/2023 8.00 AM – 10.00 AM 02/05/2025 9.00 AM – 12.00 PM	2 hours, 2 People	No
<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>	<b><i>Eucalyptus parramattensis</i> subsp. <i>decadens</i></b>	Parallel field-transverse method	<input checked="" type="checkbox"/> Yes 01/08/2023 8.00 AM – 10.00 AM 02/05/2025 9.00 AM – 12.00 PM	<input type="checkbox"/> No <Dates & times>	2 hours, 2 People	No
Small-flower Grevillea	<b><i>Grevillea parviflora</i> subsp. <i>parviflora</i></b>	Parallel field-transverse method	<input checked="" type="checkbox"/> Yes 01/08/2023	<input type="checkbox"/> No <Dates & times>	2 hours, 2 People	No

		se method	8.00 AM – 10.00 AM 02/05/2025 9.00 AM – 12.00 PM				
Scrub Turpentine	<b><i>Rhodamnia rubescens</i></b>	Parallel field- transverse method	<input checked="" type="checkbox"/> Yes 20/06/2023 9.00 AM – 12.00 PM	<input type="checkbox"/> No <Dates & times>	2 hours, 2 People	No	No
Native Guava	<b><i>Rhodomyrtus psidioides</i></b>	Parallel field- transverse method	<input checked="" type="checkbox"/> Yes 20/06/2023 9.00 AM – 12.00 PM	<input type="checkbox"/> No <Dates & times>	2 hours, 2 People	No	No
Magenta Lilly Pilly	<i>Syzygium paniculatum</i>	Parallel field- transverse method	<input checked="" type="checkbox"/> Yes 02/05/2025 9.00 AM – 12.00 PM	<input type="checkbox"/> No <Dates & times>	2 hours, 2 People	No	No

Refer to Section 2.4.3 for detailed survey effort.

**Table 5-7: Threatened species surveys for candidate fauna species credit species on the subject land**

Common name	Scientific name	Threatened fauna species surveys			Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)	
		Survey method (e.g., harp trap, Elliott trap, bioacoustics, etc.)	Timing of survey – within recommended period? (BAM-C / TBDC)				Effort (hours & no. people)
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	Bird Watching/ Watching hollows during dusk	<input checked="" type="checkbox"/> Yes 09/11/2019 8.00 AM – 9.00 AM 10/11/2019 8.00 AM – 9.00 AM 11/11/2019 8.30 AM – 10.00 AM 13/11/2019 7.30 AM – 9.00 AM	<input type="checkbox"/> No <Dates & times>		No	No



Glossy Black-Cockatoo	<b><i>Calyptrorhynchus lathamii</i></b>	Bird Watching/ Watching hollows during dusk	<input checked="" type="checkbox"/> Yes 31/07/2023 8.30 AM – 9.30 AM  01/08/2023 8.30 AM – 10.00 AM 02/08/2023 8.30 AM – 9.30 AM 03/08/2023 8.00 AM – 9.00 AM	<input type="checkbox"/> No <Dates & times>		No	No
White-bellied Sea-Eagle	<b><i>Haliaeetus leucogaster</i></b>	Bird Watching	<input checked="" type="checkbox"/> Yes 01/08/2023 8.30 AM – 10.00 AM 02/08/2023 8.30 AM – 9.30 AM 03/08/2023 8.00 AM – 9.00 AM	<input type="checkbox"/> No <Dates & times>		No	No
Little Eagle	<b><i>Hieraaetus morphnoides</i></b>	Bird Watching	<input checked="" type="checkbox"/> Yes 01/08/2023 8.30 AM – 10.00 AM 02/08/2023 8.30 AM – 9.30 AM 03/08/2023 8.00 AM – 9.00 AM	<input type="checkbox"/> No <Dates & times>		No	No
Square-tailed Kite	<b><i>Lophoictinia isura</i></b>	Bird Watching	<input checked="" type="checkbox"/> Yes 09/11/2019 8.00 AM – 9.00 AM 10/11/2019 8.00 AM – 9.00 AM 11/11/2019 8.30 AM – 10.00 AM	<input type="checkbox"/> No <Dates & times>		No	No

			13/11/2019 7.30 AM – 9.00 AM				
Southern Myotis	<b><i>Myotis macropus</i></b>	Anabat detectors	<input checked="" type="checkbox"/> Yes 11-13/02 2020	<input type="checkbox"/> No <Dates & times>		No	No
Barking Owl	<b><i>Ninox connivens</i></b>	Bird watching/ listening for calls	<input checked="" type="checkbox"/> Yes 31/07/2023 01/08/2023 02/08/2023 03/08/2023	<input type="checkbox"/> No <Dates & times>		No	No
Powerful Owl	<b><i>Ninox strenua</i></b>	Bird watching/ listening for calls	<input checked="" type="checkbox"/> Yes 31/07/2023 01/08/2023 02/08/2023 03/08/2023	<input type="checkbox"/> No <Dates & times>		No	No
Southern Greater Glider	<b><i>Petauroides Volans</i></b>	Transect surveys, targeting loose timber, hollow surveys	<input checked="" type="checkbox"/> Yes 31/07/2023 8.30 AM – 9.30 AM 01/08/2023 8.30 AM – 10.00 AM 02/08/2023 8.30 AM – 9.30 AM 03/08/2023 8.00 AM – 9.00 AM	<input type="checkbox"/> No <Dates & times>		No	No
		Camera trapping	<input checked="" type="checkbox"/> Yes 29/04/2025 – 27 May 2025 4 weeks				
Squirrel Glider	<b><i>Petaurus norfolcensis</i></b>	Transect surveys, targeting loose timber, hollow surveys	<input checked="" type="checkbox"/> Yes 31/07/2023 8.30 AM – 9.30 AM 01/08/2023 8.30 AM – 10.00 AM	<input type="checkbox"/> No <Dates & times>		No	No

			02/08/2023 8.30 AM – 9.30 AM 03/08/2023 8.00 AM – 9.00 AM				
		Camera trapping	<input checked="" type="checkbox"/> Yes 29/04/2025 – 27 May 2025 4 weeks				
Brush-tailed Phascogale	<b><i>Phascogale tapoatafa</i></b>	Camera trapping	<input type="checkbox"/> Yes 29/04/2025 – 27 May 2025 4 weeks	<input type="checkbox"/> No <Dates & times>		No	No
Koala	<b><i>Phascolarctos cinereus</i></b>	Koala Surveys	<input checked="" type="checkbox"/> Yes 22 May 2024	<input type="checkbox"/> No <Dates & times>		No	No
Masked Owl	<b><i>Tyto novaehollandiae</i></b>	Bird watching/ listening for calls	<input checked="" type="checkbox"/> Yes 31/07/2023 8.30 AM – 9.30 AM 01/08/2023 8.30 AM – 10.00 AM 02/08/2023 8.30 AM – 9.30 AM 03/08/2023 8.00 AM – 9.00 AM	<input type="checkbox"/> No <Dates & times>		No	No

Refer to Section 2.4.3 for detailed survey effort.



**5.5 Expert reports**

Koala Corridor Assessment (Steven Ward, 2025). Refer to Appendix J.

**5.6 More appropriate local data (where relevant)**

N/A

**Table 5-8 Use of more appropriate local data for habitat suitability**

Species	Amendments to species data	Local data source/s
N/A		

**5.6 Area or count, and location of suitable habitat for a species credit species (a species polygon)**

N/A

**Table 5-9 Results for present species (recorded within the subject land)**

[illegible]



**Table 5-10 Results for EPBC Act listed species present (recorded within the subject land)**

<b>Common name</b>	<b>Scientific name</b>	<b>Abundance – No. individual plants present on subject land</b> (Flora with unit of measure as count)	<b>Extent (ha) of suitable habitat present on site</b> (flora or fauna with unit of measure as area)
N/A	N/A	N/A	N/A





## 6. Identifying prescribed impacts

**Table 6-1: Prescribed impacts identified**

Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature. Where relevant, threatened species or fauna that are part of a TEC or EC, that are at risk of vehicle strike
Example: Karst, caves, crevices, cliffs, rocks or other geological features of significance	<input type="checkbox"/> Yes / <input checked="" type="checkbox"/> No	No karst's, caves, crevices, cliffs, rocks are present within or near the site, as such the proposed development would not impact these features.	N/A
Example: Vehicle strikes	<input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No	N/A Site is located within an area of Medowie that is surrounded by Urban development therefore the chance for vehicle strike.	N/A
Human-made structures	<input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No	Seven existing dwellings occur on site currently, will need to be demolished as part of the future development.	N/A
Non-native vegetation	<input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No	The sites ground cover predominantly consists of exotic grasses and weeds.	N/A
Habitat connectivity	<input type="checkbox"/> Yes / <input checked="" type="checkbox"/> No	The site does not occur within any key habitat corridor identified in the Medowie Planning Strategy (PSC, 2016).	N/A
Waterbodies, water quality and hydrological processes	<input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No	One drainage line occurs within the site, however, this has been created by the urban environment	
Wind turbine strikes (wind farm development only)	<input type="checkbox"/> Yes / <input checked="" type="checkbox"/> No	N/A	N/A



## Stage 2: Impact assessment (biodiversity values and prescribed impacts)

### 7. Avoid and minimise impacts

#### 7.1 Avoid and minimise direct and indirect impacts

##### 7.1.1 Project location

The site is ~7.7ha in size and is located in Medowie. The site is zoned as RU2 Rural Landscape. The site is highly disturbed and predominantly consists of managed exotic grassland with scattered trees. The site lacks a mid-stratum due to the managed nature of the site. The sites ground cover consists of predominantly exotic ground cover species due to the constant management/ slashing of the site for bushfire purposes.

##### 7.1.2 Project design

The study area is the area of land within the site that has been assessed in this report, which is the area of vegetation within the site that is relevant to this BDAR i.e., the area of vegetation within or potentially impacted by the construction and operational footprint. Land within the site that is not considered to be impacted by the proposal (either directly or indirectly) is considered to be outside the study area. In this case however, the entire site was surveyed.

The site contains two (2) primary Plant Community Types (PCT's) including:

- PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest
- PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.

PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest is associated with the threatened ecological communities. These being the BC Act listed Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions and EPBC Act listed Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland.

#### 7.2 Avoid and minimise prescribed impacts

The following sections 7.4 to 8.4 describe efforts undertaken to avoid and minimise impacts on biodiversity values in accordance with Chapter 7 of the BAM.

#### 7.3 Other measures considered

N/A

## 7.4 Summary of measures to avoid and minimise impacts

**Table 7-1: Avoidance and minimisation measures for direct, indirect and prescribed impacts**

Locating a Project to Avoid and Minimise Impacts on Native Vegetation and Habitat	
Objectives/Requirements	Compliance
<p>Project location decisions should be informed by knowledge of biodiversity values. The biodiversity values set out in Stage 1 of the BAM may be used to provide early consideration in planning the route or location of a proposal.</p>	<p>The site is located in Medowie and the site is zoned as RU2 land. The 2016 Medowie Planning Strategy shows the area as being mapped for future residential development. As well as the Medowie Place Plan (PSC, 2023). These both show that the precinct being earmarked for both residential and mixed-use purposes.</p> <p>The mapped Biodiversity area of the site has been avoided which has few koala preferred trees i.e., <i>E. tereticornis</i> and <i>E. robusta</i> and is consistent with the Preferred koala habitat mapping as per Port Stephens Council 2024.</p>
<p>Final selection of project location may be an iterative process. Location decisions may need to be revisited when all field surveys have been completed.</p> <p>Direct impacts on clearing of native vegetation and habitat can be avoided and minimised by:</p> <p>(a) locating the development outside of biodiversity values</p> <p>(b) locating the project in areas where the native vegetation or threatened species habitat is in the poorest condition (i.e. areas that have a lower vegetation integrity score)</p> <p>(c) locating the project in areas that avoid habitat for species that have a high biodiversity risk weighting or land mapped on the important habitat map, or native vegetation that is a TEC or highly cleared PCT.</p> <p>(d) locating the project so its outside of the buffer area around breeding habitat features such as nest trees or caves</p>	<p>The proposed development will take place over RU2 Rural Landscape land.</p> <p>a) As reflected in the Biodiversity Values Map, the south-western corner of the Subject Site contains biodiversity values. The majority of this area is to be avoided by the proposed development. Koala preferred habitat in the South-western portion of the site has been avoided as part of the proposal.</p> <p>b) The Subject DA Footprint has been located within the RU2 Rural Landscape zone. The majority of the development footprint is to occur within the degraded grassland present on site.</p> <p>c) The Subject DA Footprint will impact upon TEC Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions within PCT (3995). The development footprint as stated previously avoids the area of vegetation containing the highest</p>

	<p>ecological value within the sites south-western corner. The proposed development also avoids the area of preferred koala habitat within the site south-western corner.</p> <p>The concept plan has been designed to consider a wildlife corridor for improved wildlife connectivity through the development and maintaining existing koala feed trees where possible. The wildlife corridor is to be maintained at an APZ standard to mitigate bushfire hazard.</p> <p>d) the development has been designed to avoid habitat features such as hollow bearing trees within the buffer areas around potential breeding habitat wherever possible. No established nests or caves were identified on the subject site.</p>
<p>Justifications for the decisions in determining the final location must be based on consideration of</p> <ul style="list-style-type: none"> <li>(a) an analysis of alternative modes or technologies that would avoid or minimise impacts on biodiversity values</li> <li>(b) an analysis of alternative routes that would avoid or minimise impacts on biodiversity values</li> <li>(c) an analysis of alternative sites that within a property on which the project is proposed that would avoid or minimise impacts on biodiversity values</li> </ul>	<p>The removal of vegetation will occur within the RU2 Rural Landscape.</p> <ul style="list-style-type: none"> <li>a) There are no alternative modes or technology.</li> <li>b) The route that has been selected has aimed to minimise the impacts to the biodiversity of the site.</li> <li>c) An analysis of the site has shown that the location chosen for the proposed subdivision has been chosen to minimise and avoid impacts on biodiversity values. With avoidance aimed at retaining the TEC of Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.</li> </ul>
<p>The proposal may also list and map constraints, such as:</p> <ul style="list-style-type: none"> <li>(a) Bushfire protection requirements, including clearing for asset protection zones</li> <li>(b) Flood planning levels</li> <li>(c) Servicing constraints</li> </ul>	<p>Bushfire mitigation measures including Asset Protection Zones has been implemented within the proposed lots.</p>

Design the proposal to avoid or minimise direct and indirect impacts on native vegetation, threatened species, threatened ecological communities and their habitat	
<p>Justifications for the decisions in determining the final location must be based on consideration of</p> <ul style="list-style-type: none"> <li>(a) reducing the clearing footprint of the project</li> <li>(b) locating ancillary facilities in areas where there are no biodiversity values</li> <li>(c) locating ancillary facilities in areas where the native vegetation or threatened species habitat is in the poorest condition (i.e. areas that have a lower vegetation integrity score)</li> <li>(d) locating ancillary facilities in areas that avoid habitat for species and vegetation in high threat status categories (e.g. an EEC or CEEC or entity at risk of SAI)</li> <li>(e) Actions and activities that provide for rehabilitation, ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation, threatened species, threatened ecological communities and their habitat on the development site</li> </ul>	<ul style="list-style-type: none"> <li>a) The clearing footprint of the project has been reduced as to retain the vegetation of PCT 1649</li> <li>b) The development has been located to avoid the mapped BV Area.</li> <li>c) The development has been located to avoid the mapped BV Area and TEC and has been located in the area with the lowest VIS.</li> <li>d) The EC within the site has been avoided.</li> <li>e) The site's vegetation of PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest is to be retained for conservation and rehabilitation purposes, this area of vegetation on site is listed as preferred Koala habitat as such it is being retained as to avoid impacts to said species.</li> </ul>
Avoid or Minimise Prescribed Impacts when planning the proposal	
<p>Prescribed impacts may occur on habitat features that are not native vegetation e.g., caves, rocky outcrops, and flyways. Because these types of features cannot readily replace or offset, it is important that measures to avoid minimise impacts are undertaken and are clearly documented</p>	<p>Prescribe impacts such as caves, rocky outcrops, and flyways do not occur on the site.</p>
Locating a Project to Avoid and Minimise Prescribed Biodiversity Impacts	
<p>Prescribed biodiversity impacts can be avoided and minimised by:</p> <ul style="list-style-type: none"> <li>(a) locating surface works to avoid direct impacts on the habitat features identified in Chapter 6</li> <li>(b) locating of sub-surface works, both in the horizontal and vertical plane, to avoid and minimise operations beneath the habitat features identified in Chapter 6 e.g., locating longwall panels away from</li> </ul>	<ul style="list-style-type: none"> <li>a) Surface works will impact on habitat features such as hollow bearing trees and removal of Koala Feed Trees these can be mitigated by replanting Koala Feed Trees and the installation of nest boxes.</li> <li>b) N/A</li> <li>c) The project is located to predominantly affect open grassland, with most of the site's mature canopy vegetation to be retained. The site in its current state</li> </ul>

<p>geological features of significance or water dependent plant communities and their supporting aquifers</p> <p>(c) locating the project to avoid severing or interfering with corridors connecting different areas of habitat, migratory flight paths to important habitat or local movement pathways</p> <p>(d) optimising project layout to minimise interactions with threatened species and ecological communities, e.g., designing turbine layout to allow buffers around features that attract and support aerial species, such as forest edges, riparian corridors and wetlands, ridgetops and gullies</p> <p>(e) locating the project to avoid direct impacts on water bodies or hydrological processes</p>	<p>does not function as a suitable corridor for fauna and flora species due to its highly fragmented nature and residential development surrounding the site.</p> <p>d) Project layout has been designed to avoid impact on the endangered ecological community found within the sites PCT 3995</p> <p>e) The wildlife corridor has been designed to convey flood waters through the proposed development mitigating the risk of flooding.</p>
<p>When locating a proposal, the following need to be analysed and justification should be provided for each alternative selected:</p> <p>(a) alternative modes or technologies that would avoid or minimise prescribed impacts</p> <p>(b) alternative routes that would avoid or minimise prescribed impacts</p> <p>(c) alternative locations that would avoid or minimise prescribed impacts</p> <p>(d) alternative sites within a property on which the project is proposed that would avoid or minimise prescribed impacts</p>	<p>The location of the proposal has been chosen as it minimises the impacts on biodiversity within the site, by choosing an area that consists of predominantly degraded grassland.</p> <p>Koala preferred habitat in the South-western portion of the site has been avoided as part of the proposal.</p> <p>The preferred Koala feed trees including <i>Eucalyptus tereticornis</i> (Forest Red Gum) and <i>Eucalyptus robusta</i> (Swamp Mahogany) are proposed for planting within the vegetated drainage corridor. Additional plantings are also proposed which will help to increase vegetation cover to facilitate koala movements. Koalas have been found to preferentially select trees not just for food but also for their cover and/or shelter. Sluiter et al. (2002) found that koalas in the Campbelltown area were located in Turpentine (<i>Syncarpia glomulifera</i>), but there was no evidence of browsing this species from analysis of leaf cuticle fragments in collected faecal pellets.</p> <p>In response to PSC RFI issued December 2023 AND May 2025, VC Management engaged Steven Ward EMM Consulting to provide technical advice to update the concept plan to include a riparian corridor that would provide connectivity for the Koala. Refer to Appendix J for Medowie</p>

	Koala Letter & Koala Corridor Assessment recommendations.
Justifications for project location decisions should identify any other site constraints that the proponent has considered in determining the location and design of the project, e.g., bushfire protection requirements including clearing for asset protection zones, flood planning levels, servicing constraints.	Bushfire mitigation measures have been implemented.
<b>Design the proposal to avoid or minimise prescribed impacts</b>	
<p>Design measures that can avoid or minimise prescribed impacts include:</p> <ul style="list-style-type: none"> <li>(a) engineering solutions, such as proven techniques to: i. minimise fracturing of bedrock underlying features of geological significance, or groundwater-dependent communities and their supporting aquifers ii. restore connectivity and movement corridors</li> <li>(b) design elements that minimise interactions with threatened entities, such as: i. designing turbines to dissuade perching and minimise the diameter of the rotor swept area ii. designing fencing to prevent animal entry to transport corridors iii. providing vegetated buffers rehabilitated with native species</li> <li>(c) maintaining environmental processes that are critical to the formation and persistence of habitat features not associated with native vegetation</li> <li>(d) maintaining hydrological processes that sustain threatened entities</li> <li>(e) controlling the quality of water released from the site, to avoid or minimise downstream impacts on threatened entities.</li> </ul>	Water Sensitive Urban Design (WSUD) will be implemented to ensure that water quality and runoff are appropriately like existing conditions on site and minimise prescribed impacts on biodiversity values.





## 8. Impact Assessment

### 8.1 Direct Impacts

The following describes direct impacts on native vegetation, including impacts on TECs and threatened species through the removal of potential habitat. Direct impacts of the development are detailed in the following Tables 8-1 to 8-3.

**Table 8-1: Summary of residual direct impacts**

PCT	TEC	BC Act Name / Listing Status	EPBC Act Name / Listing Status	Vegetation Zone (VZ) Name	Direct Impact
<b>PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.</b>	N/A	N/A	Not Listed	VZ1	YES
<b>PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest</b>	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and Southeast Corner Bioregions	Endangered Ecological Community	Not Listed	VZ2	YES

**Table 8-2: Impacts to Vegetation Integrity (VI) Scores**

PCT	Vegetation Zone (VZ)	Management Zone / Area Impacted	Current VI Score	Future VI Score	Change in VI Score	Total Change in VI Score
<b>PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.</b>	VZ1	0.16	33	0	-33	-33
<b>PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest</b>	VZ2	1.35	35.7	0	-35.7	-35.7

### 8.1.1 Residual direct impacts

**Table 8-3: Summary of residual direct impacts**

Direct impact (Describe the impact on PCT/TEC/EC or threatened species and their habitat)	BC Act status	EPBC Act status	SAIL entity	Project phase/timing of impact (e.g. construction, operation, rehabilitation)	Extent (ha, number of individuals)
PCT 3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub.	Not listed (Not a TEC)	Not Listed	No	Pre-construction	1.35
PCT 3995 - Hunter Coast Paperbark-Swamp Mahogany Forest	Endangered Ecological Community	Not Listed	No	Pre-construction	0.16

### 8.1.2 Assessment of Direct Impacts on Confirmed Ecosystem Credit Species

As indicated in previous Table 2-7, several predicted ecosystem credit species have been confirmed for the site. The following provides an assessment of direct impacts on the confirmed ecosystem credit species, which have been grouped into guilds.

**Birds of Prey** – *Lophoictinia isura* (Square-tailed Kite (Foraging)), *Hieraaetus morphnoides* (Little Eagle) (Foraging) and *Haliaeetus leucogaster* White-bellied Sea-Eagle.

*Hieraaetus morphnoides* (Little Eagle) and *Lophoictinia isura* (Square-tailed Kite) do hunt in terrestrial environments and are more likely to forage within in the site.

These are highly mobile species that are able to footage over large ranges. There is potential for any of these species to occur in the site's conservation area, which has largely been avoided by the proposal.

Overall, it is considered that the avoided habitat described in previous section 3.2.1, as well as the recommended mitigation measures described in previous section 3.1.2 would minimise the impacts on these wide-ranging species.

**Forest Owls** – *Ninox strenua* (Powerful Owl (Foraging)), *Ninox connivens* (Barking Owl) and *Tyto novaehollandiae* (Masked Owl (Foraging)).

These species were not recorded on the site during the targeted surveys undertaken in August 2023. The site contains potential foraging habitat for these owls; although arboreal mammal activity was observed to be low for the site, with low sightings of prey species during spotlighting surveys. Nevertheless, it must be assumed that prey species may nest and forage within the site.

These are highly mobile species that are able to forage over large ranges. There is potential for any of these species to occur in the site (although some more than others).



Suitable sized hollows were watched during spotlighting to determine the presence of potential roost sites for these owl species, the resulting surveys didn't detect any roosting activity from owl species.

### **Threatened Fauna**

*Callocephalon fimbriatum* (Gang-gang Cockatoo), *Calyptorhynchus lathamii* (Glossy Black-Cockatoo), *Myotis Macropus* (Southern Myotis), *Petaurus norfolcensis* (Squirrel Glider) and *Phascogale tapoatafa* (Brush-tailed Phascogale).

These species were not recorded within the site. The most likely habitat for these species within the site is PCT 1649 – vegetation zone 1. Direct impacts to PCT 1649 – vegetation zone 1 have been largely avoided by locating much of the development footprint in the two other PCT's on-site. The site was also deemed to be lacking in habitat suitable for species such as *Myotis Macropus* (Southern Myotis) as such it is determined that direct impacts on these threatened fauna species will be minimal.



## 8.2 Indirect impacts

**Table 8-4: Summary of residual indirect impacts**

<b>Indirect impact</b> (Describe impact, e.g., transport of weeds and pathogens from the site to adjacent vegetation)	<b>Impacted entities</b> (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	<b>Extent</b> (ha or zone reference)	<b>Frequency</b>	<b>Duration</b> (long-term/ short-term/ medium-term)	<b>Project phase/ timing of impact</b> (e.g., construction, operation, rehabilitation)	<b>Likelihood and consequences</b>
Inadvertent impacts on adjacent habitat or vegetation	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin, and South East Corner Bioregions. EPBC: Not Listed	Adjacent vegetation	Daily during construction	Potentially long-term	During construction	Low
Sedimentation and contaminated and/or nutrient rich run-off	N/A	Into downstream areas	During heavy rainfall or storm events	Potentially long-term	During rainfall events	Medium
Noise, dust, or light spill	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin, and South East Corner Bioregions. EPBC: Not Listed	Adjacent vegetation	Daily during construction and sporadically during operation	Short-term impacts during construction phase, long-term impacts	Daily during construction and sporadically during operation	Low
Transport of weeds and pathogens from the site to adjacent vegetation	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales	Potential to spread into nearby habitat	During construction and operation	Potentially long-term impacts	Ongoing for the life of the development	Medium



	North Coast, Sydney Basin, and South East Corner Bioregions. EPBC: Not Listed					
Onsite rubbish Dumping	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin, and South East Corner Bioregions. EPBC: Not Listed	Potential for rubbish to spread into areas outside the development footprint.	Anytime during construction and operation	Ongoing for the life of the development	Ongoing for the life of the development	Low
Wood collection	N/A	Potential habitat to be removed from areas outside of the development footprint	Anytime during construction and operation.	Ongoing for the life of the development	Ongoing for the life of the development	Low
Bush rock removal and disturbance	N/A	Potential habitat to be removed from areas outside of the development footprint	Anytime during construction and operation	Ongoing for the life of the development	Ongoing for the life of the development	Low
Vehicle strike	N/A	Within access roads and within development footprint	Daily, during construction and operational phases	Potential long-term impacts.	Potential long-term impacts	Low
Increased risk of fire	N/A	Adjacent vegetation	Anytime during construction and operation	Anytime during construction and operation	Anytime during construction and operation	Low



### 8.3 Prescribed impacts

No prescribed biodiversity impacts are anticipated from the proposed development. The site does not contain any habitat features identified in s.8.2.1.2 of the BAM. The proposal would not severe or significantly interfere with a habitat corridor.

#### 8.3.1 Minimisation of impacts

Mitigation measures are proposed to minimise potential impacts to the site's biodiversity values: these are summarised in Table 8-4. These include measures to be implemented in the pre-construction, construction and post-construction phases. It is considered that these measures would serve to minimise any potential direct or indirect impacts.

### 8.4 Mitigating residual impacts – management measures and implementation

**Table 8-5 Summary of proposed mitigation and management measures for residual impacts (direct, indirect and prescribed)**

Action	Responsibility	Timing
<b>Pre-construction Phase Measures</b>		
The proposed APZs are to be managed to the standards of an APZ as defined in <i>Planning for Bushfire Protection 2019</i> . No exotic trees or shrubs are to be planted within the proposed APZs. It is recommended that this should be protected in perpetuity through a positive / restrictive covenant, registered on title, under Section 88B or 88E of the Conveyancing Act 1919.	Landowner	Covenant to be established prior to commencement of any excavation or clearing works.
The boundaries of the development footprint will be delineated in the field using bunting / flagging tape to ensure inadvertent clearing / disturbance of the adjacent vegetation does not occur.	Project manager.	Prior to commencement of any excavation or clearing works.
Any site workers / contractors are to be inducted on the ecological sensitivities of the site, including, but not limited to, the importance of avoiding disturbance to the vegetation / habitat external to the development footprint.	Project manager in consultation with the project ecologist.	Prior to commencement of any excavation or clearing works.



Erosion and sediment control measures (e.g. silt fences, straw bales wrapped in geotextile etc) must be established before excavation or vegetation clearance begins and are to remain in place until all surfaces have been fully restored and stabilised.	Project manager.	Prior to commencement of any excavation or clearing works.
<p>A pre-clearing survey will be conducted by a qualified ecologist and will include the following;</p> <ul style="list-style-type: none"> <li>➤ Any habitat trees (hollow-bearing trees or nest trees) within the clearing footprint shall be clearly marked (with flagging tape or fluoro spray-paint). Any salvageable habitat features (such as ground timber), identified during the pre-clearing survey, shall be redistributed in the site's retained area of vegetation.</li> </ul> <p>Installation of nest boxes</p>	Project Ecologist	Prior to commencement of any excavation or clearing works.
<b>Construction Phase Management Actions</b>		
<p>During the clearing of native vegetation, and only if habitat trees occur within the development footprint, a suitably qualified and experienced ecologist must:</p> <ul style="list-style-type: none"> <li>a) Ensure no vegetation clearing occurs outside of the approved clearing footprint.</li> <li>b) Ensure soft felling techniques are utilised for felling of any habitat/hollow-bearing trees.</li> <li>c) Supervise all habitat/hollow-bearing tree removal to capture and/or relocate any dispersed fauna.</li> <li>d) Transport any injured wildlife to appropriate veterinary care or transfer the animal to a local volunteer wildlife carer group.</li> <li>e) Provide post-clearing reporting back to Council should any threatened species be captured or encountered by clearing operations.</li> </ul>	Project ecologist	During clearing.
Appropriate weed control measures must be implemented, including for instance:	Project manager.	During excavation, clearing and construction works.





<ul style="list-style-type: none"> <li>All weeds removed from the site must be transported in a sealed container or bag and disposed at a waste management facility licenced to accept green waste.</li> <li>Vehicles, machinery and equipment must be free from weed material (including seeds) before entering the construction corridor.</li> </ul>		
Any spoil storage areas or stockpiles will have appropriate erosion control devices installed to control runoff and prevent sedimentation.	Project manager.	During excavation, clearing and construction works.
Materials, plant and equipment are not to be stored within the drip-lines of any retained trees at the site or near the site.	Project manager.	During excavation, clearing and construction works.
Topsoil is to be removed from newly cleared areas and then stockpiled for later use in the rehabilitation and/or landscaping works.	Project manager.	During excavation, clearing and construction works.
Cleared vegetation will be mulched and stockpiled for later use in any vegetation restoration/landscaping activities (provided that it doesn't contain weed material). Where possible, any felled trees may be cut into manageable sections and redistributed in the site.	Project manager.	During excavation, clearing and construction works.
Sediment and erosion control devices will be inspected regularly, maintained to ensure effectiveness over the entire duration of the project, and cleaned out before 30% capacity is reached.	Project manager.	During excavation, clearing and construction works.
<b>Post-construction Phase Management Actions</b>		
All temporary erosion and sediment control devices such as silt-stop fencing will be removed from the site at the completion of the works, but not until the site is fully revegetated/stabilised.	Project manager.	After construction, but not until the site is fully revegetated/stabilised.



## 8.5 Adaptive management strategy for uncertain impacts (where relevant)

Address the following considerations to outline an adaptive management plan for uncertain impacts (indirect or prescribed), or remaining impacts where mitigation measures have not been proposed:

- identify impacts where no mitigation measures are proposed
- describe the impacts (PCT/ threatened entity/ indirect/ prescribed)
- indicate the likelihood of impact and details of the extent, both spatially and temporally
- document the baseline data required and monitoring methods to measure uncertain impacts including frequency, timing and reporting; include published data sources where relevant
- assign performance indicators that trigger management intervention and determine when the action is completed
- evaluate the risk of failure
- management actions proposed to reduce or eliminate the impact, which may include additional biodiversity credits to offset (above the credit requirement generated by the BAM-C for direct impacts), other conservation measures and/or mitigation measures. Document the decision pathway and justification for the proposed actions
- where an adaptive management strategy is not required for the proposal or some impacts of the proposal, justify why adaptive management strategies have not been prepared. Include details on the size and nature of the impacts and reasons why the severity and consequence of direct and indirect impacts are easily predicted and well understood>

Adaptive management strategy is not required for the proposal due to the size and nature of the impacts have been minimised and offset

## 9. Serious and irreversible impacts

### 9.1 Assessment for serious and irreversible impacts on biodiversity values

No entities will be at risk of an SAI due to the proposal.



## 10. Impact summary

### 10.1 Determine an offset requirement for impacts

#### 10.1.1 Impacts on native vegetation and TECs or ECs (ecosystem credits)

**Table 10-1: Impacts that do not require offset – ecosystem credits**

Vegetation zone	PCT name	TEC	Impact area (ha)	TEC association	Entity at risk of an SAI?	Current VI score
N/A						

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

Vegetation zone	PCT name	TEC	Impact area (ha)	Current VI score	Future VI score	Change in VI score	Biodiversity risk weighting	Number of ecosystem credits required
3436_Poor	Blackbutt - Rough-barked Apple - Turpentine - ferny tall open forest of the Central Coast	N/A	1.35	35.7	0	-35.7	1.75	21
3995_Poor	Smooth-barked Apple - Red Bloodwood - Brown Stringybark - Hairpin Banksia	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin	0.16	33	0	-33	2	3



	heathy open forest of coastal lowlands	and South East Corner Bioregions						
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### 10.1.2 Impacts on threatened species and their habitat (species credits)

**Table 10-3: Impacts that require an offset – species credits**

Common name	Scientific name	BC Act status	EPBC Act status	Vegetation Zone (VZ)	Loss of habitat (ha) or individuals	Biodiversity risk weighting	Number of species credits required
Koala	<i>Phascolarctos cinereus</i>	E	E	3436_Poor	1.35 ha	2	24
				3995_Poor	0.16 ha		3
						<b>Total credits</b>	27

### 10.1.3 Indirect and prescribed impacts

**Table 10-4: Summary of proposed offsets for residual indirect and prescribed impacts**

<b>Residual indirect or prescribed impact</b> (identified in Table 8-5 after mitigation)	<b>Proposed offset</b> (Additional biodiversity credit requirement and/or other conservation measures)
N/A	

### 10.2 Impacts that do not need further assessment

**Table 10-5: Impacts that do not need further assessment for ecosystem credits**

<b>Impact</b>	<b>Location within subject land</b>	<b>Justification why no further assessment is required</b>
N/A		



## 11. Biodiversity credit report

Refer to Appendix G Credit reports

|



## 12. References

- Bladon, R.V., Dickman, C.R. and Hume, I.D. (2002). Effects of habitat fragmentation on the demography, movements and social organisation of the Eastern Pygmy Possum (*Cercartetus nanus*) in northern New South Wales. *Wildlife Research* 29(1) 105 – 116.
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- Woodward, S. (2025). Koala vegetated riparian corridor advice. EMM creating opportunities. Pp. 6. 22 May 2025.

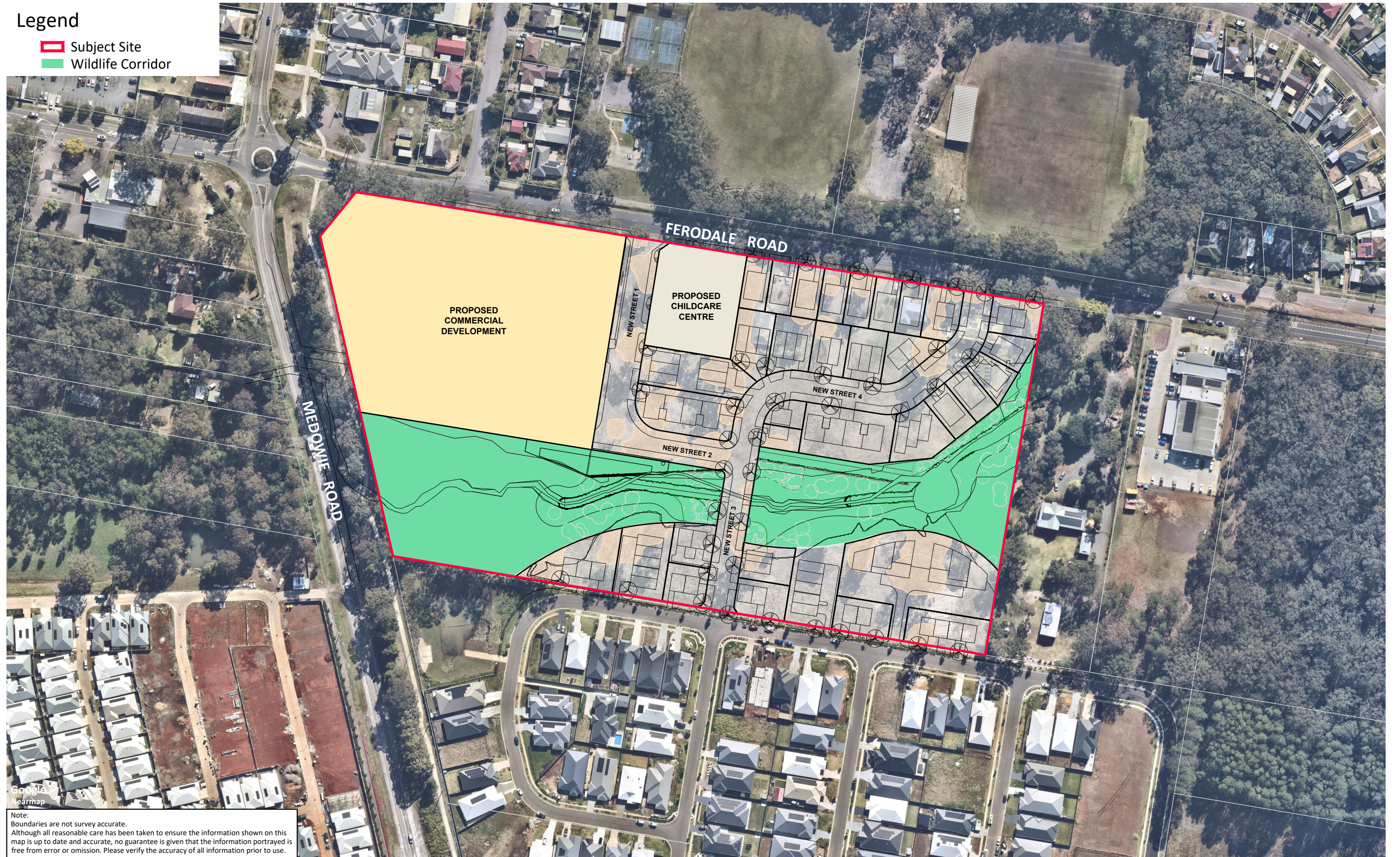


## 13. Figures



Legend

- Subject Site
- Wildlife Corridor

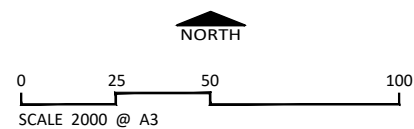


Note:  
Boundaries are not survey accurate.  
Although all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

FIGURE 1: SITE MAP

CLIENT  
SITE DETAILS  
DATE

Client  
Ferodale Road Medowie  
28 May 2025



Firebird ecoSultants Pty Ltd  
ABN - 16 105 985 993  
Level 1, 146 Hunter Street, Newcastle NSW 2300  
P O Box 354 Newcastle NSW 2300



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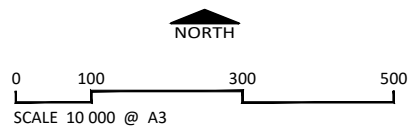
Legend

Subject Site



FIGURE 2: LOCALITY MAP

CLIENT	Client
SITE DETAILS	Ferodale Road Medowie
DATE	28 May 2025



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 P O Box 354 Newcastle NSW 2300



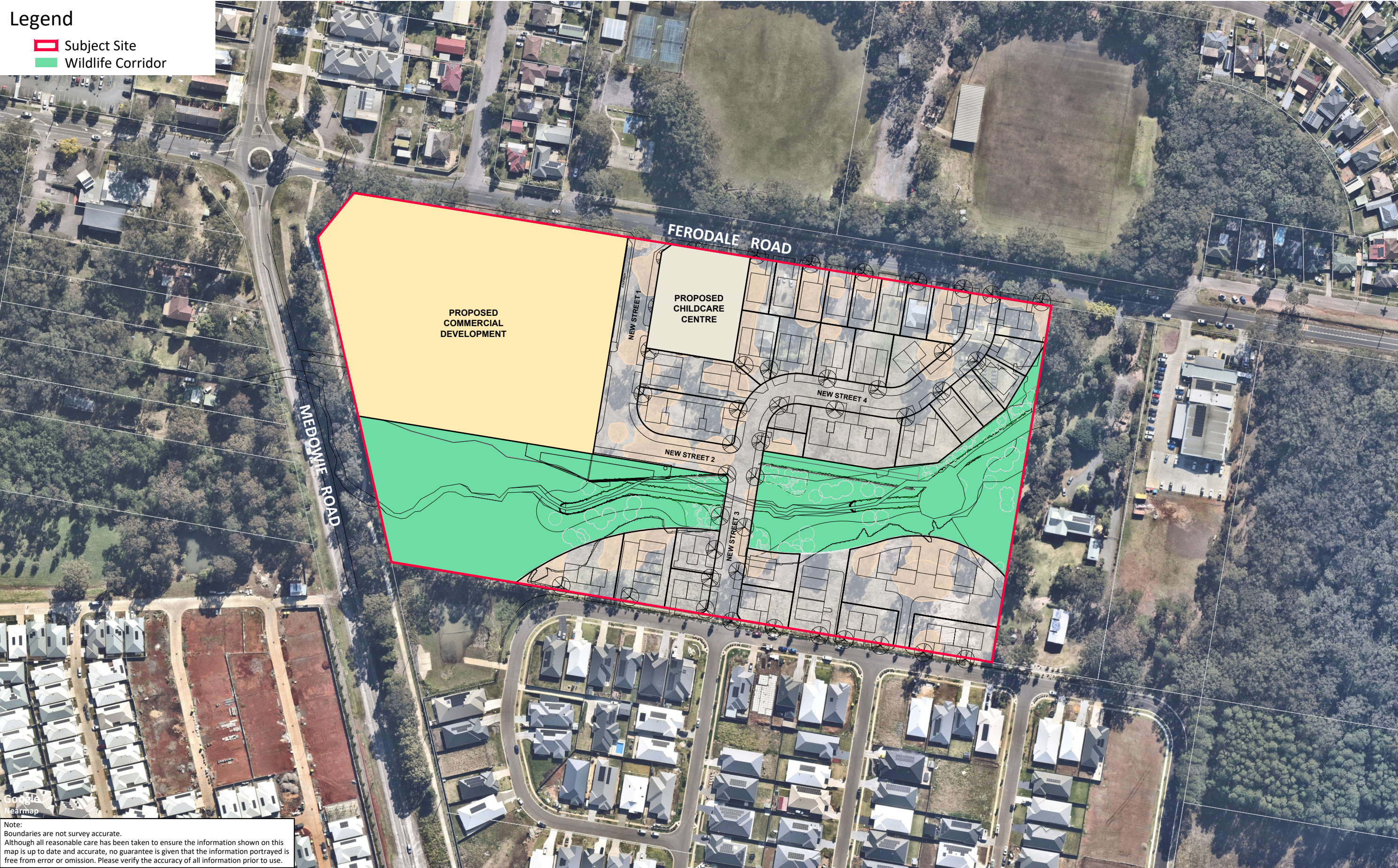
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Legend

Subject Site

Wildlife Corridor



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FIGURE 3:DEVELOPMENT LAYOUT

CLIENT

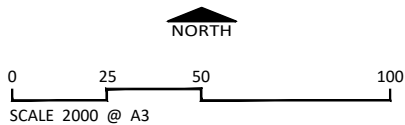
SITE DETAILS

DATE

Client

Ferodale Road Medowie

28 May 2025



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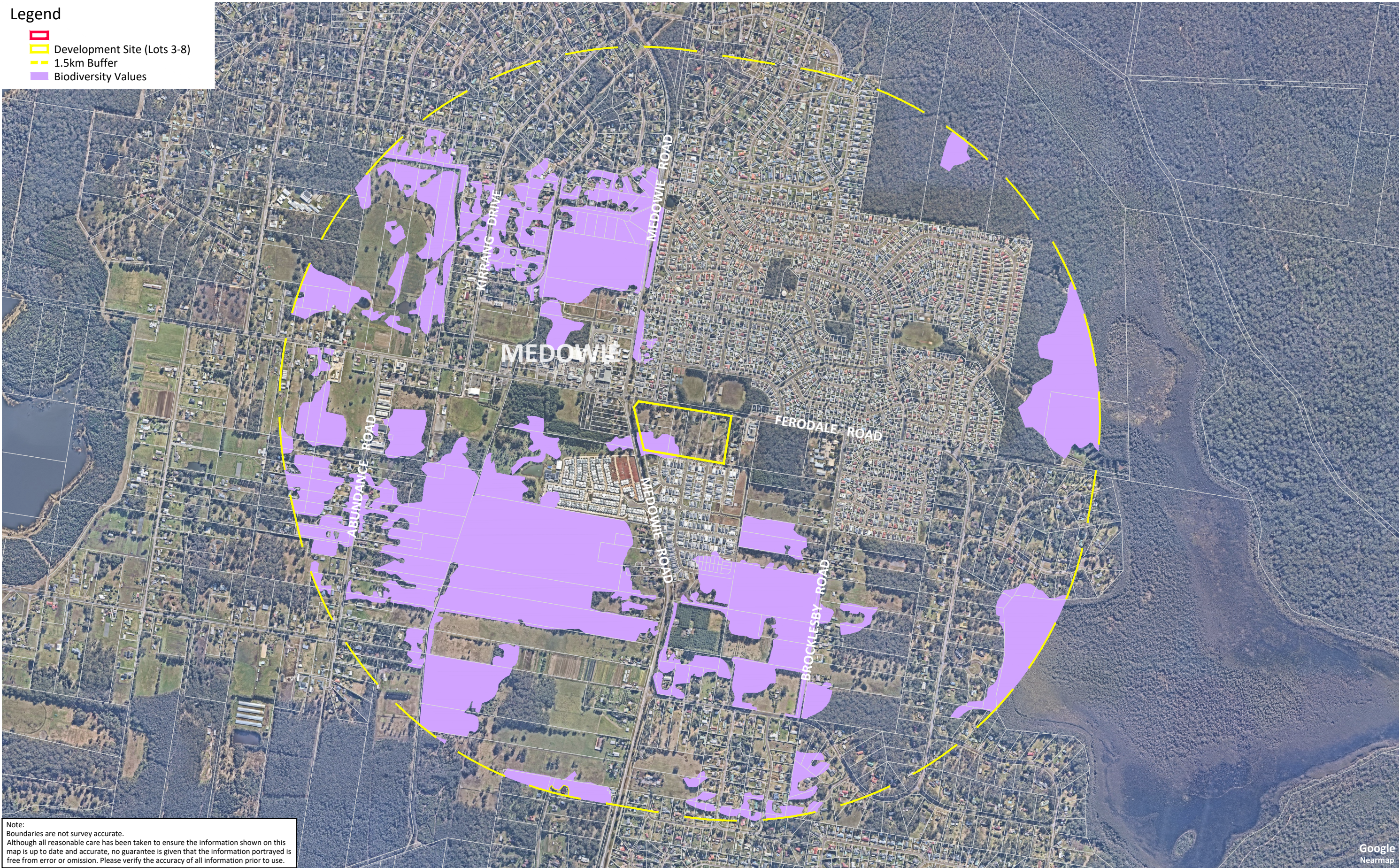
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Legend

- Development Site (Lots 3-8)
- 1.5km Buffer
- Biodiversity Values

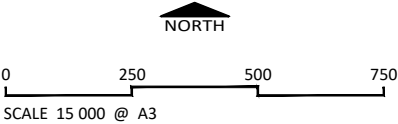


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FIGURE 4:BIODIVERSITY VALUES

CLIENT  
SITE DETAILS  
DATE

Client  
Ferodale Road Medowie  
8 January 2025



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Legend

- Subject Site
- Category 1 - exempt land
- Category 2 - regulated land
- Category 2 - sensitive regulated land

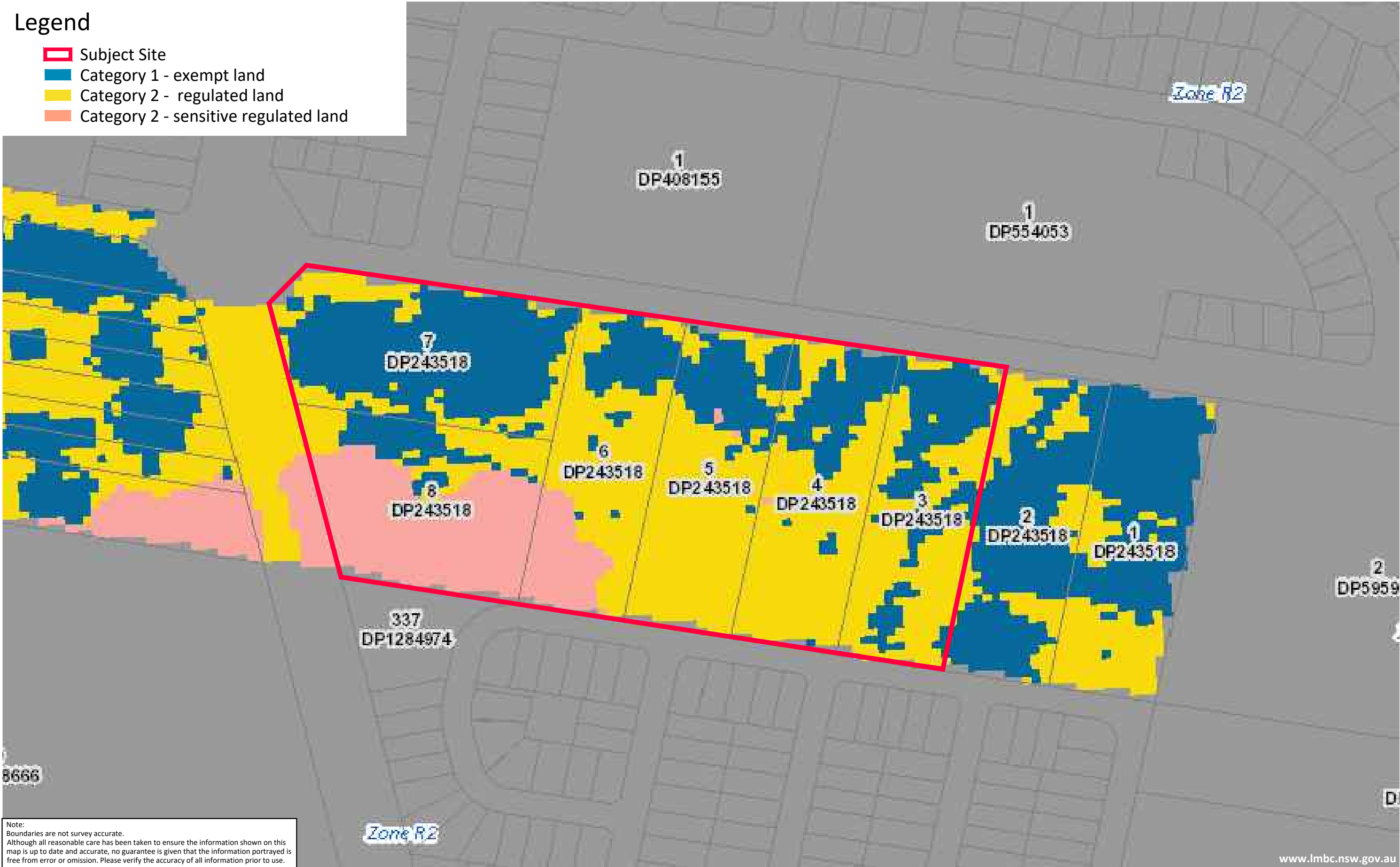


FIGURE 5: EXCLUDED IMPACTS

CLIENT  
SITE DETAILS  
DATE

Client  
Ferodale Road Medowie  
28 May 2025



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Legend

Subject Site

Floristic Plot

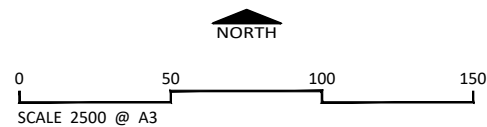


Note:  
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FIGURE 6A: FLORISTIC SURVEY PLOTS

CLIENT  
SITE DETAILS  
DATE

Client  
Ferodale Road Medowie  
28 May 2025



Firebird ecoSultants Pty Ltd  
ABN - 16 105 985 993  
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P O Box 354 Newcastle NSW 2300



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Legend

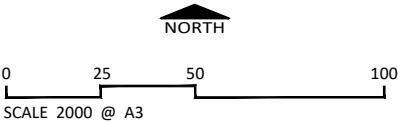
Subject Site

Grass Plot



FIGURE 6B: GRASSLAND PLOTS

CLIENT Client  
SITE DETAILS Ferodale Road Medowie  
DATE 28 May 2025



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# Legend

- ▬ Subject Site
- ▬ Native Vegetation

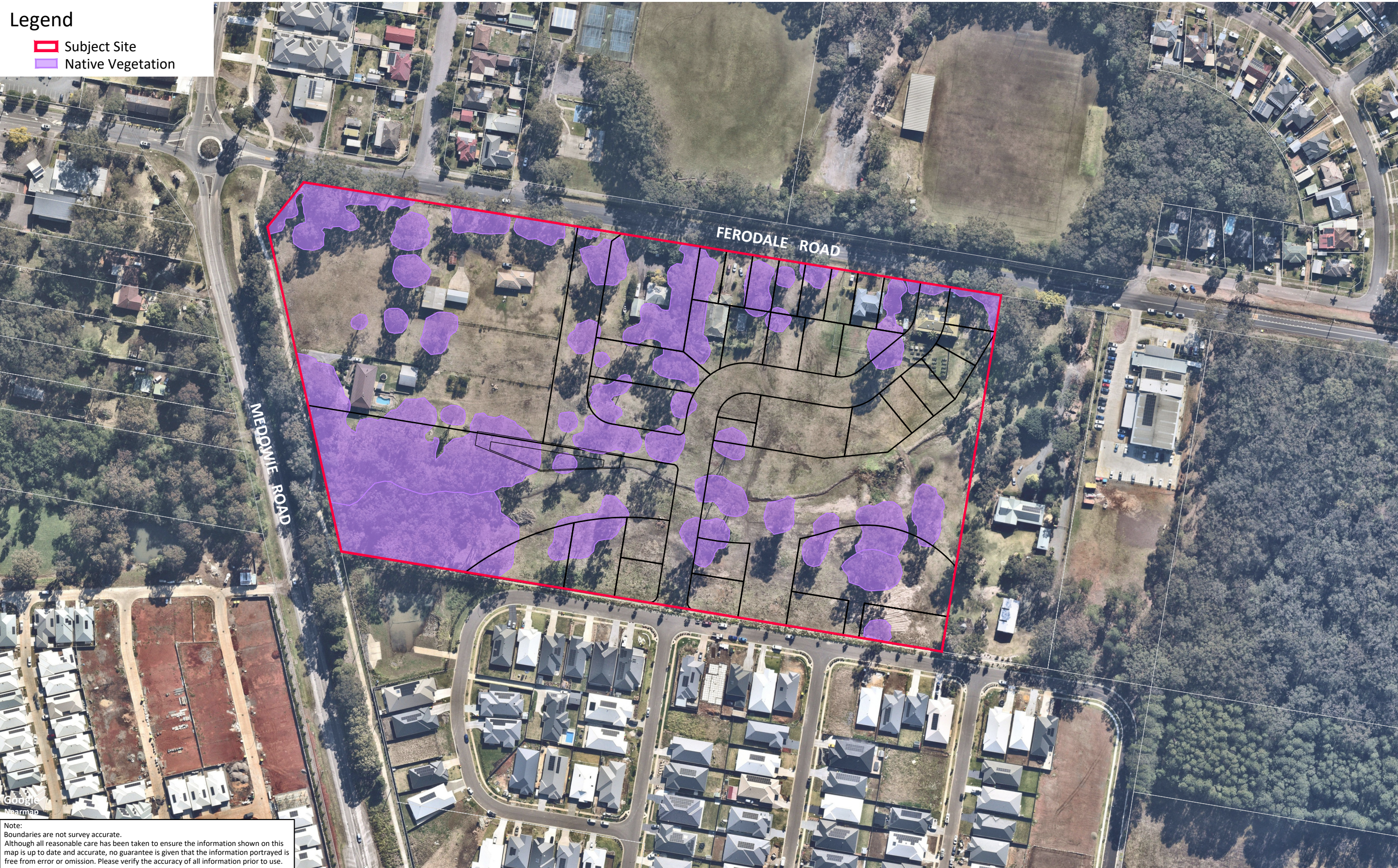
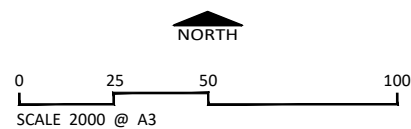


FIGURE 7: NATIVE VEGETATION WITHIN THE SITE

CLIENT  
SITE DETAILS  
DATE

Client  
Ferodale Road Medowie  
28 May 2025



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# Legend

- Subject Site
- 1.5km Buffer
- Native Vegetation

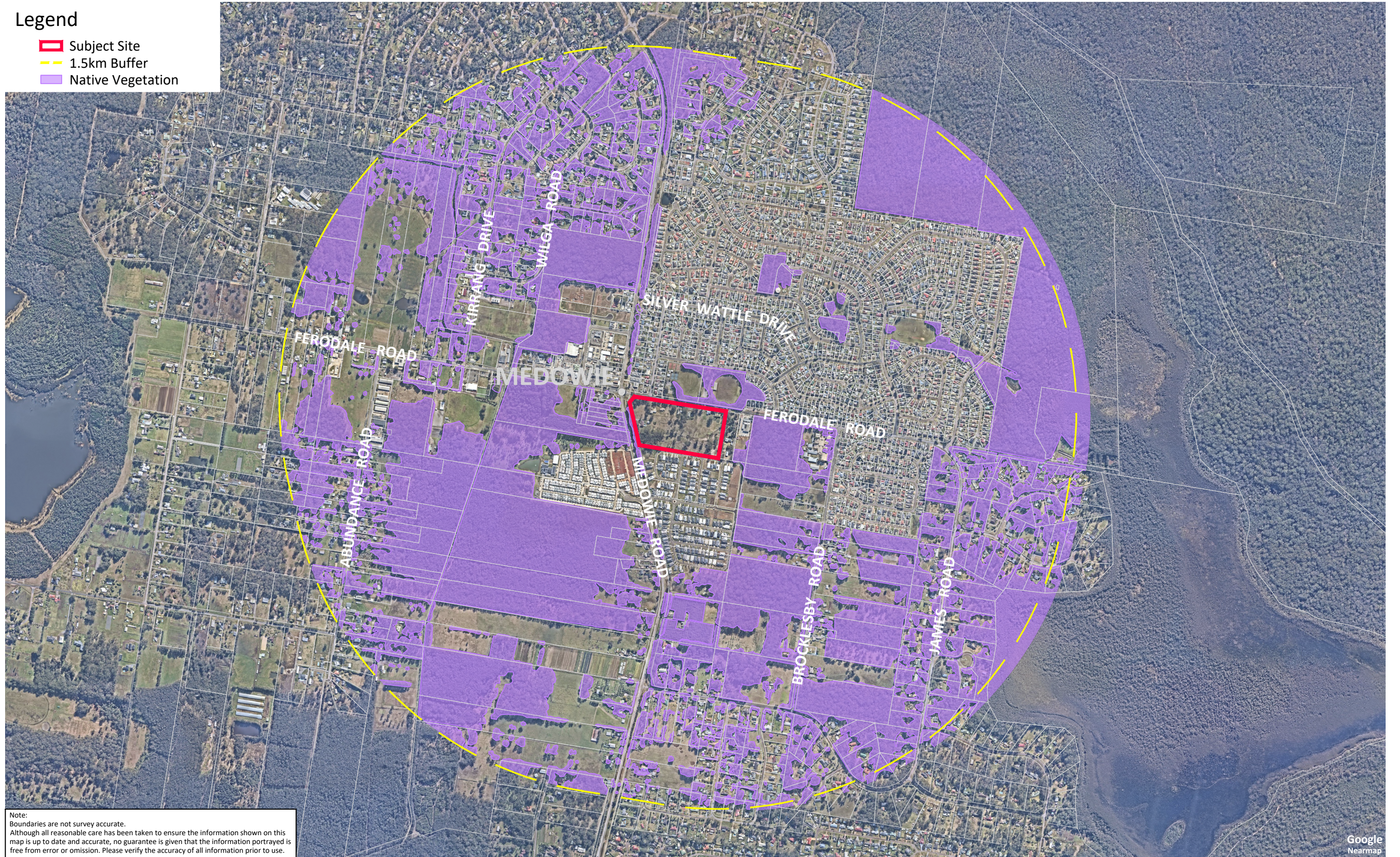
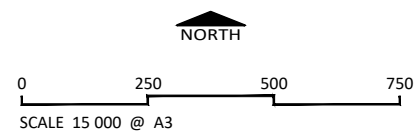


FIGURE 8:NATIVE VEGETATION EXTENT WITHIN 1.5KM OF THE SITE

CLIENT Client  
SITE DETAILS Ferodale Road Medowie  
DATE 28 May 2025



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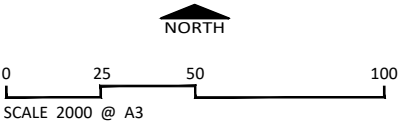
- Subject Site
- PCT 3436 Vegetation Zone 1 - 1.52ha  
Area to be Removed - 1.35ha
- PCT 3995 Vegetation Zone 2 - 0.86ha  
Area to be Removed - 0.16ha



FIGURE 9: PLANT COMMUNITY TYPES

CLIENT  
SITE DETAILS  
DATE

Client  
Ferodale Road Medowie  
22 May 2025



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Legend

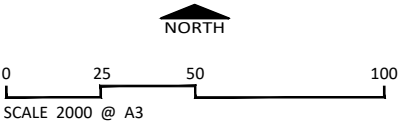
- Subject Site
- Vegetation Zone 1 - 1.52ha  
Area to be Removed - 1.35ha
- Vegetation Zone 2 - 0.86ha  
Area to be Removed - 0.16ha



FIGURE 10: VEGETATION ZONES

CLIENT  
SITE DETAILS  
DATE

Client  
Ferodale Road Medowie  
22 May 2025



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# Legend

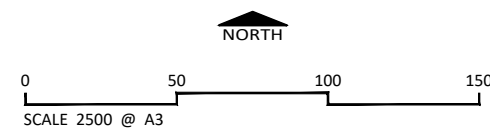
- ▬ Subject Site
- ▬ TEC (Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions)



FIGURE 11: THREATENED ECOLOGICAL COMMUNITY

CLIENT  
SITE DETAILS  
DATE

Client  
Ferodale Road Medowie  
28 May 2025



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# Legend

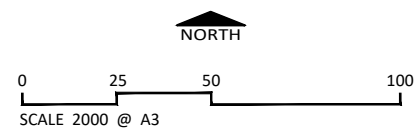
- █ Subject Site
- █ PCT 3436 Vegetation Zone 1 - 1.52ha  
Area to be Removed - 1.35ha
- █ PCT 3995 Vegetation Zone 2 - 0.86ha  
Area to be Removed - 0.16ha



FIGURE 12: VEGETATION REMOVAL MAP

CLIENT  
SITE DETAILS  
DATE

Client  
Ferodale Road Medowie  
22 May 2025



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Legend

Subject Site

Hollow-bearing Tree

Probable Hollow-bearing Tree  
(unable to identify from the ground)



FIGURE 13A:HOLLOW-BEARING TREES



Legend

- Subject Site
- Preferred Koala Habitat
- Marginal Habitat
- Mainly Cleared Land
- 100m Buffer Over Cleared Land
- 100m Buffer Over Marginal Habitat
- Blackbutt - Koala Feed Tree
- Forest Red Gum - Koala Feed Tree
- Swamp Mahogany - Koala Feed Tree

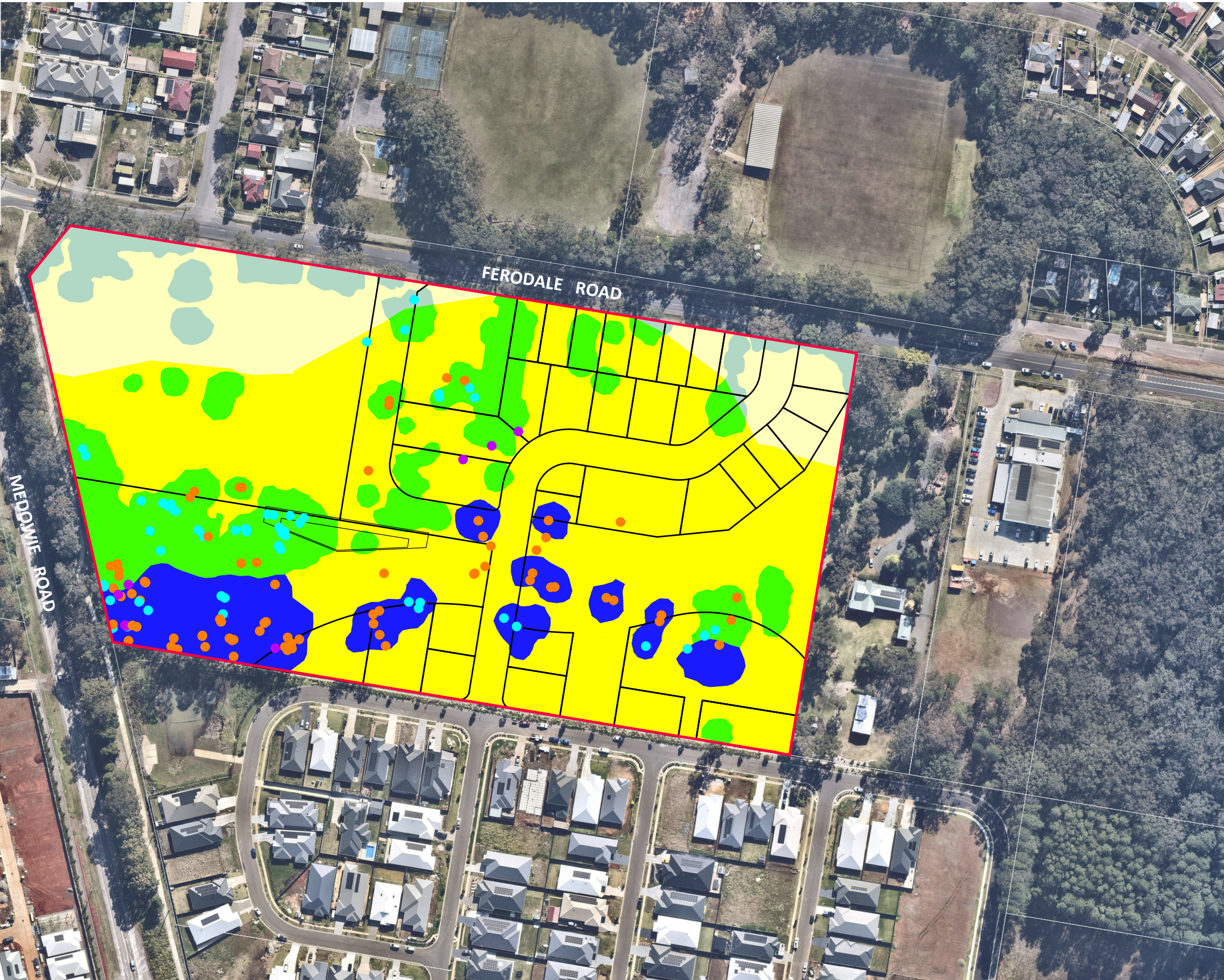
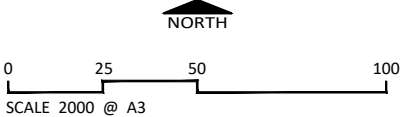


FIGURE 13B: KOALA HABITAT MAP

CLIENT  
SITE DETAILS  
DATE

Client  
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# Legend

- ▮ Subject Site
- Camera Trap

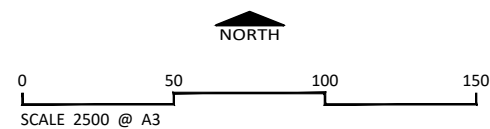


Note:  
Boundaries are not survey accurate.  
Although all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

FIGURE 14: CAMERA LOCATION MAP

CLIENT  
SITE DETAILS  
DATE

Client  
Ferodale Road Medowie  
28 May 2025



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Legend

- Subject Site
- GPS Track 31 July 2023 - Owl Survey
- GPS Track 1 August 2023 - Flora Transect
- GPS Track 2 August 2023 - Flora Transect
- GPS Track 3 August 2023 - Flora Transect
- GPS Track 2 May 2025 - Flora Transect

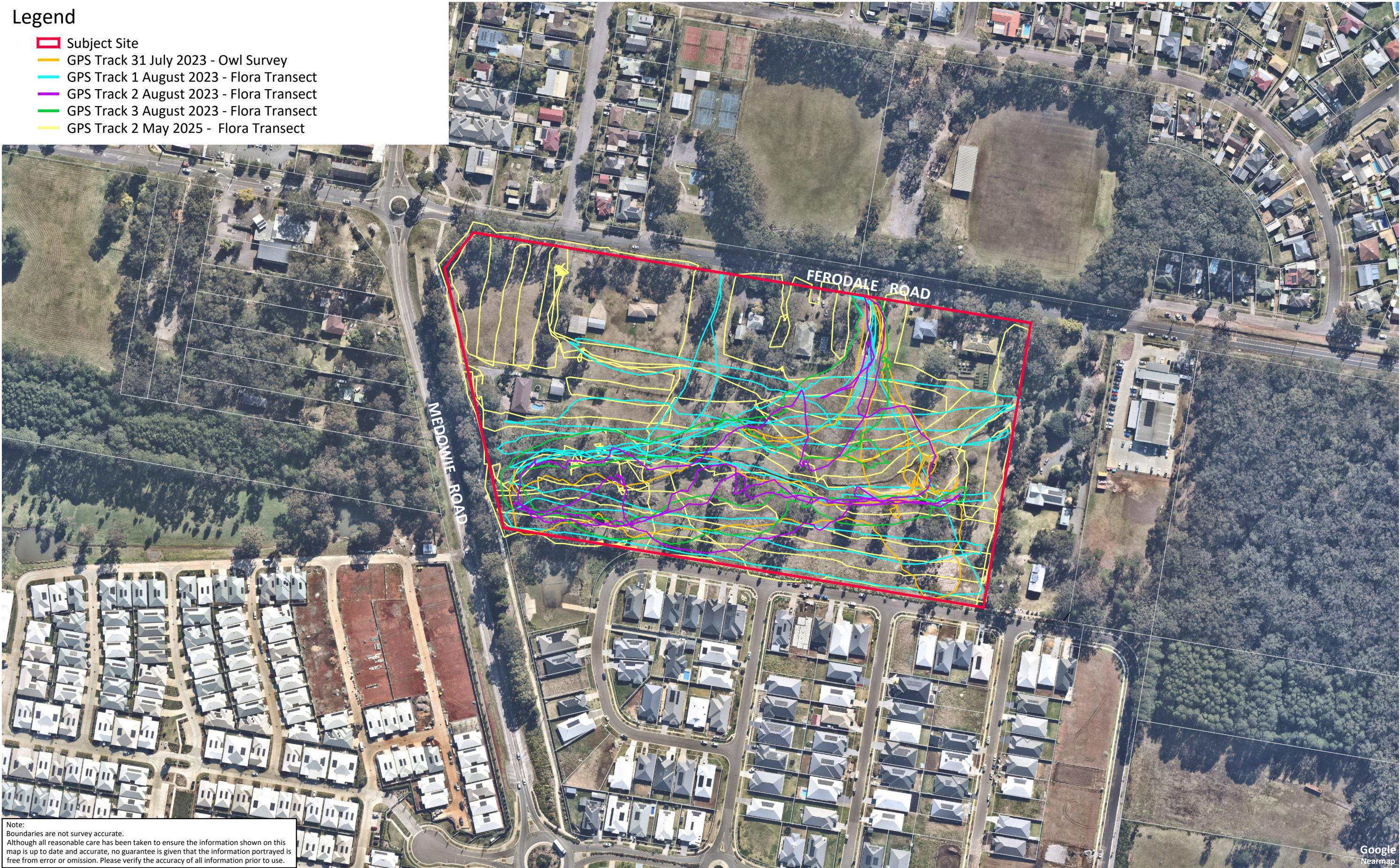
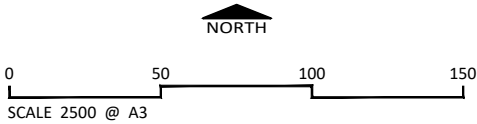


FIGURE 15: FLORA SURVEY

CLIENT  
SITE DETAILS  
DATE

Client  
Ferodale Road Medowie  
28 May 2025



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**Figure 16 Candidate species credit species records and species polygons**

N/A



**Figure 17**      **Final impacts likely to occur on the subject land**  
N/A



**Figure 18**      **Wind turbine disturbance zone**

N/A



**Figure 19**      **Serious and irreversible impacts**

N/A



**Figure 20**      **Thresholds for assessing and offsetting impacts**

N/A

## **Appendix A: BDAR requirements compliance**

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Landscape	Sections 3.1 and 3.2, Appendix E	<b>Information</b>	
		Identification of site context components and landscape features, including:	–
		<input type="checkbox"/> general description of subject land topographic and hydrological setting, geology and soils	<1.1.3>
		<input type="checkbox"/> per cent native vegetation cover in the assessment area (as described in BAM Section 3.2)	
		<input type="checkbox"/> IBRA bioregions and subregions (as described in BAM Subsection 3.1.3(2.))	<3.2.1>
		<input type="checkbox"/> rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3(3.) and Appendix E)	<3.2.2>
		<input type="checkbox"/> wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(3.))	<3.2.2>
		<input type="checkbox"/> connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5–6.))	<3.2.3>
		<input type="checkbox"/> karst, caves, crevices, cliffs, rocks and other geological features of significance and for vegetation clearing proposals, soil hazard features (as described in BAM Subsections 3.1.3(7.) and 3.1.3(12.))	<3.2.4>
		<input type="checkbox"/> areas of outstanding biodiversity value occurring on the subject land and assessment area (as described in BAM Subsection 3.1.3(8–9.))	<3.2.5>
		<input type="checkbox"/> any additional landscape features identified in any SEARs for the proposal	<3.2.7>
		<input type="checkbox"/> NSW (Mitchell) landscape on which the subject land occurs	<3.2.6>
		<input type="checkbox"/> details of field reconnaissance undertaken to confirm the extent and condition of landscape features and native vegetation cover (as described in Operational Manual Stage 1 Section 2.4)	<2.1>
		<b>Maps and tables</b>	
		<input type="checkbox"/> Site Map	<Figure 1>
		<input type="checkbox"/> Property boundary	
		<input type="checkbox"/> Boundary of subject land	
		<input type="checkbox"/> Cadastre of subject land (including labelling of Lot and DP or section plan if relevant)	



		<input type="checkbox"/> Landscape features identified in BAM Subsection 3.1.3	
		<input type="checkbox"/> Location Map	<Figure 2>
		<input type="checkbox"/> Digital aerial photography at 1:1,000 scale or finer	
		<input type="checkbox"/> Boundary of subject land	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		<input type="checkbox"/> Assessment area (i.e. the subject land and either 1500 m buffer area or 500 m buffer for linear development) <input type="checkbox"/> Landscape features identified in BAM Subsection 3.1.3 <input type="checkbox"/> Additional detail (e.g. local government area boundaries) relevant at this scale	
		Landscape features identified in BAM Subsection 3.1.3 and to be shown on the Site Map and/or Location Map include:	–
		<input type="checkbox"/> IBRA bioregions and subregions <input type="checkbox"/> rivers, streams and estuaries <input type="checkbox"/> wetlands and important wetlands <input type="checkbox"/> connectivity of different areas of habitat <input type="checkbox"/> karst, caves, crevices, cliffs, rocks and other geological features of significance and if required, soil hazard features <input type="checkbox"/> areas of outstanding biodiversity value occurring on the subject land and assessment area <input type="checkbox"/> any additional landscape features identified in any SEARs for the proposal <input type="checkbox"/> NSW (Mitchell) landscape on which the subject land occurs	< <b>Figure 1</b> & Figure 2>
		<b>Data</b>	
		<input type="checkbox"/> All report maps as separate jpeg files	
		Individual digital shape files of:	–

		<input type="checkbox"/> subject land boundary	–
		<input type="checkbox"/> assessment area (i.e. subject land and 1500 m buffer area) boundary	–
		<input type="checkbox"/> cadastral boundary of subject land	–
		<input type="checkbox"/> areas of native vegetation cover	–
		<input type="checkbox"/> landscape features	–

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Native vegetation	Chapter 4, Appendix A and Appendix H	<b>Information</b>	
		<input type="checkbox"/> Identify native vegetation extent within the subject land, including cleared areas and evidence to support differences between mapped vegetation extent and aerial imagery (as described in BAM Section 4.1(1–3.) and Subsection 4.1.1)	<4.1 & Figure 7>
		<input type="checkbox"/> Provide justification for all parts of the subject land that do not contain native vegetation (as described in BAM Subsection 4.1.2)	<4.1.2>
		<input type="checkbox"/> Review of existing information on native vegetation including references to previous vegetation maps of the subject land and assessment area (described in BAM Section 4.1(3.) and Subsection 4.1.1)	<2.2.2>
		<input type="checkbox"/> Describe the systematic field-based floristic vegetation survey undertaken in accordance with BAM Section 4.2	<2.2.3>
		<input type="checkbox"/> Where relevant, describe the use of more appropriate local data, provide reasons that support the use of more appropriate local data and include the written confirmation from the decision-maker that they support the use of more appropriate local data (as described in BAM Subsection 1.4.2 and Appendix A)	<Insert relevant reference & Appendix G>
		For each PCT within the subject land, describe:	–
		<input type="checkbox"/> PCT name and ID	<4.1 & Figure 7>
		<input type="checkbox"/> vegetation class	<4.1.2>

		<input type="checkbox"/> extent (ha) within subject land	<2.2.2>
		<input type="checkbox"/> evidence used to identify a PCT including any analyses undertaken, references/sources, existing vegetation maps (BAM Section 4.2(1–3.))	<2.2.3>
		<input type="checkbox"/> plant species relied upon for identification of the PCT and relative abundance of each species	<Insert relevant reference and Appendix G>
		<input type="checkbox"/> if relevant, TEC status including evidence used to determine vegetation is the TEC (BAM Subsection 4.2.2(1–2.))	<4.1 & Figure 7>
		<input type="checkbox"/> estimate of per cent cleared value of PCT (BAM Subsection 4.2.1(5.))	<4.1.2>
		Describe the vegetation integrity assessment of the subject land, including:	–
		<input type="checkbox"/> identification and mapping of vegetation zones (as described in BAM Subsection 4.3.1)	<4.4 & Figure 10>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		<input type="checkbox"/> description of vegetation zones within the subject land (as described in Operational Manual Stage 1 Table 2 and Subsection 3.3.2)	<4.4 & Figure 10>
		<input type="checkbox"/> area (ha) of each vegetation zone	<4.4>
		<input type="checkbox"/> assessment of patch size (as described in BAM Subsection 4.3.2)	<4.4>
		<input type="checkbox"/> survey effort (i.e. number of vegetation integrity survey plots) as described in BAM Subsection 4.3.4(1–2.)	<4.5.1>
		<input type="checkbox"/> use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsection 4.3.3(5.))	<4.5.3>
		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):	–
		<input type="checkbox"/> identify the PCT or vegetation class for which local benchmark data will be applied	<4.5.3>

		<input type="checkbox"/> identify published sources of local benchmark data (if benchmarks obtained from published sources) <input type="checkbox"/> describe methods of local benchmark data collection (if reference plots used to determine local benchmark data)	
		<input type="checkbox"/> provide justification for use of local data rather than BioNet Vegetation Classification benchmark values	<4.5.3>
		<input type="checkbox"/> provide written confirmation from the decision-maker that they support the use of local benchmark data	<Appendix G>
		<b>Maps and tables</b>	
		<input type="checkbox"/> Map of native vegetation extent within the subject land at scale not greater than 1:10,000 including identification of <b>all areas of native vegetation including areas that are ground cover only</b> , cleared areas (as described in BAM Section 4.1(1–3.)) and all parts of the subject land that do not contain native vegetation (BAM Subsection 4.1.2)	<Figure 7>
		<input type="checkbox"/> Map of PCTs within the subject land (as described in BAM Section 4.2(1.))	<Figure 8>
		<input type="checkbox"/> Map of vegetation zones within the subject land (as described in BAM Subsection 4.3.1)	<Figure 10>
		<input type="checkbox"/> Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCT boundaries	<Figure 6>
		<input type="checkbox"/> Map of TEC distribution on the subject land and table of TEC listing, status and area (ha)	<Figure 9 & Table 5>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		<input type="checkbox"/> Map of patch size locations for each native vegetation zone and table of patch size areas (as described in BAM Subsection 4.3.2)	<Figure 10 & Table 6>
		Table of current vegetation integrity scores for each vegetation zone within the site and including:	–
		<input type="checkbox"/> composition condition score	<Table 7>
		<input type="checkbox"/> structure condition score	

		<input type="checkbox"/> function condition score	
		<input type="checkbox"/> presence of hollow bearing trees	
		<b>Data</b>	
		<input type="checkbox"/> All report maps as separate jpeg files	–
		<input type="checkbox"/> Plot field data (MS Excel format)	
		<input type="checkbox"/> Plot field datasheets	<Appendix F>
		Digital shape files of:	–
		<input type="checkbox"/> PCT boundaries within subject land	–
		<input type="checkbox"/> TEC boundaries within subject land	–
		<input type="checkbox"/> vegetation zone boundaries within subject land	–
		<input type="checkbox"/> floristic vegetation survey and vegetation integrity plot locations	–
Threatened species	Chapter 5	<b>Information</b>	
		Identify ecosystem credit species likely to occur on the subject land, including:	–
		<input type="checkbox"/> list of ecosystem credit species derived from the BAM-C (as described in BAM Subsection 5.1.1 and Section 5.2(1.))	< >
		<input type="checkbox"/> justification and supporting evidence for exclusion of any ecosystem credit species based on geographic limitations, habitat constraints or vagrancy (as described in BAM Subsections 5.2.1 and 5.2.2)	<5.1.1>
		<input type="checkbox"/> justification for addition of any ecosystem credit species to the list	<5.1.1>
		Identify species credit species likely to occur on the subject land, including:	–
		<input type="checkbox"/> list of species credit species derived from the BAM-C (as described in BAM Subsection 5.1.1)	<Table 10 & Table 11>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
--------------	----------	-----------------	-------------------------------

		<input type="checkbox"/> justification and supporting evidence for exclusions based on geographic limitations, habitat constraints or vagrancy (as described in BAM Subsections 5.2.1 and 5.2.2)	<5.1.2>
		<input type="checkbox"/> justification and supporting evidence for exclusions based on degraded habitat constraints and/or microhabitats on which the species depends (as described in BAM Subsection 5.2.2)	<5.1.2>
		<input type="checkbox"/> justification for addition of any species credit species to the list	<5.1.2>
		From the list of candidate species credit species, identify:	–
		<input type="checkbox"/> species assumed present within the subject land (if relevant) (as described in BAM Subsection 5.2.4(2.a.))	<Table 12 & Table 13>
		<input type="checkbox"/> species present within the subject land on the basis of being identified on an important habitat map for a species (as described in BAM Subsection 5.2.4(2.d.))	
		<input type="checkbox"/> species for which targeted surveys are to be completed to determine species presence (BAM Subsection 5.2.4(2.b.))	
		<input type="checkbox"/> species for which an expert report is to be used to determine species presence (BAM Subsection 5.2.4(2.c.))	
		Present the outcomes of species credit species assessments from:	–
		<input type="checkbox"/> threatened species survey (as described in BAM Section 5.2.4)	<Table 14 & Table 15>
		<input type="checkbox"/> expert reports (if relevant) including justification for presence of the species and information used to make this determination (as described in BAM Subsection 5.2.4, Section 5.3, Box 3)	<5.4>
		Where survey has been undertaken include detailed information on:	–
		<input type="checkbox"/> survey method and effort (as described in BAM Section 5.3)	<Table 14 & Table 15>
		<input type="checkbox"/> justification of survey method and effort (e.g. citation of peer-reviewed literature) if approach differs from the department's taxa-specific survey guides or where no relevant guideline has been published	<5.3>
		<input type="checkbox"/> timing of survey in relation to requirements in the TBDC or the department's taxa-specific survey guides. Where survey was undertaken outside these guides include justification for the timing of surveys	<Table 14 & Table 15 & 5.3>

		<input type="checkbox"/> survey personnel and relevant experience	<Declarations ii>
		<input type="checkbox"/> describe any limitations to surveys and how these were addressed/overcome	<5.3>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		Where an expert report has been used in place of survey (as described in BAM Section 5.3, Box 3), include:	–
		<input type="checkbox"/> justification of the use of an expert report	<5.4>
		<input type="checkbox"/> identify the expert, provide evidence of their expert credentials and departmental approval of expert status	
		<input type="checkbox"/> all requirements of Box 3 have been addressed in the expert report	
		Where use of local data is proposed (BAM Subsection 1.4.2):	–
		<input type="checkbox"/> identify relevant species	<5.5>
		<input type="checkbox"/> identify data to be amended	
		<input type="checkbox"/> identify source of information for local data, e.g. published literature, additional survey data, etc.	
		<input type="checkbox"/> justify use of local data in preference to VIS Classification or TBDC data	
		<input type="checkbox"/> provide written confirmation from the decision-maker that they support the use of local data	<Appendix G>
		Species polygon completed for species credit species present within the subject land (assumed present or determined on the basis of survey, expert report or important habitat map) ensuring that:	–
		<input type="checkbox"/> the unit of measure for each species is documented	<Table 17 & Table 18>
		for species assessed by area:	–
		<input type="checkbox"/> the polygon includes the extent of suitable habitat for the target species within the subject land (as described in BAM Subsection 5.2.5)	<Figure 11>
		<input type="checkbox"/> a description of, and evidence-based justification for, the habitat constraints, features or microhabitats used to map the species polygon including reference to information in the TBDC for that species and any buffers applied	<5.6>

		for species assessed by counts of individuals:	–
		<input type="checkbox"/> the number of individual plants present on the subject land (as described in BAM Subsection 5.2.5(3.))	<5.6>
		<input type="checkbox"/> the method used to derive this number (i.e. threatened species survey or expert report) and evidence-based justification for the approach taken	<5.6>
		<input type="checkbox"/> the polygon includes all individuals located on the subject land with a buffer of 30 m around the individuals or groups of individuals on the subject land	<Figure 11>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		<input type="checkbox"/> Identify the biodiversity risk weighting for each species credit species identified as present within the subject land (as described in BAM Section 5.4)	<Table 17 & Table 18>
		<b>Maps and tables</b>	
		<input type="checkbox"/> Table showing ecosystem credit species in accordance with BAM Subsection 5.1.1, and identifying:	
		<input type="checkbox"/> the ecosystem credit species removed from the list	<Table 9>
		<input type="checkbox"/> the sensitivity to gain class of each species	<Table 9>
		<input type="checkbox"/> Table detailing species credit species in accordance with BAM Section 5.2 and identifying:	<Table 10 & Table 11>
		<input type="checkbox"/> the species credit species removed from the list of species because the species is considered vagrant, out of geographic range or the habitat or microhabitat features are not present	<Table 10 & Table 11>
		<input type="checkbox"/> the candidate species credit species not recorded on the subject land as determined by targeted survey, expert report or important habitat map	<Table 12 & Table 13>
		<input type="checkbox"/> Table detailing species credit species recorded or assumed as present within the subject land, habitat constraints or microhabitats associated with the species, counts of individuals (flora)/extent of suitable habitat (flora and fauna) (as described in BAM Subsection 5.2.6) and biodiversity risk weighting (BAM Section 5.4)	<5.6 & Table 17 & Table 18>
		<input type="checkbox"/> Map indicating the GPS coordinates of all individuals of each species recorded within the subject land and the species polygon for each species (as described in BAM Subsection 5.2.5)	<Figure 11>



		<b>Data</b>	
		<input type="checkbox"/> Digital shape files of suitable habitat identified for survey for each candidate species credit species	–
		<input type="checkbox"/> Survey locations including GPS coordinates of any plots, transects, grids	
		<input type="checkbox"/> Digital shape files of each species polygon including GPS coordinates of located individuals	–
		<input type="checkbox"/> Species polygon map in jpeg format	–
		<input type="checkbox"/> Expert reports and any supporting data used to support conclusions of the expert report	
		<input type="checkbox"/> Field datasheets detailing survey information including prevailing conditions, date, time, equipment used, etc.	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Prescribed impacts	Chapter 6	<b>Information</b>	
		Identify potential prescribed biodiversity impacts on threatened entities, including:	–
		<input type="checkbox"/> karst, caves, crevices, cliffs, rocks and other geological features of significance (as described in BAM Subsection 6.1.1) <input type="checkbox"/> occurrences of human-made structures and non-native vegetation (as described in BAM Subsection 6.1.2) <input type="checkbox"/> corridors or other areas of connectivity linking habitat for threatened entities (as described in BAM Subsection 6.1.3) <input type="checkbox"/> waterbodies or any hydrological processes that sustain threatened entities (as described in BAM Subsection 6.1.4)	<Table 19>
		<input type="checkbox"/> 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)	<Table 20>
		<input type="checkbox"/> 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)	<Table 19>

		<input type="checkbox"/> Identify a list of threatened entities that may be dependent upon or may use habitat features associated with any of the prescribed impacts	
		<input type="checkbox"/> 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)	<6>
		Where the proposed development is for a wind farm:	–
		<input type="checkbox"/> 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)	<Table 20>
		<input type="checkbox"/> provide details of targeted survey for candidate species of wind farm developments undertaken in accordance with BAM Subsection 6.1.5(2–3.)	<Table 20>
		<input type="checkbox"/> 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.))	<Figure 1 & Figure 2>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		Where the proposal may result in vehicle strike:	–
		<input type="checkbox"/> identify a list of threatened fauna or protected fauna species that are part of a TEC and at risk of vehicle strike due to the proposal	<Table 19>
		<b>Maps and tables</b>	
		<input type="checkbox"/> Map showing location of any prescribed impact features (i.e. karst, caves, crevices, cliffs, rocks, human-made structures, etc.)	<Figure 1 & Figure 2>
		<input type="checkbox"/> Map showing location of potential vehicle strike locations	<Figure 1>
		<input type="checkbox"/> 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)	<Figure 1 & Figure 2>
		<b>Data</b>	
		<input type="checkbox"/> Digital shape files of prescribed impact feature locations	–

		<input type="checkbox"/> Prescribed impact features map in jpeg format	–
Avoid and minimise impacts	Chapter 7	<b>Information</b>	
		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:	–
		<input type="checkbox"/> modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology	<7.1.2 & 7.2.2>
		<input type="checkbox"/> routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route	<7.1.1 & 7.2.1>
		<input type="checkbox"/> alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location	<7.1.1 & 7.2.1>
		<input type="checkbox"/> 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 & 7.2.1>
		<input type="checkbox"/> Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design (as described in BAM Sections 7.1 and 7.2)	<7.1.2 & 7.2.2>
		<input type="checkbox"/> 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.))	<7>
		<input type="checkbox"/> Detail measures or options considered but not implemented because they are not feasible and/or practical (e.g. due to site constraints)	<7.3>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		<b>Maps and tables</b>	
		<input type="checkbox"/> Table of measures to be implemented to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility	<Table 21>
		<input type="checkbox"/> Map of alternative footprints considered to avoid or minimise impacts on biodiversity values; and of the final proposal footprint, including construction and operation	<Figure 3>

		<input type="checkbox"/> Maps demonstrating indirect impact zones where applicable	<Figure 12>
		<b>Data</b>	
		Digital shape files of:	–
		<input type="checkbox"/> alternative and final proposal footprint	–
		<input type="checkbox"/> direct and indirect impact zones	–
		<input type="checkbox"/> Maps in jpeg format	–
Assessment of impacts	Chapter 8, Sections 8.1 and 8.2	<b>Information</b>	
		<input type="checkbox"/> Determine the impacts on native vegetation and threatened species habitat, including a description of direct impacts of clearing of native vegetation, threatened ecological communities and threatened species habitat (as described in BAM Section 8.1)	<Table 22>
		Assessment of indirect impacts on vegetation and threatened species and their habitat including (as described in BAM Section 8.2):	–
		<input type="checkbox"/> description of the nature, extent, frequency, duration and timing of indirect impacts of the proposal	<Table 24>
		<input type="checkbox"/> documenting the consequences to vegetation and threatened species and their habitat including evidence-based justifications	<8.2>
		<input type="checkbox"/> reporting any limitations or assumptions, etc. made during the assessment	<8.2>
		<input type="checkbox"/> identification of the threatened entities and their habitat likely to be affected	<Table 24>
		Assessment of prescribed biodiversity impacts (as described in BAM Section 8.3) including:	–
		assessment of the nature, extent <b>frequency</b> , duration <b>and timing</b> of impacts on the habitat of threatened species or ecological communities associated with:	–
		<input type="checkbox"/> karst, caves, crevices, cliffs, rocks and other features of geological significance	<8.3.1>
		<input type="checkbox"/> human-made structures	<8.3.2>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		<input type="checkbox"/> non-native vegetation	<8.3.3>
		<input type="checkbox"/> connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range	<8.3.4>
		<input type="checkbox"/> movement of threatened species that maintains their life cycle	<8.3.4>
		<input type="checkbox"/> water quality, waterbodies and hydrological processes that sustain threatened species and threatened ecological communities	<8.3.5>
		<input type="checkbox"/> assessment of the impacts of wind turbine strikes on protected animals	<1.1.1>
		<input type="checkbox"/> assessment of the impacts of vehicle strikes on threatened species of animals or on animals that are part of a TEC	<8.3.7>
		<input type="checkbox"/> evaluate the consequences of prescribed impacts	<1.1>
		<input type="checkbox"/> describe impacts that are uncertain	<8.2 & 1.1>
		<input type="checkbox"/> document limitations to data, assumptions and predictions	<8.2 & 1.1>
		<b>Maps and tables</b>	
		<input type="checkbox"/> Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts	<Table 23>
		<b>Data</b>	
		N/A	–
Mitigation and management of impacts	Chapter 8, Sections 8.4 and 8.5	<b>Information</b>	
		Identification of measures to mitigate or manage impacts in accordance with the recommendations in BAM Sections 8.4 and 8.5 including:	–
		<input type="checkbox"/> techniques, timing, frequency and responsibility	<Table 27>

		<input type="checkbox"/> identify measures for which there is risk of failure	
		<input type="checkbox"/> evaluate the risk and consequence of any residual impacts	
		<input type="checkbox"/> document any adaptive management strategy proposed	<1.1>
		Identification of measures for mitigating impacts related to:	–
		<input type="checkbox"/> displacement of resident fauna (as described in BAM Subsection 8.4.1(2.))	<8.4>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		<input type="checkbox"/> indirect impacts on native vegetation and habitat (as described in BAM Subsection 8.4.1(3.)) <input type="checkbox"/> mitigating prescribed biodiversity impacts (as described in BAM Subsection 8.4.2)	
		<input type="checkbox"/> Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM Section 8.5)	<1.1>
		<b>Maps and tables</b>	
		<input type="checkbox"/> 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 27>
		<b>Data</b>	
		N/A	–
Impact summary	Chapter 9	<b>Information</b>	
		Identification and assessment of impacts on TECs and threatened species that are at risk of a serious and irreversible impacts (SAIL, in accordance with BAM Section 9.1) including:	–
		<input type="checkbox"/> addressing all criteria in Subsection 9.1.1 for each TEC listed as at risk of an SAIL present on the subject land	<Table 30 & Table 31>
		<input type="checkbox"/> <b>for each TEC, report the extent of the TEC in NSW</b>	<Table 30>
		<input type="checkbox"/> addressing all criteria in Subsection 9.1.2 for each threatened species at risk of an SAIL present on the subject land	<Table 32 & Table 33>

		<input type="checkbox"/> for each threatened species, report the population size in NSW	<Table 32>
		<input type="checkbox"/> documenting assumptions made and/or limitations to information	<Table 30– Table 33>
		<input type="checkbox"/> documenting all sources of data, information, references used or consulted	
		<input type="checkbox"/> clearly justifying why any criteria could not be addressed	
		<input type="checkbox"/> Identification of impacts requiring offset in accordance with BAM Section 9.2	<Table 35 & Table 36>
		<input type="checkbox"/> Identification of impacts not requiring offset in accordance with BAM Subsection 9.2.1(3.)	<Table 34>
		<input type="checkbox"/> Identification of areas not requiring assessment in accordance with BAM Section 9.3	<Table 38>
		<b>Maps and tables</b>	
		<input type="checkbox"/> Map showing the extent of TECs at risk of an SAIL within the subject land	<Figure 14>
		<input type="checkbox"/> Map showing location of threatened species at risk of an SAIL within the subject land	<Figure 14>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		Map showing location of:	–
		<input type="checkbox"/> impacts requiring offset	<Figure 15>
		<input type="checkbox"/> impacts not requiring offset	<Figure 15>
		<input type="checkbox"/> areas not requiring assessment	<Figure 15>
		<b>Data</b>	
		Digital shape files of:	–
		<input type="checkbox"/> extent of TECs at risk of an SAIL within the subject land	–
		<input type="checkbox"/> location of threatened species at risk of an SAIL within the subject land	–
		<input type="checkbox"/> boundary of impacts requiring offset	–
		<input type="checkbox"/> boundary of impacts not requiring offset	–
		<input type="checkbox"/> boundary of areas not requiring assessment	–

		<input type="checkbox"/> Maps in jpeg format	–
Impact summary	Chapter 10	<b>Information</b>	
		Ecosystem credits and species credits that measure the impact of the development on biodiversity values, including:	–
		<input type="checkbox"/> future vegetation integrity score for each vegetation zone within the subject land (Equation 25 and Equation 26 in BAM Appendix H)	<Table 35>
		<input type="checkbox"/> change in vegetation integrity score (BAM Subsection 8.1.1)	
		<input type="checkbox"/> number of required ecosystem credits for the direct impacts of the proposal on each vegetation zone within the subject land (BAM Subsection 10.1.2)	
		<input type="checkbox"/> biodiversity risk weighting for each	<Table 35 & Table 36>
		<input type="checkbox"/> number of required species credits for each candidate threatened species that is directly impacted on by the proposal (BAM Subsection 10.1.3)	<Table 36>
		<b>Maps and tables</b>	
		<input type="checkbox"/> Table of PCTs requiring offset and the number of ecosystem credits required	<Table 35>
		<input type="checkbox"/> Table of threatened species requiring offset and the number of species credits required	<Table 36>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		<b>Data</b>	
		<input type="checkbox"/> Submitted proposal in the BAM Calculator	–
Biodiversity credit report	Chapter 10	<b>Information</b>	
		<input type="checkbox"/> Description of credit classes for ecosystem credits and species credits at the development or clearing site or land to be biodiversity certified (BAM Section 10.2)	<Table 39 & Table 40>
		<input type="checkbox"/> BAM credit report in pdf format	<Appendix H>



		<b>Maps and tables</b>	
		<input type="checkbox"/> Table of credit class and matching credit profile	<Table 40>
		<b>Data</b>	
		<input type="checkbox"/> BAM credit report in pdf format	<Appendix H>



## **Appendix B: Biodiversity Values Map and Threshold tool report**



## Biodiversity Values Map and Threshold Report

This report is generated using the Biodiversity Values Map and Threshold (BMAT) tool. The BMAT tool is used by proponents to supply evidence to your local council to determine whether or not a Biodiversity Development Assessment Report (BDAR) is required under [the Biodiversity Conservation Regulation 2017 \(Cl. 7.2 & 7.3\)](#).

The report provides results for the proposed development footprint area identified by the user and displayed within the blue boundary on the map.

There are two pathways for determining whether a BDAR is required for the proposed development:

1. Is there Biodiversity Values Mapping?
2. Is the 'clearing of native vegetation area threshold' exceeded?

### Biodiversity Values Map and Threshold Report

Date of Report Generation		23/05/2025 2:53 PM
1. Biodiversity Values (BV) Map - Results Summary (Biodiversity Conservation Regulation Section 7.3)		
1.1	<b>Does the development Footprint intersect with BV mapping?</b>	yes
1.2	Was <u>ALL</u> BV Mapping within the development footprint added in the last 90 days? (dark purple mapping only, no light purple mapping present)	no
1.3	<b>Date of expiry of dark purple 90 day mapping</b>	N/A
1.4	<b>Is the Biodiversity Values Map threshold exceeded?</b>	yes
2. Area Clearing Threshold - Results Summary (Biodiversity Conservation Regulation Section 7.2)		
2.1	<b>Size of the development or clearing footprint</b>	99,565.5 sqm
2.2	<b>Native Vegetation Area Clearing Estimate (NVACE)</b> (within development/clearing footprint)	67,570.2 sqm
2.3	<b>Method for determining Minimum Lot Size</b>	LEP
2.4	<b>Minimum Lot Size</b> (10,000sqm = 1ha)	500 sqm
2.5	<b>Area Clearing Threshold</b> (10,000sqm = 1ha)	2,500 sqm
2.6	<b>Does the estimate exceed the Area Clearing Threshold?</b> (NVACE results are an estimate and can be reviewed using the <a href="#">Guidance</a> )	yes
<b>REPORT RESULT: Is the Biodiversity Offset Scheme (BOS) Threshold exceeded for the proposed development footprint area?</b> (Your local council will determine if a BDAR is required)		<b>yes</b>

## What do I do with this report?

- If the result above indicates the BOS Threshold has been exceeded, your local council may require a Biodiversity Development Assessment Report with your development application. Seek further advice from Council. An accredited assessor can apply the Biodiversity Assessment Method and prepare a BDAR for you. For a list of accredited assessors go to: <https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor>.
- If the result above indicates the BOS Threshold has not been exceeded, you may not require a Biodiversity Development Assessment Report. This BMAT report can be provided to Council to support your development application. Council can advise how the area clearing threshold results should be considered. Council will review these results and make a determination if a BDAR is required. Council may ask you to review the area clearing threshold results. You may also be required to assess whether the development is “likely to significantly affect threatened species” as determined under the test in Section 7.3 of the *Biodiversity Conservation Act 2016*.
- If a BDAR is not required by Council, you may still require a permit to clear vegetation from your local council.
- If all Biodiversity Values mapping within your development footprint was less than 90 days old, i.e. areas are displayed as dark purple on the BV map, a BDAR may not be required if your Development Application is submitted within that 90 day period. Any BV mapping less than 90 days old on this report will expire on the date provided in Line item 1.3 above.

For more detailed advice about actions required, refer to the Interpreting the evaluation report section of the [Biodiversity Values Map Threshold Tool User Guide](#) .

## Review Options:

- If you believe the Biodiversity Values mapping is incorrect please refer to our [BV Map Review webpage](#) for further information.
- If you or Council disagree with the area clearing threshold estimate results from the NVACE in Line Item 2.6 above (i.e. area of Native Vegetation within the Development footprint proposed to be cleared), review the results using the [Guide for reviewing area clearing threshold results from the BMAT Tool](#).

## Acknowledgement

I, as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature: \_\_\_\_\_

(Typing your name in the signature field will be considered as your signature for the purposes of this form)

Date: \_\_\_\_\_

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## Biodiversity Values Map and Threshold Tool

The Biodiversity Values (BV) Map and Threshold Tool identifies land with high biodiversity value, particularly sensitive to impacts from development and clearing.

The BV map forms part of the Biodiversity Offsets Scheme threshold, which is one of the factors for determining whether the Scheme applies to a clearing or development proposal. You have used the Threshold Tool in the map viewer to generate this BV Threshold Report for your nominated area. This report calculates results for your proposed development footprint and indicates whether Council may require you to engage an accredited assessor to prepare a Biodiversity Development Assessment Report (BDAR) for your development.

This report may be used as evidence for development applications submitted to councils. You may also use this report when considering native vegetation clearing under the State Environmental Planning Policy (Biodiversity and Conservation) 2021 - Chapter 2 vegetation in non-rural areas.

What's new? For more information about the latest updates to the Biodiversity Values Map and Threshold Tool go to the updates section on the [Biodiversity Values Map webpage](#).

Map Review: Landholders can request a review of the BV Map where they consider there is an error in the mapping on their property. For more information about the map review process and an application form for a review go to the [Biodiversity Values Map Review webpage](#).

If you need help using this map tool see our [Biodiversity Values Map and Threshold Tool User Guide](#) or contact the Map Review Team at [map.review@environment.nsw.gov.au](mailto:map.review@environment.nsw.gov.au) or on 1800 001 490.





# Biodiversity Values Map



978.6 0 489.32 978.6 Metres

WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere

### Legend

-  Biodiversity Values that have been mapped for more than 90 days
-  Biodiversity Values added within last 90 days
-  Native Vegetation Area Clearing Estimate (NVACE)
-  Development area selected by proponent

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1: 19,265



This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

Imagery © Airbus DS/Spot Image 2016

© NSW Department of Customer Service, Basemaps 2019

© NSW Department of Planning and Environment

The results provided in this tool are generated using the best available mapping and knowledge of species habitat requirements.

This map is valid as at the date the report was generated. Checking the [Biodiversity Values Map viewer](#) for mapping updates is recommended.





## Appendix C: Determination of excluded impacts

N/A



## Appendix D: Matters of national environmental significance

N/A





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## Appendix E: Vegetation survey data

# Appendix E: Vegetation survey data

## PLOT 1

BAM PLOT DATA SHEET				21/11/2022	Andrew	Semi-Intact							
Copy these 2 rows into BAM Calc	plot	pct	area	patchsize	conditionclass	zone	easting	northing	bearing	compTree	compShrub	compGrass	
	1.00	PCT 3436					56			4	2	14	
Species List													
Enter first 4 letters of genus and first 4 letters of species here				OR type/paste Scientific Name here									
Abbreviation	Kingdom	Class	Family	Scientific Name	Common Name	BC Act	EPBC Act	GrowthForm	N or E	HTE	Cover	Abundance	
Euca pilu			Myrtaceae	Eucalyptus pilularis	Blackbutt	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		35	2	
Ango cost			Myrtaceae	Angophora costata	Sydney Red Gum	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		10	1	
Gloc ferd			Phyllanthaceae	Glochidion ferdinandii		Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		0.3	5	
Prat purp			Campanulaceae	Pratia purpurascens	Whiteroot	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.5	200	
Lepi late			Cyperaceae	Lepidosperma latens		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.2	2	
Impe cyli			Poaceae	Imperata cylindrica	Blady Grass	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		6	300	
Digi diff			Poaceae	Digitaria diffusa	Open Summer-grass	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		1	100	
Cent asia			Apiaceae	Centella asiatica	Indian Pennywort	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.5	300	
Ento marg			Poaceae	Entolasia marginata	Bordered Panic	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.1	1	
Dich repe			Convolvulaceae	Dichondra repens	Kidney Weed	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.2	50	
hydr sibb			Apiaceae	Hydrocotyle sibthorpioides		Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.3	100	
Micr stip			Poaceae	Microlaena stipoides	Weeping Grass	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		6	400	
Pasp orbi			Poaceae	Paspalum orbiculare	Ditch Millet	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		10	500	
Pter escu			Dennstaedtiaceae	Pteridium esculentum	Bracken	Not Listed	Not Listed	Fern (EG)	Alive in NSW, Native		0.3	4	
Loma mult			Lomandraceae	Lomandra multiflora	Many-flowered Mat-rush	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.1	2	
Brey oblo			Phyllanthaceae	Breynia oblongifolia	Coffee Bush	Not Listed	Not Listed	Shrub (SG)	Alive in NSW, Native		0.2	4	
Scho apog			Cyperaceae	Schoenus apogon	Fluke Bogrush	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		10	800	
Cyno dact			Poaceae	Cynodon dactylon	Common Couch	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		1	200	
Loma long			Lomandraceae	Lomandra longifolia 'Tanika'		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.2	2	
Lant cama			Verbenaceae	Lantana camara	Lantana	Not Listed	Not Listed	0 Introduced	YES		0.3	5	
Rich bras			Rubiaceae	Richardia brasiliensis	Mexican Clover	Not Listed	Not Listed	0 Introduced			0.1	20	
Junc cogn			Juncaceae	Juncus cognatus		Not Listed	Not Listed	0 Introduced			0.1	1	
Pasp dila			Poaceae	Paspalum dilatatum	Paspalum	Not Listed	Not Listed	0 Introduced	YES		5	200	
Loni japo			Caprifoliaceae	Lonicera japonica	Japanese Honeysuckle	Not Listed	Not Listed	0 Introduced	YES		4	200	



Hypo radi			Asteraceae	Hypochoeris radicata	Catsear	Not Listed	Not Listed	0	Introduced		0.1	10
Aste subu			Asteraceae	Aster subulatus	Wild Aster	Not Listed	Not Listed	0	Introduced		0.1	1
Sonc aspe			Asteraceae	Sonchus asper	Prickly Sowthistle	Not Listed	Not Listed	0	Introduced		0.1	2
Verb bona			Verbenaceae	Verbena bonariensis	Purpletop	Not Listed	Not Listed	0	Introduced		0.1	10
Cirs vulg			Asteraceae	Cirsium vulgare	Spear Thistle	Not Listed	Not Listed	0	Introduced		0.1	1
Ligu sine			Oleaceae	Ligustrum sinense	Small-leaved Privet	Not Listed	Not Listed	0	Introduced	YES	0.5	30
Sonc oler			Asteraceae	Sonchus oleraceus	Common Sowthistle	Not Listed	Not Listed	0	Introduced		0.1	1
Axon comp			Poaceae	Axonopus compressus	Broad-leaved Carpet Grass	Not Listed	Not Listed	0	Introduced		25	1000
Andr virg			Poaceae	Andropogon virginicus	Whisky Grass	Not Listed	Not Listed	0	Introduced	YES	5	200
Gamo purp			Asteraceae	Gamochaeta purpurea	Purple Cudweed	Not Listed	Not Listed	0	Introduced		0.1	10
Cype erag			Cyperaceae	Cyperus eragrostis	Umbrella Sedge	Not Listed	Not Listed	0	Introduced	YES	0.2	20
Soli sess			Asteraceae	Soliva sessilis	Bindyi	Not Listed	Not Listed	0	Introduced		0.1	5
Bill scan			Pittosporaceae	Billardiera scandens	Hairy Apple Berry	Not Listed	Not Listed	Other (OG)	Alive in NSW, Native		0.1	1
Poly caly	Plantae	Flora	Convolvulaceae	Polymelia calycina		Not Listed	Not Listed	Other (OG)	Alive in NSW, Native		0.1	5
Dian caer	Plantae	Flora	Phormiaceae	Dianella caerulea	Blue Flax-lily	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	3
Astr humi	Plantae	Flora	Ericaceae	Astroloma humifusum	Native Cranberry	Not Listed	Not Listed	Shrub (SG)	Alive in NSW, Native		0.1	1
Loma filli	Plantae	Flora	Lomandraceae	Lomandra filiformis		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.1	2
Ento stri	Plantae	Flora	Poaceae	Entolasia stricta	Wiry Panic	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.1	3
Desm brac	Plantae	Flora	Fabaceae (Faboideae)	Desmodium brachypodium	Large Tick-trefoil	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	2
Gono tetr	Plantae	Flora	Haloragaceae	Gonocarpus tetragynus	Poverty Raspwort	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	1
Euca tere	Plantae	Flora	Myrtaceae	Eucalyptus tereticornis	Forest Red Gum	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		0.5	1
Care inve	Plantae	Flora	Cyperaceae	Carex inversa	Knob Sedge	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		2	200
Pasp dist	Plantae	Flora	Poaceae	Paspalidium distans		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		5	200
Bide pilo	Plantae	Flora	Asteraceae	Bidens pilosa	Cobbler's Pegs	Not Listed	Not Listed	0	Introduced		0.1	2
Pasp urvi	Plantae	Flora	Poaceae	Paspalum urvillei	Vasey Grass	Not Listed	Not Listed	0	Introduced		0.1	1

[illegible]

PLOT 2

BAM PLOT DATA SHEET				21/11/2022	Andrew	Semi-Intact							
Copy these 2 rows into BAM Calc	plot	pct	area	patchsize	conditionclass	zone	easting	northing	bearing	compTree	compShrub	compGrass	
	2.00	pct 3436				56				3		1	8
Species List													
Enter first 4 letters of genus and first 4 letters of species here				OR type/paste Scientific Name here									
Abbreviation	Kingdom	Class	Family	Scientific Name	Common Name	BC Act	EPBC Act	GrowthForm	N or E	HTE	Cover	Abundance	
Euca tere		Flora	Myrtaceae	Eucalyptus tereticornis	Forest Red Gum	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		20	2	
Gloc ferd		Flora	Phyllanthaceae	Glochidion ferdinandii		Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		0.5	50	
Scho apog		Flora	Cyperaceae	Schoenus apogon	Fluke Bogrush	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		20	1000	
Cent asia		Flora	Apiaceae	Centella asiatica	Indian Pennywort	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		1	500	
Gono tetr		Flora	Haloragaceae	Gonocarpus tetragynus	Poverty Raspwort	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	20	
Hydr sibt		Flora	Apiaceae	Hydrocotyle sibthorpioides		Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.5	200	
Poly caly		Flora	Convolvulaceae	Polymeria calycina		Not Listed	Not Listed	Other (OG)	Alive in NSW, Native		0.1	2	
Digi diff		Flora	Poaceae	Digitaria diffusa	Open Summer-grass	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		2	200	
Loma long		Flora	Lomandraceae	Lomandra longifolia 'Tanika'		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		1	1	
Pasp orbi		Flora	Poaceae	Paspalum orbiculare	Ditch Millet	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		10	200	
Opli aemu		Flora	Poaceae	Oplismenus aemulus		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		7	300	
Dich repe		Flora	Convolvulaceae	Dichondra repens	Kidney Weed	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.5	200	
Dian caer		Flora	Phormiaceae	Dianella caerulea	Blue Flax-lily	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	1	
Junc		Flora	Juncaceae	Juncus spp.		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.1	1	
Pter escu		Flora	Dennstaedtiaceae	Pteridium esculentum	Bracken	Not Listed	Not Listed	Fern (EG)	Alive in NSW, Native		0.1	2	
Erag brow		Flora	Poaceae	Eragrostis brownii	Brown's Lovegrass	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		10	1000	
Pasp dist		Flora	Poaceae	Paspalidium distans		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		2	100	
Hypo muel		Flora	Dennstaedtiaceae	Hypolepis muelleri	Harsh Ground Fern	Not Listed	Not Listed	Fern (EG)	Alive in NSW, Native		0.2	10	
Pers hydr		Flora	Polygonaceae	Persicaria hydropiper	Water Pepper	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.3	20	
Pasp urvi		Flora	Poaceae	Paspalum urvillei	Vasey Grass	Not Listed	Not Listed		0 Introduced		0.1	1	
Seta parv		Flora	Poaceae	Setaria parviflora		Not Listed	Not Listed		0 Introduced		0.1	1	
Anag arve		Flora	Primulaceae	Anagallis arvensis	Scarlet Pimpernel	Not Listed	Not Listed		0 Introduced		0.1	20	
Cirs vulg		Flora	Asteraceae	Cirsium vulgare	Spear Thistle	Not Listed	Not Listed		0 Introduced		0.2	20	



32	Cirs vulg		Flora	Asteraceae	Cirsium vulgare	Spear Thistle	Not Listed	Not Listed	0	Introduced		0.2	20
33	Sene mada		Flora	Asteraceae	Senecio madagascariensis	Fireweed	Not Listed	Not Listed	0	Introduced		0.1	10
34	Cony		Flora	Asteraceae	Conyza spp.		Not Listed	Not Listed	0	Introduced		20	1000
35	Ligu sine		Flora	Oleaceae	Ligustrum sinense	Small-leaved Privet	Not Listed	Not Listed	0	Introduced	YES	0.2	20
36	Loni japo		Flora	Caprifoliaceae	Lonicera japonica	Japanese Honeysuckle	Not Listed	Not Listed	0	Introduced	YES	0.3	50
37	plan lanc		Flora	Plantaginaceae	Plantago lanceolata	Lamb's Tongues	Not Listed	Not Listed	0	Introduced		0.1	10
38	Soli sess		Flora	Asteraceae	Soliva sessilis	Bindyi	Not Listed	Not Listed	0	Introduced		0.1	10
39	Cype erag		Flora	Cyperaceae	Cyperus eragrostis	Umbrella Sedge	Not Listed	Not Listed	0	Introduced	YES	0.3	100
40	Pasp dila		Flora	Poaceae	Paspalum dilatatum	Paspalum	Not Listed	Not Listed	0	Introduced	YES	10	400
41	Sonc aspe		Flora	Asteraceae	Sonchus asper	Prickly Sowthistle	Not Listed	Not Listed	0	Introduced		0.1	1
42	Oxal purp		Flora	Oxalidaceae	Oxalis purpurea		Not Listed	Not Listed	0	Introduced		0.1	10
43	Brey oblo		Flora	Phyllanthaceae	Breynia oblongifolia	Coffee Bush	Not Listed	Not Listed	Shrub (SG)	Alive in NSW, Native		0.1	1
44	Euca pipe		Flora	Myrtaceae	Eucalyptus piperita	Sydney Peppermint	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		1	1
45	Gono micr		Flora	Haloragaceae	Gonocarpus micranthus		Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	10
46	Vero pleb		Flora	Plantaginaceae	Veronica plebeia	Trailing Speedwell	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	1
47	Dauc gloc	Plantae	Flora	Apiaceae	Daucus glochidiatus	Native Carrot	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	1
48	Hype gram	Plantae	Flora	Clusiaceae	Hypericum gramineum	Small St John's Wort	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	1
49	Euch spha	Plantae	Flora	Asteraceae	Euchiton sphaericus	Star Cudweed	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	10
50	Gamo purp	Plantae	Flora	Asteraceae	Gamochaeta purpurea	Purple Cudweed	Not Listed	Not Listed		0	Introduced	0.1	10
51	Verb bona	Plantae	Flora	Verbenaceae	Verbena bonariensis	Purpletop	Not Listed	Not Listed		0	Introduced	0.1	10
52	Andr virg	Plantae	Flora	Poaceae	Andropogon virginicus	Whisky Grass	Not Listed	Not Listed		0	Introduced	1	100
53	Axon comp	Plantae	Flora	Poaceae	Axonopus compressus	Broad-leaved Carpet Grass	Not Listed	Not Listed		0	Introduced	5	200

compForbs	compFerns	compOther	strucTree	Shrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollow	funLitterCover	funLenFallenLogs	funTreeStemSto9	funTreeStem10to1	funTreeStem20	funTreeStem30to49	funTreeStem50	funTreeRegen	funHighThreatExotic
11	2	1	21.5	0.1	52.1	3	0.3	0.1	1	0	40.0	0.0	0	0	0	0	0	1 YES	11.8

Tree Count	Absent=0,Present	1 x 1 m Plots	Subplot	Average
80cm +	0	Leaf Litter		
50-79 cm	1	5	35	
30-49 cm	0	15	45	
20-29 cm	0	25	65	
10-19 cm	0	35	25	
5-9 cm	0	45	30	
<5 cm	0	Bare Ground		
		5	65	
Logs	<sum of logs on ground >10cm	15	35	
0		25	30	
		35	35	
Hollows	<Number of hollow bearing trees	45	35	
0				
		Cryptogram		
		5	0	
		15	0	
		25	5	
		35	0	
		45	0	
		Rock Cover		
		5	0	
		15	0	
		25	0	
		35	0	
		45	2	

## PLOT 3

BAM PLOT DATA SHEET				21/11/2022	Andrew	Semi-Intact							
Copy these 2 rows into BAM Calc	plot	pct	area	patchsize	conditionclass	zone	easting	northing	bearing	compTree	compShrub	compGrass	
	3.00	pct 3995					56			6	1	3	
Species List													
Enter first 4 letters of genus and first 4 letters of species here				OR type/paste Scientific Name here									
Abbreviation	Kingdom	Class	Family	Scientific Name	Common Name	BC Act	EPBC Act	GrowthForm	N or E	HTE	Cover	Abundance	
Euca resi	Flora	Myrtaceae	Myrtaceae	Eucalyptus resinifera	Red Mahogany	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		25	3	
Ango cost	Flora	Myrtaceae	Myrtaceae	Angophora costata	Sydney Red Gum	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		20	5	
Gloc ferd	Flora	Phyllanthaceae	Phyllanthaceae	Glochidion ferdinandii		Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		35	8	
Euca tere	Flora	Myrtaceae	Myrtaceae	Eucalyptus tereticornis	Forest Red Gum	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		0.5	1	
Gahn sieb	Flora	Cyperaceae	Cyperaceae	Gahnia sieberi		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		10	200	
Calo dubi	Flora	Dicksoniaceae	Dicksoniaceae	Calochlaena dubia	Rainbow Fern	Not Listed	Not Listed	Other (OG)	Alive in NSW, Native		10	100	
Cupa anac	Flora	Sapindaceae	Sapindaceae	Cupaniopsis anacardioides	Tuckeroo	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		0.1	2	
Pitt undu	Flora	Pittosporaceae	Pittosporaceae	Pittosporum undulatum	Sweet Pittosporum	Not Listed	Not Listed	Shrub (SG)	Alive in NSW, Native		0.5	2	
Casu glau	Flora	Casuarinaceae	Casuarinaceae	Casuarina glauca	Swamp Oak	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		0.5	1	
Care sp.	Flora	Cyperaceae	Cyperaceae	Carex sp. Bendemeer		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.2	5	
Junc usit	Flora	Juncaceae	Juncaceae	Juncus usitatus		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.1	1	
Livi aust	Flora	Arecaceae	Arecaceae	Livistona australis	Cabbage Palm	Not Listed	Not Listed	Other (OG)	Alive in NSW, Native		0.1	1	
Ochn serr	Flora	Ochnaceae	Ochnaceae	Ochna serrulata	Mickey Mouse Plant	Not Listed	Not Listed	0	Introduced	YES	0.1	1	
cinn camp	Flora	Lauraceae	Lauraceae	Cinnamomum camphora	Camphor Laurel	Not Listed	Not Listed	0	Introduced	YES	1	1	
Aspa offi	Flora	Asparagaceae	Asparagaceae	Asparagus officinalis	Asparagus	Not Listed	Not Listed	0	Introduced		0.1	1	
Cype erag	Flora	Cyperaceae	Cyperaceae	Cyperus eragrostis	Umbrella Sedge	Not Listed	Not Listed	0	Introduced	YES	0.1	10	
Sene mada	Flora	Asteraceae	Asteraceae	Senecio madagascariensis	Fireweed	Not Listed	Not Listed	0	Introduced		0.1	5	
Cony	Flora	Asteraceae	Asteraceae	Conyza spp.		Not Listed	Not Listed	0	Introduced		0.1	10	
Loni japo	Flora	Caprifoliaceae	Caprifoliaceae	Lonicera japonica	Japanese Honeysuckle	Not Listed	Not Listed	0	Introduced	YES	0.5	20	
Lant cama	Flora	Verbenaceae	Verbenaceae	Lantana camara	Lantana	Not Listed	Not Listed	0	Introduced	YES	0.1	1	
Pass edul	Flora	Passifloraceae	Passifloraceae	Passiflora edulis	Common Passionfruit	Not Listed	Not Listed	0	Introduced		0.1	1	
Ligu sine	Flora	Oleaceae	Oleaceae	Ligustrum sinense	Small-leaved Privet	Not Listed	Not Listed	0	Introduced	YES	25	500	



compForbs	compFerns	compOther	strucTree	Shrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollowtri	funLitterCover	funLenFallenLogs	funTreeStemSto9	funTreeStem10to15	funTreeStem20ti	funTreeStem30to49	funTreeStem50ti	funTreeRegen	funHighThreatExotic
0	0	2	81.1	0.5	10.3	0	0	10.1	1	0	55.6	0.0	1	0	1	1	1	YES	26.8

Tree Count	Absent=0,Presen	1 x 1 m Plots	Subplot	Average
80cm +	1		Leaf Litter	
50-79 cm	1	5	98	
30-49 cm	1	15	98	
20-29 cm	1	25	2	55.6
10-19 cm	0	35	20	
5-9 cm	1	45	60	
<5 cm	0		Bare Ground	
		5	0	
Logs	<sum of longs on ground >10cm	15	0	
0		25	95	37.0
		35	70	
Hollows	<Number of hollow bearing trees	45	20	
0			Cryptogram	
		5	0	
		15	0	
		25	0	0.0
		35	0	
		45	0	
			Rock Cover	
		5	0	
		15	0	
		25	0	0.0
		35	0	
		45	0	

PLOT 4

BAM PLOT DATA SHEET				29/04/2025	Sandeep and Zac	degraded and under scrubbed							
Copy these 2 rows into BAM Calc	plot	pct	area	patchsize	conditionclass	zone	easting	northing	bearing	compTree	compShrub	compGrass	
	4.00 PCT 3436					56				3	0	6	
Species List													
Enter first 4 letters of genus and first 4 letters of species here				OR type/paste Scientific Name here									
Abbreviation	Kingdom	Class	Family	Scientific Name	Common Name	BC Act	EPBC Act	GrowthForm	N or E	HTE	Cover	Abundance	
ango cost	Plantae	Flora	Myrtaceae	Angophora costata	Sydney Red Gum	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		20	1	
euca tere	Plantae	Flora	Myrtaceae	Eucalyptus tereticornis	Forest Red Gum	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		30	1	
euca resi	Plantae	Flora	Myrtaceae	Eucalyptus resinifera	Red Mahogany	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		10	1	
pasp dila	Plantae	Flora	Poaceae	Paspalum dilatatum	Paspalum	Not Listed	Not Listed	0 Introduced			2	10	
seta pumi	Plantae	Flora	Poaceae	Setaria pumila	Pale Pigeon Grass	Not Listed	Not Listed	0 Introduced			10	100	
axon comp	Plantae	Flora	Poaceae	Axonopus compressus	Broad-leaved Carpet Grass	Not Listed	Not Listed	0 Introduced			15	200	
both pert	Plantae	Flora	Poaceae	Bothriochloa pertusa		Not Listed	Not Listed	0 Introduced			0.8	10	
rich bras	Plantae	Flora	Rubiaceae	Richardia brasiliensis	Mexican Clover	Not Listed	Not Listed	0 Introduced			10	50	
lobe purp	Plantae	Flora	Campanulaceae	Lobelia purpurascens	whiteroot	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		2	20	
micr stip	Plantae	Flora	Poaceae	Microlaena stipoides	Weeping Grass	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.5	10	
spor creb	Plantae	Flora	Poaceae	Sporobolus creber	Slender Rat's Tail Grass	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		1	20	
fimb dich	Plantae	Flora	Cyperaceae	Fimbristylis dichotoma	Common Fringe-sedge	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		3	30	
glyc taba	Plantae	Flora	Fabaceae (Faboideae)	Glycine tabacina complex		Not Listed	Not Listed	Other (OG)	Alive in NSW, Native		2	5	
loma long	Plantae	Flora	Lomandraceae	Lomandra longifolia 'Tanika'		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.9	2	
loni japo	Plantae	Flora	Caprifoliaceae	Lonicera japonica	Japanese Honeysuckle	Not Listed	Not Listed	0 Introduced			15	20	
pter escu	Plantae	Flora	Dennstaedtiaceae	Pteridium esculentum	Bracken	Not Listed	Not Listed	Fern (EG)	Alive in NSW, Native		0.8	3	
cyno dact	Plantae	Flora	Poaceae	Cynodon dactylon	Common Couch	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		15	900	
sida acut	Plantae	Flora	Malvaceae	Sida acuta	Spinyhead Sida	Not Listed	Not Listed	0 Introduced			0.8	5	
	Plantae	Flora	Poaceae	Paspalum distichum	Water Couch	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		10	80	



[illegible]



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## **Appendix F: Decision-maker authorisation to use more appropriate local data**

N/A





## Appendix G: Credit reports

## Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00019448/BAAS18020/20/00019449	Medowie Planning Proposal - Ferodale Rd	28/10/2024
Assessor Name	Report Created	BAM Data version *
Sarah Jones	28/05/2025	Current classification (live - default) (80)
Assessor Number	BAM Case Status	Date Finalised
BAAS18020	Open	To be finalised
Assessment Revision	BOS entry trigger	Assessment Type
4	BOS Threshold: Biodiversity Values Map and area clearing threshold	Part 4 Developments (General)

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

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

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

Hunter Coast Paperbark-Swamp Mahogany Forest												
2	3995_Poor	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	33	33.0	0.16	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		3
											<b>Subtotal</b>	<b>3</b>
Hunter Coast Sandy Creekflat Low Paperbark Scrub												
1	3436_Poor	Not a TEC	35.7	35.7	1.4	PCT Cleared - 52%	High Sensitivity to Gain			1.75		21
											<b>Subtotal</b>	<b>21</b>
											<b>Total</b>	<b>24</b>

### 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 SAIL	Species credits

## BAM Credit Summary Report

<i>Phascolarctos cinereus / Koala ( Fauna )</i>									
3436_Poor	35.7	35.7	1.4			Endangered	Endangered	False	24
3995_Poor	33.0	33.0	0.16			Endangered	Endangered	False	3
								<b>Subtotal</b>	<b>27</b>





## BAM Biodiversity Credit Report (Like for like)

### Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00019448/BAAS18020/20/00019449	Medowie Planning Proposal - Ferodale Rd	28/10/2024
Assessor Name	Assessor Number	BAM Data version *
Sarah Jones	BAAS18020	Current classification (live - default) (80)
Proponent Names	Report Created	BAM Case Status
	28/05/2025	Open
Assessment Revision	BOS entry trigger	Assessment Type
4	BOS Threshold: Biodiversity Values Map and area clearing threshold	Part 4 Developments (General)
Date 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.	
To be finalised		

### Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		
Species		
Nil		

# 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
No Changes

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

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
1564-Blackbutt - Rough-barked Apple - Turpentine - ferny tall open forest of the Central Coast	Not a TEC	0.3	6	0	6
1619-Smooth-barked Apple - Red Bloodwood - Brown Stringybark - Hairpin Banksia heathy open forest of coastal lowlands	Not a TEC	1.7	26	0	26



## BAM Biodiversity Credit Report (Like for like)

<b>1564-Blackbutt - Rough-barked Apple - Turpentine - ferny tall open forest of the Central Coast</b>	<b>Like-for-like credit retirement options</b>					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 690, 697, 698, 755, 1092, 1262, 1267, 1268, 1281, 1385, 1548, 1549, 1550, 1556, 1557, 1558, 1564, 1565, 1580, 1582, 1584, 1585, 1845, 1846, 1847, 1914, 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	1564_Poor	Yes	6	Hunter, Ellerston, Karuah Manning, Kerrabee, Liverpool Range, Peel, Tomalla, Upper Hunter, Wyong and Yengo.  or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

## BAM Biodiversity Credit Report (Like for like)

**1619-Smooth-barked Apple -  
Red Bloodwood - Brown  
Stringybark - Hairpin Banksia  
heathy open forest of coastal  
lowlands**

### Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Sydney Coastal Dry Sclerophyll Forests This includes PCT's: 1083, 1138, 1156, 1181, 1183, 1250, 1253, 1619, 1620, 1621, 1623, 1624, 1625, 1627, 1632, 1636, 1638, 1642, 1643, 1681, 1776, 1777, 1778, 1780, 1782, 1783, 1785, 1786, 1787, 3578, 3579, 3580, 3581, 3582, 3583, 3584, 3585, 3586, 3587, 3588, 3589, 3590, 3591, 3592, 3593, 3594, 3595, 3596, 3597, 3598	Sydney Coastal Dry Sclerophyll Forests <50%	1619_Poor	Yes	26	Hunter, Ellerston, Karuah Manning, Kerrabee, Liverpool Range, Peel, Tomalla, Upper Hunter, Wyong and Yengo.  or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.





## BAM Biodiversity Credit Report (Like for like)

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### Species Credit Summary

No Species Credit Data

### Credit Retirement Options

Like-for-like credit retirement options

# BAM Biodiversity Credit Report (Variations)

## Proposal Details

### Assessment Id

00019448/BAAS18020/20/00019449

### Assessor Name

Sarah Jones

### Proponent Name(s)

### Assessment Revision

4

### Date Finalised

To be finalised

### Proposal Name

Medowie Planning Proposal - Ferodale Rd

### Assessor Number

BAAS18020

### Report Created

28/05/2025

### BOS entry trigger

BOS Threshold: Biodiversity Values Map and area clearing threshold

### BAM data last updated \*

28/10/2024

### BAM Data version \*

Current classification (live - default) (80)

### BAM Case Status

Open

### Assessment Type

Part 4 Developments (General)

\* 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		
Nil		

## Additional Information for Approval

PCT Outside Ibra Added

None added





## PCT

Name

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

1564-Blackbutt - Rough-barked Apple - Turpentine - ferny tall open forest of the Central Coast	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region

## BAM Biodiversity Credit Report (Variations)

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 690, 697, 698, 755, 1092, 1262, 1267, 1268, 1281, 1385, 1548, 1549, 1550, 1556, 1557, 1558, 1564, 1565, 1580, 1582, 1584, 1585, 1845, 1846, 1847, 1914, 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	1564_Poor	Yes	6	Hunter, Ellerston, Karuah Manning, Kerrabee, Liverpool Range, Peel, Tomalla, Upper Hunter, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	<b>Variation options</b>					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Wet Sclerophyll Forests (Grassy sub-formation)	Tier 4 or higher threat status	1564_Poor	Yes (including artificial)	6	IBRA Region: Sydney Basin, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.



## BAM Biodiversity Credit Report (Variations)

<b>1619-Smooth-barked Apple - Red Bloodwood - Brown Stringybark - Hairpin Banksia heathy open forest of coastal lowlands</b>	<b>Like-for-like credit retirement options</b>					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Sydney Coastal Dry Sclerophyll Forests This includes PCT's: 1083, 1138, 1156, 1181, 1183, 1250, 1253, 1619, 1620, 1621, 1623, 1624, 1625, 1627, 1632, 1636, 1638, 1642, 1643, 1681, 1776, 1777, 1778, 1780, 1782, 1783, 1785, 1786, 1787, 3578, 3579, 3580, 3581, 3582, 3583, 3584, 3585, 3586, 3587, 3588, 3589, 3590, 3591, 3592, 3593, 3594, 3595, 3596, 3597, 3598	Sydney Coastal Dry Sclerophyll Forests <50%	1619_Poor	Yes	26	Hunter, Ellerston, Karuah Manning, Kerrabee, Liverpool Range, Peel, Tomalla, Upper Hunter, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	<b>Variation options</b>					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Dry Sclerophyll Forests (Shrubby sub-formation)	Tier 4 or higher threat status	1619_Poor	Yes (including artificial)	26	IBRA Region: Sydney Basin, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

### Species Credit Summary

No Species Credit Data

## Credit Retirement Options    Like-for-like options



# BAM Candidate Species Report

## Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00019448/BAAS18020/20/00019449	Medowie Planning Proposal - Ferodale Rd	28/10/2024
Assessor Name	Report Created	BAM Data version *
Sarah Jones	28/05/2025	Current classification (live - default) (80)
Assessor Number	Assessment Type	BAM Case Status
BAAS18020	Part 4 Developments (General)	Open
Assessment Revision	BOS entry trigger	Date Finalised
4	BOS Threshold: Biodiversity Values Map and area clearing threshold	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
<b><i>Ninox connivens</i></b> Barking Owl		<div> <input type="checkbox"/> Jan           <input type="checkbox"/> Feb           <input type="checkbox"/> Mar           <input type="checkbox"/> Apr         </div> <div> <input type="checkbox"/> May           <input type="checkbox"/> Jun           <input checked="" type="checkbox"/> Jul           <input checked="" type="checkbox"/> Aug         </div> <div> <input type="checkbox"/> Sep           <input type="checkbox"/> Oct           <input type="checkbox"/> Nov           <input type="checkbox"/> Dec         </div> <div> <input type="checkbox"/> Survey month outside the specified months?         </div>
<b><i>Phascogale tapoatafa</i></b> Brush-tailed Phascogale		<div> <input type="checkbox"/> Jan           <input type="checkbox"/> Feb           <input type="checkbox"/> Mar           <input type="checkbox"/> Apr         </div> <div> <input checked="" type="checkbox"/> May           <input type="checkbox"/> Jun           <input type="checkbox"/> Jul           <input type="checkbox"/> Aug         </div> <div> <input type="checkbox"/> Sep           <input type="checkbox"/> Oct           <input type="checkbox"/> Nov           <input type="checkbox"/> Dec         </div> <div> <input type="checkbox"/> Survey month outside the specified months?         </div>

## BAM Candidate Species Report

<b><i>Angophora inopina</i></b> Charmhaven Apple		<div> <input type="checkbox"/> Jan           <input type="checkbox"/> Feb           <input type="checkbox"/> Mar           <input type="checkbox"/> Apr         </div> <div> <input type="checkbox"/> May           <input type="checkbox"/> Jun           <input type="checkbox"/> Jul           <input checked="" type="checkbox"/> Aug         </div> <div> <input type="checkbox"/> Sep           <input type="checkbox"/> Oct           <input type="checkbox"/> Nov           <input type="checkbox"/> Dec         </div> <div> <input type="checkbox"/> Survey month outside the specified months?         </div>
<b><i>Eucalyptus parramattensis subsp. decadens</i></b> Eucalyptus parramattensis subsp. decadens		<div> <input type="checkbox"/> Jan           <input type="checkbox"/> Feb           <input type="checkbox"/> Mar           <input type="checkbox"/> Apr         </div> <div> <input checked="" type="checkbox"/> May           <input type="checkbox"/> Jun           <input type="checkbox"/> Jul           <input checked="" type="checkbox"/> Aug         </div> <div> <input type="checkbox"/> Sep           <input type="checkbox"/> Oct           <input type="checkbox"/> Nov           <input type="checkbox"/> Dec         </div> <div> <input type="checkbox"/> Survey month outside the specified months?         </div>
<b><i>Callocephalon fimbriatum</i></b> Gang-gang Cockatoo		<div> <input type="checkbox"/> Jan           <input type="checkbox"/> Feb           <input type="checkbox"/> Mar           <input type="checkbox"/> Apr         </div> <div> <input type="checkbox"/> May           <input type="checkbox"/> Jun           <input type="checkbox"/> Jul           <input type="checkbox"/> Aug         </div> <div> <input type="checkbox"/> Sep           <input type="checkbox"/> Oct           <input checked="" type="checkbox"/> Nov           <input type="checkbox"/> Dec         </div> <div> <input type="checkbox"/> Survey month outside the specified months?         </div>
<b><i>Phascolarctos cinereus</i></b> Koala		<div> <input type="checkbox"/> Jan           <input type="checkbox"/> Feb           <input type="checkbox"/> Mar           <input type="checkbox"/> Apr         </div> <div> <input type="checkbox"/> May           <input type="checkbox"/> Jun           <input type="checkbox"/> Jul           <input type="checkbox"/> Aug         </div> <div> <input type="checkbox"/> Sep           <input type="checkbox"/> Oct           <input type="checkbox"/> Nov           <input type="checkbox"/> Dec         </div> <div> <input type="checkbox"/> Survey month outside the specified months?         </div>
<b><i>Hieraaetus morphnoides</i></b> Little Eagle	*Survey months are outside of the months specified in Bionet.	<div> <input type="checkbox"/> Jan           <input type="checkbox"/> Feb           <input type="checkbox"/> Mar           <input type="checkbox"/> Apr         </div> <div> <input type="checkbox"/> May           <input type="checkbox"/> Jun           <input type="checkbox"/> Jul           <input checked="" type="checkbox"/> Aug         </div> <div> <input type="checkbox"/> Sep           <input type="checkbox"/> Oct           <input type="checkbox"/> Nov           <input type="checkbox"/> Dec         </div> <div> <input checked="" type="checkbox"/> Survey month outside the specified months?         </div>
<b><i>Syzygium paniculatum</i></b> Magenta Lilly Pilly		<div> <input type="checkbox"/> Jan           <input type="checkbox"/> Feb           <input type="checkbox"/> Mar           <input type="checkbox"/> Apr         </div> <div> <input checked="" type="checkbox"/> May           <input type="checkbox"/> Jun           <input type="checkbox"/> Jul           <input type="checkbox"/> Aug         </div> <div> <input type="checkbox"/> Sep           <input type="checkbox"/> Oct           <input type="checkbox"/> Nov           <input type="checkbox"/> Dec         </div> <div> <input type="checkbox"/> Survey month outside the specified months?         </div>



## BAM Candidate Species Report

<b><i>Tyto novaehollandiae</i></b> Masked Owl		<input type="checkbox"/> Jan <input type="checkbox"/> Feb <input type="checkbox"/> Mar <input type="checkbox"/> Apr <input type="checkbox"/> May <input type="checkbox"/> Jun <input checked="" type="checkbox"/> Jul <input checked="" type="checkbox"/> Aug <input type="checkbox"/> Sep <input type="checkbox"/> Oct <input type="checkbox"/> Nov <input type="checkbox"/> Dec <input type="checkbox"/> Survey month outside the specified months?
<b><i>Rhodomirtus psidioides</i></b> Native Guava		<input type="checkbox"/> Jan <input type="checkbox"/> Feb <input type="checkbox"/> Mar <input type="checkbox"/> Apr <input type="checkbox"/> May <input checked="" type="checkbox"/> Jun <input type="checkbox"/> Jul <input type="checkbox"/> Aug <input type="checkbox"/> Sep <input type="checkbox"/> Oct <input type="checkbox"/> Nov <input type="checkbox"/> Dec <input type="checkbox"/> Survey month outside the specified months?
<b><i>Callistemon linearifolius</i></b> Netted Bottle Brush	*Survey months are outside of the months specified in Bionet.	<input type="checkbox"/> Jan <input type="checkbox"/> Feb <input type="checkbox"/> Mar <input type="checkbox"/> Apr <input type="checkbox"/> May <input type="checkbox"/> Jun <input type="checkbox"/> Jul <input checked="" type="checkbox"/> Aug <input type="checkbox"/> Sep <input type="checkbox"/> Oct <input type="checkbox"/> Nov <input type="checkbox"/> Dec <input checked="" type="checkbox"/> Survey month outside the specified months?
<b><i>Ninox strenua</i></b> Powerful Owl		<input type="checkbox"/> Jan <input type="checkbox"/> Feb <input type="checkbox"/> Mar <input type="checkbox"/> Apr <input type="checkbox"/> May <input type="checkbox"/> Jun <input checked="" type="checkbox"/> Jul <input checked="" type="checkbox"/> Aug <input type="checkbox"/> Sep <input type="checkbox"/> Oct <input type="checkbox"/> Nov <input type="checkbox"/> Dec <input type="checkbox"/> Survey month outside the specified months?
<b><i>Rhodamnia rubescens</i></b> Scrub Turpentine		<input type="checkbox"/> Jan <input type="checkbox"/> Feb <input type="checkbox"/> Mar <input type="checkbox"/> Apr <input type="checkbox"/> May <input checked="" type="checkbox"/> Jun <input type="checkbox"/> Jul <input type="checkbox"/> Aug <input type="checkbox"/> Sep <input type="checkbox"/> Oct <input type="checkbox"/> Nov <input type="checkbox"/> Dec <input type="checkbox"/> Survey month outside the specified months?
<b><i>Grevillea parviflora subsp. parviflora</i></b> Small-flower Grevillea		<input type="checkbox"/> Jan <input type="checkbox"/> Feb <input type="checkbox"/> Mar <input type="checkbox"/> Apr <input type="checkbox"/> May <input type="checkbox"/> Jun <input type="checkbox"/> Jul <input checked="" type="checkbox"/> Aug <input type="checkbox"/> Sep <input type="checkbox"/> Oct <input type="checkbox"/> Nov <input type="checkbox"/> Dec <input type="checkbox"/> Survey month outside the specified months?

## BAM Candidate Species Report

<b><i>Calyptrorhynchus lathami lathami</i></b> South-eastern Glossy Black-Cockatoo	*Survey months are outside of the months specified in Bionet.	<div> <input type="checkbox"/> Jan             <input type="checkbox"/> Feb             <input type="checkbox"/> Mar             <input type="checkbox"/> Apr           </div> <div> <input type="checkbox"/> May             <input type="checkbox"/> Jun             <input type="checkbox"/> Jul             <input checked="" type="checkbox"/> Aug           </div> <div> <input type="checkbox"/> Sep             <input type="checkbox"/> Oct             <input checked="" type="checkbox"/> Nov             <input type="checkbox"/> Dec           </div> <div> <input checked="" type="checkbox"/> Survey month outside the specified months?           </div>
<b><i>Petauroides volans</i></b> Southern Greater Glider		<div> <input type="checkbox"/> Jan             <input type="checkbox"/> Feb             <input type="checkbox"/> Mar             <input type="checkbox"/> Apr           </div> <div> <input checked="" type="checkbox"/> May             <input type="checkbox"/> Jun             <input type="checkbox"/> Jul             <input type="checkbox"/> Aug           </div> <div> <input type="checkbox"/> Sep             <input type="checkbox"/> Oct             <input type="checkbox"/> Nov             <input type="checkbox"/> Dec           </div> <div> <input type="checkbox"/> Survey month outside the specified months?           </div>
<b><i>Myotis macropus</i></b> Southern Myotis		<div> <input type="checkbox"/> Jan             <input checked="" type="checkbox"/> Feb             <input type="checkbox"/> Mar             <input type="checkbox"/> Apr           </div> <div> <input type="checkbox"/> May             <input type="checkbox"/> Jun             <input type="checkbox"/> Jul             <input type="checkbox"/> Aug           </div> <div> <input type="checkbox"/> Sep             <input type="checkbox"/> Oct             <input type="checkbox"/> Nov             <input type="checkbox"/> Dec           </div> <div> <input type="checkbox"/> Survey month outside the specified months?           </div>
<b><i>Lophoictinia isura</i></b> Square-tailed Kite		<div> <input type="checkbox"/> Jan             <input type="checkbox"/> Feb             <input type="checkbox"/> Mar             <input type="checkbox"/> Apr           </div> <div> <input type="checkbox"/> May             <input type="checkbox"/> Jun             <input type="checkbox"/> Jul             <input type="checkbox"/> Aug           </div> <div> <input type="checkbox"/> Sep             <input type="checkbox"/> Oct             <input checked="" type="checkbox"/> Nov             <input type="checkbox"/> Dec           </div> <div> <input type="checkbox"/> Survey month outside the specified months?           </div>
<b><i>Petaurus norfolcensis</i></b> Squirrel Glider		<div> <input type="checkbox"/> Jan             <input type="checkbox"/> Feb             <input type="checkbox"/> Mar             <input type="checkbox"/> Apr           </div> <div> <input checked="" type="checkbox"/> May             <input type="checkbox"/> Jun             <input checked="" type="checkbox"/> Jul             <input checked="" type="checkbox"/> Aug           </div> <div> <input type="checkbox"/> Sep             <input type="checkbox"/> Oct             <input type="checkbox"/> Nov             <input type="checkbox"/> Dec           </div> <div> <input type="checkbox"/> Survey month outside the specified months?           </div>
<b><i>Haliaeetus leucogaster</i></b> White-bellied Sea-Eagle		<div> <input type="checkbox"/> Jan             <input type="checkbox"/> Feb             <input type="checkbox"/> Mar             <input type="checkbox"/> Apr           </div> <div> <input type="checkbox"/> May             <input type="checkbox"/> Jun             <input type="checkbox"/> Jul             <input checked="" type="checkbox"/> Aug           </div> <div> <input type="checkbox"/> Sep             <input type="checkbox"/> Oct             <input type="checkbox"/> Nov             <input type="checkbox"/> Dec           </div> <div> <input type="checkbox"/> Survey month outside the specified months?           </div>

## Threatened species Manually Added

None added

## Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Bar-tailed Godwit (baueri)	<i>Limosa lapponica baueri</i>	Habitat constraints
Black-eyed Susan	<i>Tetratheca juncea</i>	Habitat degraded
Broad-billed Sandpiper	<i>Limicola falcinellus</i>	Habitat constraints
Brush-tailed Rock-wallaby	<i>Petrogale penicillata</i>	Habitat constraints
Bush Stone-curlew	<i>Burhinus grallarius</i>	Habitat degraded Habitat constraints
Common Planigale	<i>Planigale maculata</i>	Habitat degraded
Curlew Sandpiper	<i>Calidris ferruginea</i>	Habitat constraints
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	Habitat constraints
Eastern Osprey	<i>Pandion cristatus</i>	Habitat constraints
Eastern Pygmy-possum	<i>Cercartetus nanus</i>	Habitat degraded
Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	<i>Dromaius novaehollandiae</i> - endangered population	Habitat degraded Geographic limitations
Great Knot	<i>Calidris tenuirostris</i>	Habitat degraded Habitat constraints
Greater Sand-plover	<i>Charadrius leschenaultii</i>	Habitat constraints
Green and Golden Bell Frog	<i>Litoria aurea</i>	Habitat degraded
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Habitat constraints
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	Habitat constraints
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Habitat constraints
Lesser Sand-plover	<i>Charadrius mongolus</i>	Habitat constraints
Little Bent-winged Bat	<i>Miniopterus australis</i>	Habitat constraints
Mahony's Toadlet	<i>Uperoleia mahonyi</i>	Refer to BAR
<i>Pterostylis chaetophora</i>	<i>Pterostylis chaetophora</i>	Habitat degraded



## BAM Candidate Species Report

Red Knot	<i>Calidris canutus</i>	Habitat constraints
Regent Honeyeater	<i>Anthochaera phrygia</i>	Habitat constraints
Rough Doubletail	<i>Diuris praecox</i>	Refer to BAR
Stephens' Banded Snake	<i>Hoplocephalus stephensii</i>	Habitat degraded
Swift Parrot	<i>Lathamus discolor</i>	Habitat constraints
Terek Sandpiper	<i>Xenus cinereus</i>	Habitat constraints
Trailing Woodruff	<i>Asperula asthenes</i>	Habitat degraded
Wallum Froglet	<i>Crinia tinnula</i>	Refer to BAR

# BAM Predicted Species Report

## Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00019448/BAAS18020/20/00019449	Medowie Planning Proposal - Ferodale Rd	28/10/2024
Assessor Name	Report Created	BAM Data version *
Sarah Jones	28/05/2025	Current classification (live - default) (80)
Assessor Number	Assessment Type	BAM Case Status
BAAS18020	Part 4 Developments (General)	Open
Assessment Revision	BOS entry trigger	Date Finalised
4	BOS Threshold: Biodiversity Values Map and area clearing threshold	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)
Australasian Bittern	Botaurus poiciloptilus	3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Australian Painted Snipe	Rostratula australis	3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Bar-tailed Godwit (baueri)	Limosa lapponica baueri	3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Black Bittern	Ixobrychus flavicollis	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub 3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Black Falcon	Falco subniger	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub 3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
Black-necked Stork	Ephippiorhynchus asiaticus	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub 3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Broad-billed Sandpiper	Limicola falcinellus	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub

## BAM Predicted Species Report

Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Curlew Sandpiper	Calidris ferruginea	3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Dusky Woodswallow	Artamus cyanopterus cyanopterus	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Eastern False Pipistrelle	Falsistrellus tasmaniensis	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Eastern Osprey	Pandion cristatus	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Flame Robin	Petroica phoenicea	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
Gang-gang Cockatoo	Callocephalon fimbriatum	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Great Knot	Calidris tenuirostris	3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Greater Broad-nosed Bat	Scoteanax rueppellii	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Greater Sand-plover	Charadrius leschenaultii	3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Grey-headed Flying- fox	Pteropus poliocephalus	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Large Bent-winged Bat	Miniopterus orianae oceanensis	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Lesser Sand-plover	Charadrius mongolus	3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Little Bent-winged Bat	Miniopterus australis	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Little Eagle	Hieraaetus morphnoides	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Little Lorikeet	Glossopsitta pusilla	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3995-Hunter Coast Paperbark-Swamp Mahogany Forest
New Holland Mouse	Pseudomys novaehollandiae	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub



## BAM Predicted Species Report

Painted Honeyeater	<i>Grantiella picta</i>	3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Red Knot	<i>Calidris canutus</i>	3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Regent Honeyeater	<i>Anthochaera phrygia</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub 3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Scarlet Robin	<i>Petroica boodang</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
South-eastern Glossy Black-Cockatoo	<i>Calyptorhynchus lathami lathami</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub 3995-Hunter Coast Paperbark-Swamp Mahogany Forest
South-eastern Hooded Robin	<i>Melanodryas cucullata cucullata</i>	3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Speckled Warbler	<i>Chthonicola sagittata</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
Spotted Harrier	<i>Circus assimilis</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub 3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub 3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Square-tailed Kite	<i>Lophoictinia isura</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub 3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Swift Parrot	<i>Lathamus discolor</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub 3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Terek Sandpiper	<i>Xenus cinereus</i>	3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Turquoise Parrot	<i>Neophema pulchella</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
Varied Sittella	<i>Daphoenositta chrysoptera</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub 3995-Hunter Coast Paperbark-Swamp Mahogany Forest
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub 3995-Hunter Coast Paperbark-Swamp Mahogany Forest
White-throated Needletail	<i>Hirundapus caudacutus</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub 3995-Hunter Coast Paperbark-Swamp Mahogany Forest
Yellow-bellied Glider	<i>Petaurus australis</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub

### Threatened species Manually Added

None added

## BAM Predicted Species Report

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

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C
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# BAM Vegetation Zones Report

## Proposal Details

Assessment Id	Assessment name	BAM data last updated *
00019448/BAAS18020/20/00019449	Medowie Planning Proposal - Ferodale Rd	28/10/2024
Assessor Name	Report Created	BAM Data version *
Sarah Jones	28/05/2025	Current classification (live - default) (80)
Assessor Number	Assessment Type	BAM Case Status
BAAS18020	Part 4 Developments (General)	Open
Assessment Revision	BOS entry trigger	Date Finalised
4	BOS Threshold: Biodiversity Values Map and area clearing threshold	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	3436_Poor	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub	Poor	1.35	1	





## BAM Vegetation Zones Report

2	3995_Poor	3995-Hunter Coast Paperbark-Swamp Mahogany Forest	Poor	0.16		
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## Appendix H: Bat Call Analysis

N/A



# CORYMBIA ECOLOGY

**Amy Rowles**  
 415 Parishes Rd, Hilldale, NSW, 2420  
 Mob: 0418451488  
 Email: amy@corymbiaecology.com.au  
 ABN 61854031078

## BAT CALL ANALYSIS RESULTS

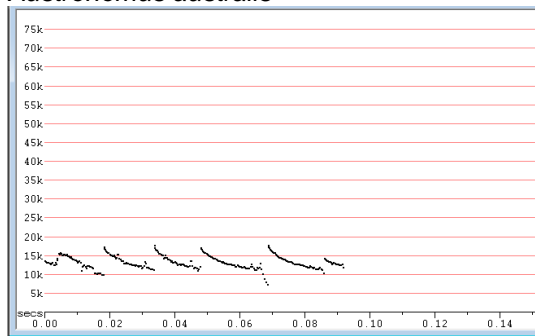
**Lizzie McDonald (Firebird) – 11-13/02/20**

Species	ID Confidence	Notes
<i>Austronomus australis</i>	D	
<i>Miniopterus australis</i>	D	
<i>Mormopterus (ozimops) ridei</i> / <i>Mormopterus norfolkensis</i>	E	
<i>Vespadelus vulturnus</i>	Pr	

- D – definite; Pr – probable; Po – possible; E-either.
- Calls were analysed using Analook.
- Example calls presented below are displayed in this report at F7.
- Analysis was completed on the 7<sup>th</sup> March 2020
- The following resources were consulted during analysis:
  - Pennay M., Law B., and Reinhold L. (2004) Bat Calls of NSW. DEC of NSW.
  - Corben C. (2009) Anabat Techniques Workshop, Titley Scientific.
  - Personal experience analysing calls and collection of reference calls in NSW

### Examples of calls for definite identified species

#### *Austronomus australis*



#### *Miniopterus australis*





## Appendix I: Images





## **Appendix J: Koala Corridor Assessment (Ward, S. 2025)**

22 May 2025

Steven Woodward  
Project and Development Manager  
VC Management  
36-40 Victoria Street  
East Gosford NSW 2250

**Re: Koala vegetated riparian corridor advice for 46-54 Ferodale Rd & 754 Medowie Rd, Medowie**

Dear Steven,

## 1 Introduction

Port Stephens Council (Council) seeks a Koala corridor through a proposed development site (46-54 Ferodale Rd, and 754 Medowie Rd; 'the site') to link with the Department of Education's site for a proposed High School at 64 Ferodale Rd, which is currently vegetated.

An earlier report was prepared which reviewed the request by Council (EMM 2024). This report draws on the site inspection and conclusions from the earlier report. A key conclusion relevant to this report is that:

*Thus, it is concluded that Koalas are currently in close proximity to the site and could thus potentially access the site. Potential Koala food trees are present within the site, but due to past disturbance the value of trees and habitat within the site is reduced by disturbance from previous activities, as well as by adjoining urban developments, both recent and historical.*

The site also contains mapped preferred koala habitat, buffer to preferred koala habitat, and marginal habitat, and the proposed High School at 64 Ferodale Rd is mapped as having marginal Koala habitat (Figure 1.1).

Council seeks the provision of a corridor that could facilitate Koala movements and access to the currently vegetated proposed High School at 64 Ferodale Rd.

This report provides comment on potential Koala connectivity across the site, and recommendations on design measures that will improve overall connectivity and Koala outcomes. Broader ecological assessment is dealt with under a Biodiversity Development Assessment Report (BDAR) being prepared separately.

### 1.1 Council comments

This report has been updated from the version dated 29 November 2024 to respond to comments received from Port Stephens Council on 8 April 2025. The comments of relevance in relation to the koala are:



2. Please provide further detail on the proposed culvert fauna underpass including proposed size and general design features to demonstrate that it will function effectively for fauna passage.

15. Given the recent records of koala near the site and the suitability of the habitat on site, it is considered likely that koala would occur. Please include koala as assumed present.

20. Please include a site specific koala habitat map. It is apparent from the data on Forest Redgum on Figure 13 that preferred koala habitat occurs across more of the site than what is indicated on the Port Stephens Koala Habitat Planning Map.

A new section to respond and to provide further detail on the proposed culvert fauna underpass is provided in this updated report. Responses to items 15 and 20 are relevant to the Biodiversity Development Assessment Report, and will be addressed in that document, and consequently are not responded to in this report.

It is noted that this report has also been updated to remove reference to 56 and 58 Ferodale Road, as these properties are no longer included as part of the proposed rezoning.



**Figure 1.1** Koala habitat mapping, blue is mapped preferred Koala habitat, green is marginal Koala habitat, blue hatching is 100m buffer to preferred Koala habitat (from Port Stephens Council 2024)

## 2 Methods

I have reviewed the landscape documentation prepared for the proposed Medowie Residential and Mixed Use Development Site (Terras Landscape Architects 2024).

It is understood that the vegetation to be retained or planted within the site will need to be managed as a bushfire asset protection zone (APZ).

## 3 Review and advice

### 3.1 Vegetated drainage corridor

The vegetation to be retained will be relatively narrow, located along a drainage line, and will contain one proposed road crossing. Maintaining the vegetation as an APZ limits the density of overstory and understory plantings that would facilitate Koala movements. Koalas will move at times through cleared lands, but higher cover will tend to facilitate movements as it will allow the opportunity to hide from predators, such as domestic dogs.

### 3.2 Edging to the vegetated drainage corridor

Along the northern and southern edges of the vegetated drainage corridor, it is proposed to have walled edges (Figure 3.1). This will discourage koalas from moving into the urban areas. As an arboreal (tree-dwelling) animal, Koalas can climb steep slopes, but vertical walls are unlikely to be traversable as long as there are not claw holds or small ledges. Koala exclusion fencing of 1200 mm height is now also often utilised by Transport for NSW, so the proposed retaining wall height of 1300 mm (Figure 3.1) is likely to be sufficient.

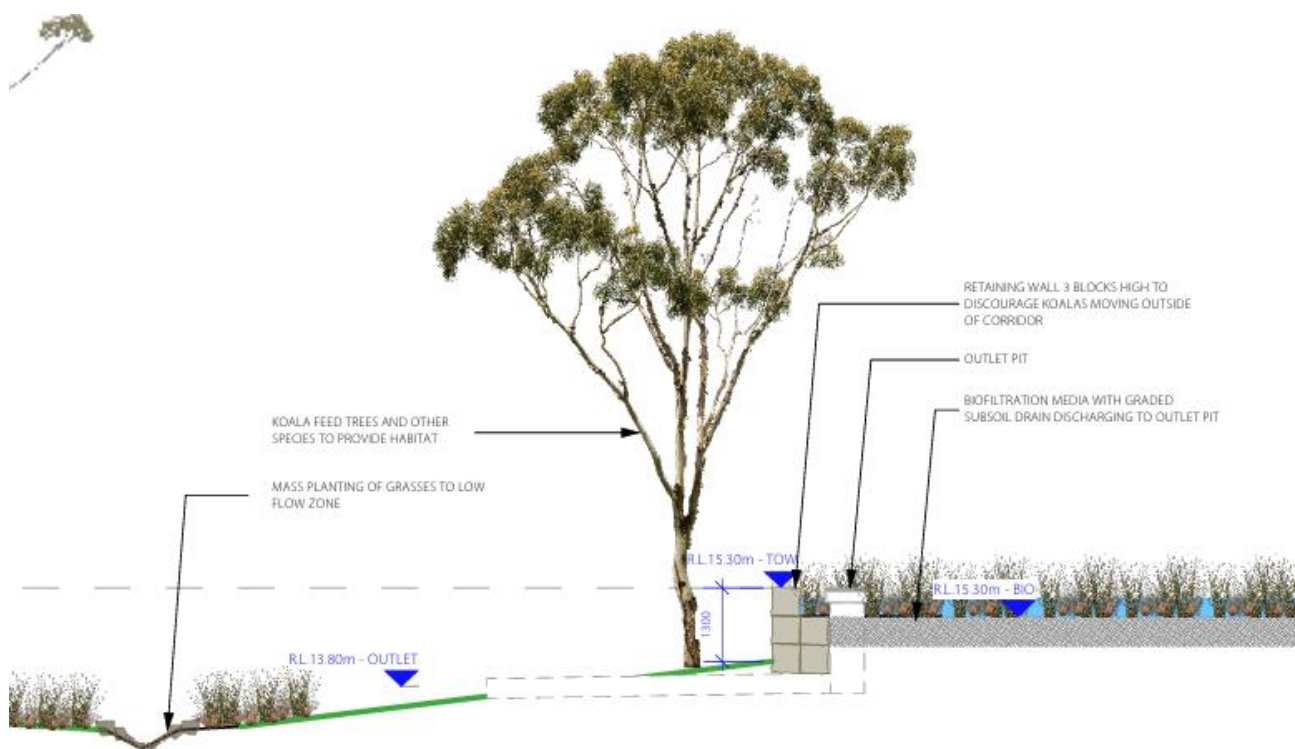


Figure 3.1 Extract from Terras Landscape Architects 2024, plan L504

### 3.3 Road crossing

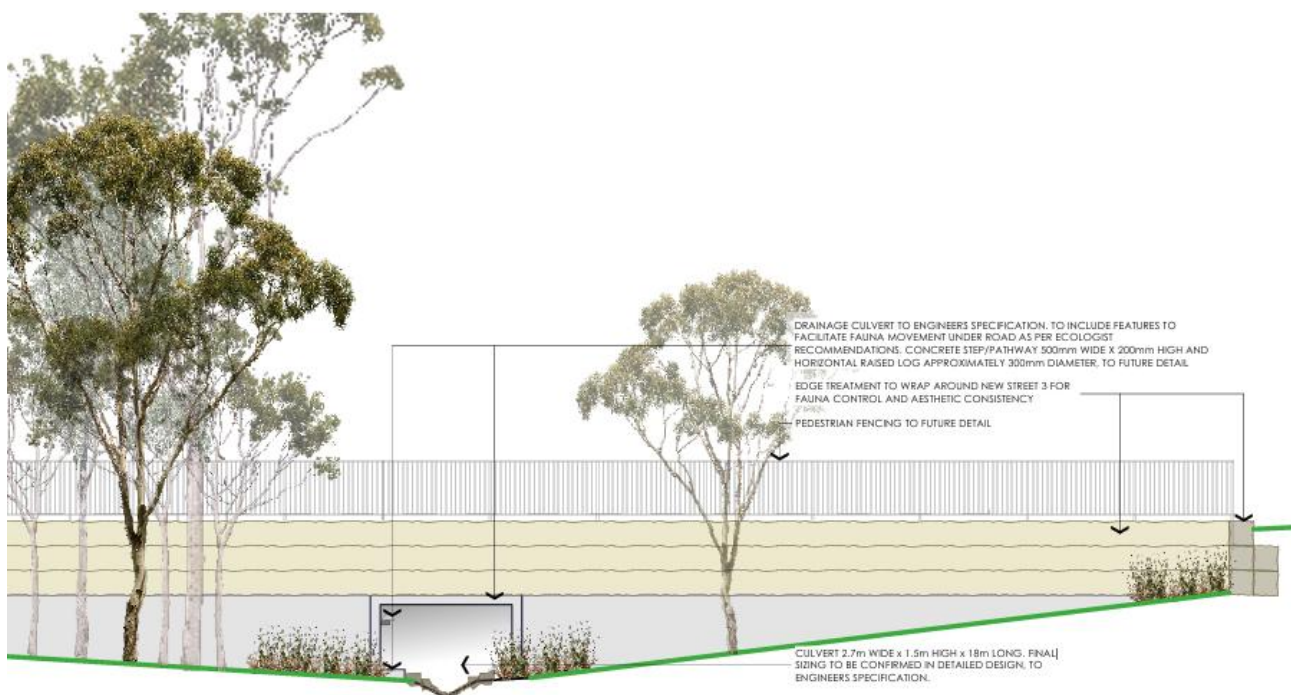
Koalas have been observed to utilise culverts to cross roads. The following recommendations are made with regards to the detailed design of the road crossing over the vegetative drainage corridor:

- Seek to maximise the height and width of the culverts.
- Seek to maximise light penetration as much as possible.

- Seek to have vegetation close to the entrance and exit to the culvert to provide cover.
- Seek to provide as natural a base as possible rather than exposed concrete.
- If feasible, provide for ground cover plantings.
- Install retaining walls or other structures that direct Koalas and other animals towards the culvert crossing.

### 3.3.1 Fauna culvert underpass

The fauna culvert underpass would be installed in the road crossing over the riparian corridor (currently provisionally called “New Street 3”). It is proposed that the culvert would be a reinforced concrete box culvert, 2.7 m wide, 1.5 m high, and 18 m in length, subject to detailed design and engineer specification. The culvert would include a concrete step pathway 500 mm wide 200 mm high to allow passage of fauna at ground level avoiding wet ground, as well as a raised horizontal logs approximately 300 mm diameter to also provide the option of an elevated pathway usable by koalas and other arboreal fauna (Figure 3.2). In relation to opening size and length of the proposed structure, the dimensions are within the range of fauna underpasses which Koalas have been observed to utilise (TfNSW 2025). That is, Koalas would be expected to utilise the proposed structure should they seek to traverse the site.



**Figure 3.2** Extract from Terras Landscape Architects 2025, plan L505

### 3.4 Plantings

The following Koala feed trees are proposed for planting within the vegetated drainage corridor:

- Forest Red Gum (*Eucalyptus tereticornis*).
- Swamp Mahogany (*Eucalyptus robusta*).

Additional plantings are proposed, which will help to increase vegetation cover to facilitate koala movements. Koalas have been found to preferentially select trees not just for food but also for their cover and/or shelter.



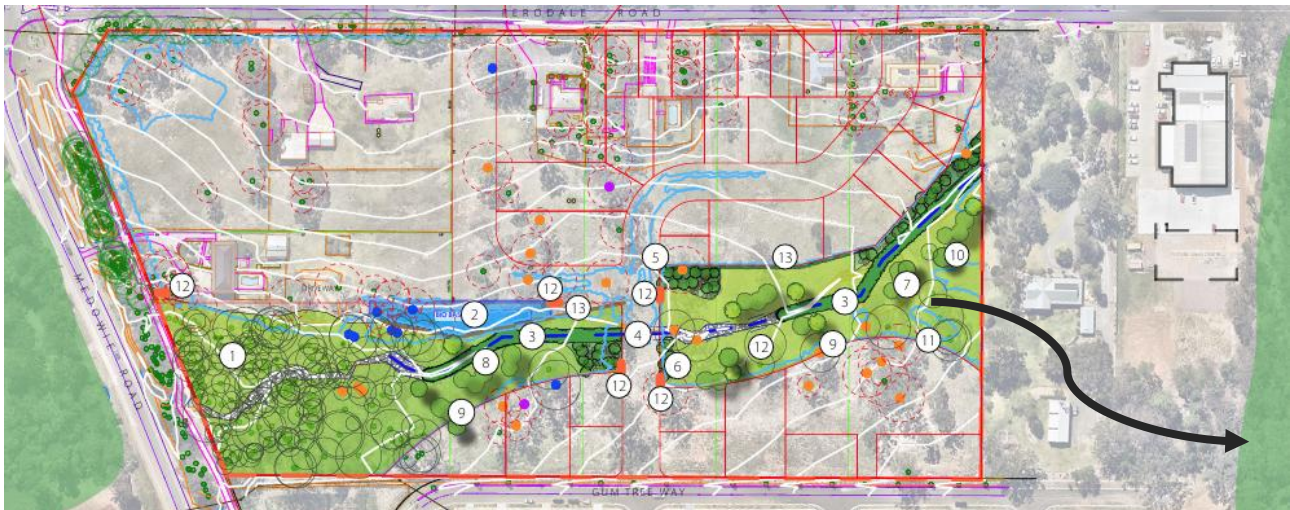
Sluiter et al. (2002) found that koalas in the Campbelltown area preferentially selected Turpentine (*Syncarpia glomulifera*), but there was no evidence of browsing this species from analysis of leaf cuticle fragments in collected faecal pellets.

### 3.5 Eastern end of the vegetated drainage corridor

At the eastern end of the proposed vegetated drainage corridor are:

- A residential block with scattered trees.
- A fitness centre which is heavily cleared, with a small number of trees present at the southern end of the block.
- The proposed High School site at 64 Ferodale Rd, which is currently vegetated.

To access the High School site, Koalas will need to move towards the southeast to trees, and to then move on to the vegetated High School site (Figure 3.3). It is therefore recommended that trees are retained to the southeast of the vegetated drainage corridor as much as possible.



**Figure 3.3** Potential Koala movement at the eastern end of vegetated drainage corridor (indicated by black arrow; Extract from Terras Landscape Architects 2025, plan L013)

### 3.6 Western end of the vegetated drainage corridor

At the western end of the proposed vegetated drainage corridor are:

- Medowie Road.
- Vegetation along the drainage corridor to the west of Medowie Road.

To access the vegetated drainage corridor within the Ferodale Road development site, Koalas will need to traverse Medowie Road. This road is utilised by vehicular traffic entering and exiting Medowie, though other access roads also exist. As Medowie increases in size the traffic volume is likely to increase. As such it is recommended that Council install a dry culvert which Koalas can utilise for movements to pass under Medowie Road so as to minimise Koala vehicle mortalities.

## 4 Closing

Recommendations to facilitate Koala movement along a proposed vegetated drainage corridor within the development site have been provided.

Yours sincerely

A handwritten signature in black ink that reads "Steven Ward". The signature is fluid and cursive, with a long horizontal stroke underneath the name.

**Dr Steven Ward**

Associate Ecologist

[sward@emmconsulting.com.au](mailto:sward@emmconsulting.com.au)

## 5 References

EMM 2024. *Koala advice for 46-58 Ferodale Rd & 754 Medowie Rd, Medowie*. 28 March 2024

Sluiter AF, Close RL and Ward SJ, 2002. Koala feeding and roosting trees in the Campbelltown area of New South Wales. *Australian Mammalogy* **23**: 173-175.

Terras Landscape Architects 2024. *Landscape documentation. Medowie Residential & Mixed Use Development*. Version G dated 12/11/2024.

TfNSW 2025. Transport for NSW Fauna connectivity database\_9-5-2025.

<https://www.transport.nsw.gov.au/operations/roads-and-waterways/environment-and-heritage/biodiversity>