Appendix 8

AEP

ECOLOGY | BIOBANKING | OFFSETS | BUSHFIRE

Ecological Assessment Report

Proposed Residential Development at 110, 118 Middle Arm Road and 129 Mary's Mount Road, Goulburn, NSW

Prepared for: DevCore

c/- RPS Group

February 2023

AEP Ref: 3137

Revision: 01

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Document Control

Document Name	Ecological Assessment Report for Proposed Residential Development at 110, 118 Middle Arm Road and 129 Mary's Mount Road, Goulburn, NSW
Project Number	3137
Client Name	DevCore c/- RPS Group
AEP Project Team	Natalie Black Warwick Muir Thomas Stephens Stephen Curry Brendon Young

Revision

Revision	Date	Author	Reviewed	Approved
00	09/01/2023	Stephen Curry	Natalie Black	Natalie Black
01	24/02/2023	Brendon Young	Natalie Black	Natalie Black

Distribution

Revision	Date	Name	Organisation
00	09/01/2023	Melinda.Larriera	DevCore c/- RPS Group
01	24/02/2023	Melinda.Larriera	DevCore c/- RPS Group

EXECUTIVE SUMMARY

Anderson Environment & Planning was commissioned by RPS Group on behalf of DevCore (the client) to undertake an Ecological Assessment Report (EAR) for a proposed residential development and associated civil works within Lot 1 DP 918039, Lot 1 DP 919845, 110 and 118 Middle Arm Road, and Lot 1 DP 920161, 129 Marys Mount Road Goulburn, NSW (the Subject Site). The site is currently zoned RU6 – Transition. The proposal includes clearing a portion of the existing native canopy (0. 342ha) and construction of new residential dwellings and associated civil works.

This report is specifically intended to indicate the likelihood of the proposed development having a significant impact on potentially occurring threatened species or ecological communities. In this regard, the report aims to recognise the relevant requirements of the *Environmental Planning & Assessment Act 1979*, the *Biodiversity Conservation Act 2016* (NSW) (BC Act), and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Fieldwork was conducted to ground-truth regional vegetation mapping and confirm historical clearing has taken place. Planted native canopy vegetation within the Subject Site is consistent with Plant Community Type (PCT) *3376 – Southern Tableland Grassy Box Woodland*. The remaining canopy section contains a mix of native and exotic species which were likely to have been planted as opposed to being a remnant patch of vegetation. The remaining vegetation on site is a small range of native canopy species and ground cover of primarily exotic weeds. The mid and ground stratum have been removed by historic clearing and are currently managed.

No threatened flora species were identified within the Subject Site.

Habitat and fauna surveys were undertaken, including nocturnal surveys resulting in two hollows and no nests being identified. No threatened fauna species were identified within the Subject Site.

Assessment under the five-part test of significance of impacts determined that no significant impacts upon threatened entities listed under the BC Act are likely to occur if mitigation measures are implemented, and consideration of the EPBC Act revealed that impacts on Matters of National Environmental Significance are unlikely occur, as is a referral to the Commonwealth.

Review of the State Environmental Planning Policy (Biodiversity and Conservation) 2021 reveals that this SEPP applies to the site in relation to Chapter 4 Koala Habitat Protection. Accordingly, Koala Spot Assessment Techniques and Call Playback Assessments have been undertaken during fieldwork.

Additionally, general recommendations and mitigation measures have been included in the report to minimise environmental impacts of the proposal during the construction phase. These measures should provide adequate protection during the construction phase for native flora and fauna in the locality.

Study Certification and Licensing

The fieldwork and report for this study was carried out and written by Stephen Curry B.EnvScMgt (Ecosystems and Biodiversity), DipCLM of Anderson Environment & Planning. The report was reviewed and approved by Senior Environmental Manager, Natalie Black BSc (Hons), MPL & Cert IV TAE & MSc (BAAS no. 19076) of Anderson Environment & Planning.

Research was conducted under the following licences:

- NSW National Parks and Wildlife Service Scientific Investigation Licence SL101313;
- Animal Research Authority (Trim File No: 14/600(2)) issued by NSW Agriculture; and
- Animal Research Establishment Accreditation Number 53724.

Certification:

As the principal certifier, I, Natalie Black, make the following certification:

The results presented in the report are, in the opinion of the principal author and certifier, a true and accurate account of the species recorded, or considered likely to occur within the Survey Area.

Commonwealth, state and local government policies and guidelines formed the basis of project surveying methodology, unless specified departures from industry standard guidelines are justified for scientific and/or animal ethics reasons; and

All research workers have complied with relevant laws and codes relating to the conduct of flora and fauna research, including the Animal Research Act 1995, National Parks and Wildlife Act 1974 and the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes.

Principal Certifier:

Natalie Black

Senior Environmental Manager

BAAS: 19076

Anderson Environment & Planning

24 February 2023

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1.0 Introduction

The proposed development is for a residential development and associated civil works, requiring the removal of 0.34ha of native canopy vegetation at 129 Marys Mount Road, 110 and 118 Middle Arm Road, Goulburn (the Subject Site).

Anderson Environment & Planning was commissioned by RPS Group on behalf of DevCore (the client) to undertake an Ecological Assessment Report (EAR) for the proposed development. The site is currently zoned RU6 – Transition. The proposed development encompasses the entirety of the Subject Site.

Anderson Environment & Planning (AEP) have undertaken necessary investigations for the production of an EAR. This assessment has been undertaken with reference to the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), the *NSW Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This report is specifically intended to indicate the likelihood of the proposal having a significant impact on threatened species or ecological communities. In this regard, the report aims to recognise the relevant requirements of the EP&A Act, the BC Act and the EPBC Act and consideration of other relevant policies is given including State Environmental Planning Policy (SEPP) (Biodiversity and Conservation) 2021 and SEPP (Resilience and Hazards) 2021. The purpose of this report is to:

- Describe the ecological values of the Subject Site;
- Explore the potential for threatened species to utilise the area; and
- Assess ecological impacts associated with the proposal against relevant legislation.

Potential ecological impacts on native species in general are also considered, as are recommendations for minimising any impacts within the scope of the development.

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

> Anderson Environment & Planning (2022). *Ecological Assessment Report for Proposed Development at 110, 118 Middle Arm Road and 129 Mary's Mount Road, Goulburn, NSW*. Unpublished report for DevCore. December 2022.

2.0 Site Particulars

Table 1 – Site Particulars

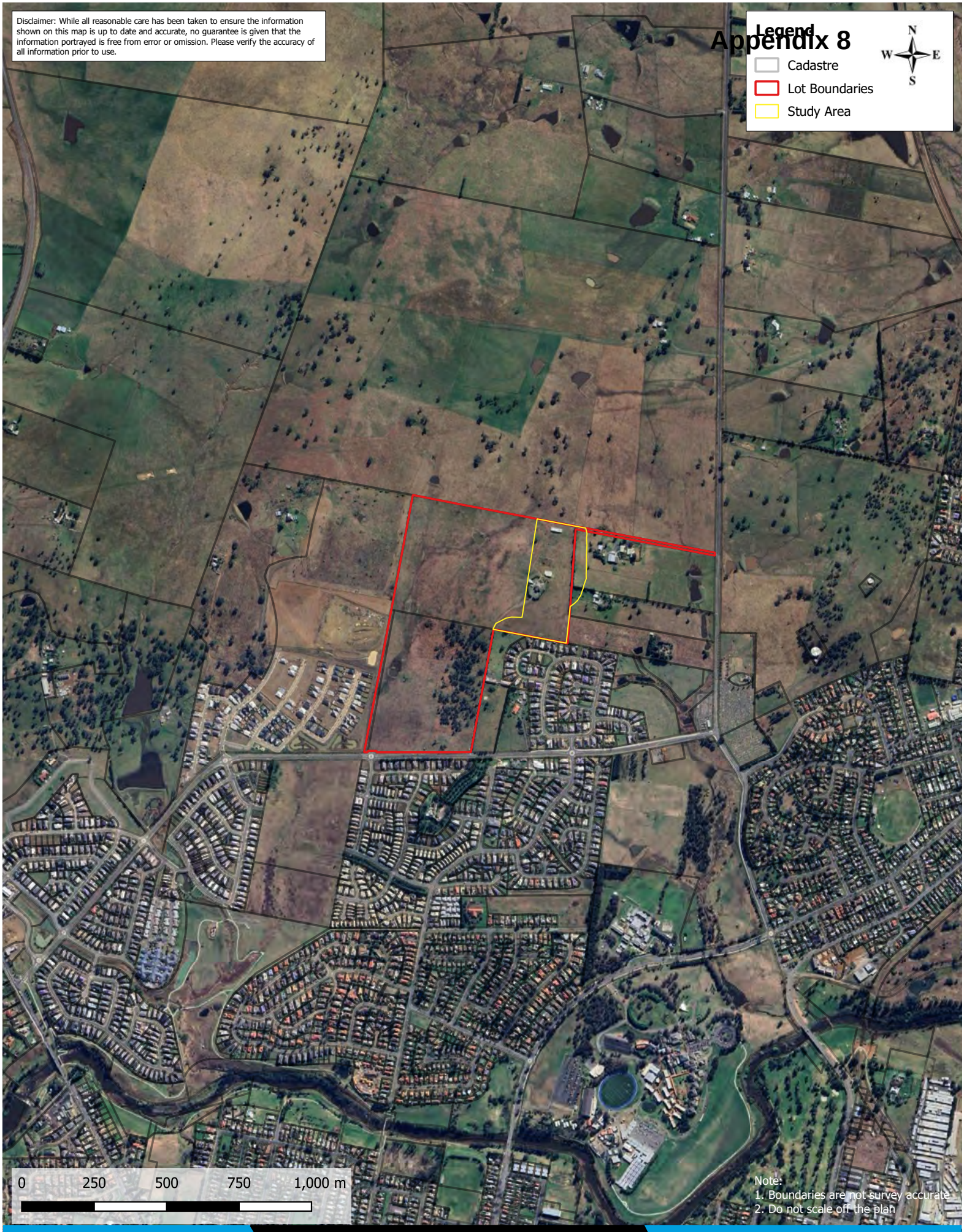
Detail	Comments
Client	DevCore c/- RPS Group
Address	110 & 118 Middle Arm Road and 129 Marys Mount Road, Goulburn, NSW
Title(s)	Lot 1 DP 918039, Lot 1 DP 919845 & Lot 1 DP 920161
Subject Site	The Subject Site encompasses part of Lot 1 DP 918039 Lot 1 DP 919845 (approx. 1.38ha).
LGA	Goulburn Mulwaree Council
Zoning	Under the *Goulburn Mulwaree Local Environmental Plan 2009* (the LEP), the Study Area is zoned RU6 – Transition.
Current Land Use	Lot 1 DP 918039, Lot 1 DP 919845 and Lot 1 DP 920161 comprise a mix of managed native and exotic vegetation, in addition to a residential dwelling on each lot.
Surrounding Land Use	The Study Area is bounded by agricultural land to the north, residential dwellings to the east, a medium density residential subdivision to the south and a currently developing residential subdivision to the west.

Figure 1 depicts the extent of the site overlaid on an aerial photograph of the locality.

3.0 Proposed Development

A proposed residential development and associated civil works is proposed, requiring the removal of 0.34ha of existing native canopy only vegetation.

Appendix 8



AEP

Title: Figure 1 - Site Location

Date: January 2023

Location: 110, 118 Middle Arm & 129 Mary's Mount Rd, Goulburn

Client: RPS Group c/- DevCore

AEP ref: 3137.01

4.0 Scope and Purpose

Investigations were carried out within the Subject Site and via literature / database searches to gather information required to adequately address Section 7.3 of the BC Act (known as the "5-part test").

Also afforded consideration were the Commonwealth *Environmental Protection Biodiversity Conservation Act, 1999* (EPBC Act), relevant *State Environmental Planning Policies* (SEPPs) and local provision such as Local Environmental Plan and Development Control Plan.

The assessment approach was tailored to undertake sufficient works to ensure that legislative requirements were met relating to threatened species and native species in general for the proposed specific development. This was achieved by background research and literature review, database searches, consultation, targeted ecological fieldwork and mapping, detailed habitat assessment, and ultimately impact assessment consideration against the type and form of development proposed.

Impact assessment was undertaken with due reference to the "*Threatened Species Test of Significance Guidelines"* (OEH, 2018).

Specifically, the scope of this study is to:

- Identify vascular plant species occurring within the site, including any threatened species listed under the BC Act or EPBC Act;
- Identify and map the extent of vegetation communities within the site, including any EECs listed under the BC Act or EPBC Act;
- Identify any fauna species, including threatened and migratory species, and populations or their habitats, which occur within the site and are known to occur in the wider locality;
- Assess the potential of the proposed development to have a significant impact on any threatened species, populations or ecological communities (or their habitats) identified from the site; and
- Describe measures to be implemented to avoid, minimise, manage or monitor potential impacts of the proposal.

In addition to the survey work conducted within the site boundary and its immediate surrounds, consideration has been afforded to the wider locality, via database searches within 10km of the site and via consideration of habitat areas that may be linked ecologically to the site.

5.0 Methodology

The field surveys for the site have been prepared and performed with due recognition of the State Survey Guidelines (DEC 2004; DECC 2009; DPIE 2020, OEH 2018).

The size of the site, the type of native vegetation and habitats remaining, the status of existing and proposed surrounding land use, and the level and type of habitat linkages to proximate bushland areas were considered in formulating the methodology employed and described below.

The assessment approach was tailored to undertake sufficient works to ensure that legislative requirements were met relating to threatened species and native species in general for the proposed specific development.

5.1 Information Sources

Information and spatial data provided within this EAR has been compiled from various sources including:

- Aerial Photograph Interpretation (API) of the site and surrounding locality;
- *NSW Biodiversity Values Map* (accessed December 2022);
- Regional vegetation mapping prepared by Eco Logical Australia Pty Ltd for Department of Environment and Conservation (2006);
- State survey guidelines (DEC 2004; DECC 2009; OEH 2018; DPIE 2020a; DPIE 2020b; DPE 2022a);
- DPE Threatened Species, Populations and Ecological Communities website (*https://www.environment.nsw.gov.au/AtlasApp/UI_Modules/TSM_/Default.aspx?a=1*) (accessed December 2022); and
- Collective knowledge gained from previous ecological survey and assessment in the greater NSW region over the past 25 years.
- In addition, database searches were carried out, namely:
- Review of flora and fauna records held by the BioNet Atlas of NSW Wildlife within a 10km radius of the site (December 2022) and;
- Review of flora and fauna records held by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search within a 5km radius of the Subject Site (December 2022).

5.2 Considerations of Biodiversity Offsets Scheme

There are three criteria that require assessment under the Biodiversity Offsets Scheme (BOS) to determine whether or not entry into the BOS is required. The three criteria include;

- Whether or not the site contains Biodiversity Values Mapped land;
- Whether or not it exceeds the Area Clearing Threshold applicable to the minimum lot size; and / or
- Whether or not a 5-part Test of Significance determines that a significant impact on threatened biodiversity is likely to occur.

5.2.1 Biodiversity Values Map

The Biodiversity Values Map (BV Map) identifies land with high biodiversity value, as defined by the Biodiversity Conservation Regulation 2017. The Biodiversity Offsets Scheme (BOS) applies to all local developments, major projects or the clearing of native vegetation where the SEPP (Vegetation in Non-Rural Areas) 2017 applies. Any of these will require entry into the BOS if they occur on land mapped on the BV Map. Exempt and complying development or private native forestry are not subject to the Biodiversity Offsets Scheme.

The BV Map does not intersect with the Subject Site; therefore, the proposal does not trigger the BOS and the requirement for a Biodiversity Development Assessment Report (BDAR) under this criterion (refer **Appendix C**).

5.2.2 Area Clearing Threshold

"The area threshold varies depending on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan (LEP)), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP). The area threshold applies to all proposed native vegetation clearing associated with a development proposal".

Table 2 – Area Clearing Thresholds (BC Act)

Minimum lot size	Threshold for clearing, above which the BOS applies
< 1ha	>0.25ha
1ha to <40ha	>0.5ha
40ha to <1000ha	**>1.0ha**
>1000ha	>2.5ha

In this case, as per the Biodiversity Values Map, the minimum lot size is approx. 100ha. Therefore, the applicable area clearing threshold is 1.0ha. As the approximate area of vegetation to be removed totals **0.34ha**, the BOS is not triggered, and as such the preparation of a BDAR is not required based on the clearing threshold.

5.2.3 Test of Significance

Following the above assessments, it is a requirement to determine whether or not the development is likely to significantly affect threatened species, ecological communities or their habitats using a Test of Significance. The Test of Significance is used to undertake qualitative analysis of the likely impacts and determine whether further assessment is required in association with the development. As part of this Ecological Assessment Report, a Five-part Test of Significance has been undertaken in **Section 8.0**.

5.3 Survey Methods

All fieldwork was conducted within the Subject Site as shown in **Figure 4.**

5.3.1 Vegetation Communities

Vegetation was surveyed utilising a variety of methods, as outlined:

- Consideration of regional mapping for the site by Umwelt Environmental and Social Consultants (2019);
- Aerial Photo interpretation (API) to identify any notable variations within the site;
- Consultation of 1:25,000 topographic map series for the area;
- Inspection of the site to ground-truth the unit(s) identified by Umwelt Environmental and Social Consultants (2019); and
- Identification of the vegetation map unit occurred via identification of required dominant species in community structural layers.

The final derived vegetation map was based on dominant species present in the canopy, shrub and ground layers. The dominant species composition, structural and physical attributes were all considered when assigning the best fit ecological communities.

Consideration was given to the potential for the derived vegetation communities to constitute EECs as listed under the BC Act and/or EPBC Act. The floristic composition, geomorphological characteristics and geographical extent were important considerations in this process. The type and location of the relevant vegetation communities can be seen in **Figure 3.**

5.3.2 Flora

A flora survey was undertaken to produce a flora species list for the Subject Site, to search specifically for threatened flora species known from the wider locality, and to gather data necessary to both derive vegetation community type(s) and to meet relevant survey guidelines. Such works included:

- Identification of all vascular plant species encountered during fieldwork; and
- Survey involved systematic coverage of the Subject Site. The Random Meander Technique (Cropper, 1993) was utilised to maximise species encountered. All vascular plant species encountered during fieldwork were recorded.

5.3.3 Habitat

An assessment of the relative habitat values present within the Subject Site was carried out. This assessment focused primarily on the identification of specific habitat types and resources within the site favoured by known threatened species from the region. The assessment also considered the potential value of the Subject Site (and surrounding areas) for all major guilds of native flora and fauna.

The assessment was based on the specific habitat requirements of each threatened fauna species in regards to home range, feeding, roosting, breeding, movement patterns and corridor requirements. Consideration was given to contributing factors including topography, soil, light and hydrology for threatened flora and assemblages.

5.3.4 Fauna

Fauna survey was carried out utilising techniques as outlined below**.** Fauna survey work was undertaken with reference to relevant guidelines and to add additional information to the generated Expected Fauna Species List (**Appendix B**).

Avifauna Surveys

The presence of avifauna within the site was assessed via targeted diurnal and nocturnal surveys and incidental observations during all other phases of fieldwork.

For diurnal surveys, birds were identified by direct observation or by recognition of calls or distinctive features such as nests, feathers etc.

For nocturnal surveys, birds were direct observation or by recognition of calls.

Mammals

The occurrence of mammals within the site was assessed by utilising habitat assessment as an analogue for presence in combination with diurnal and nocturnal survey including spotlighting and stag watching. Habitat assessment included survey for foraging resources (blossom, herbaceous, prey etc), hollows and roosting opportunity, connectivity and water.

Incidental Observations & Secondary Indications

Incidental records of any fauna species observed during fieldwork were noted. This included opportunistic sightings of secondary indications (scratches, scats, diggings, tracks etc.) of any resident or migratory species. Searches were also conducted for whitewash, regurgitation pellets and prey remains from Owls, chewed (Allo) Casuarina cones from Black-Cockatoos, chewed fruit remains from frugivorous birds etc.

5.3.5 Details of Field Surveys

A summary of the survey effort is below in **Table 3** and **Figure 4**.

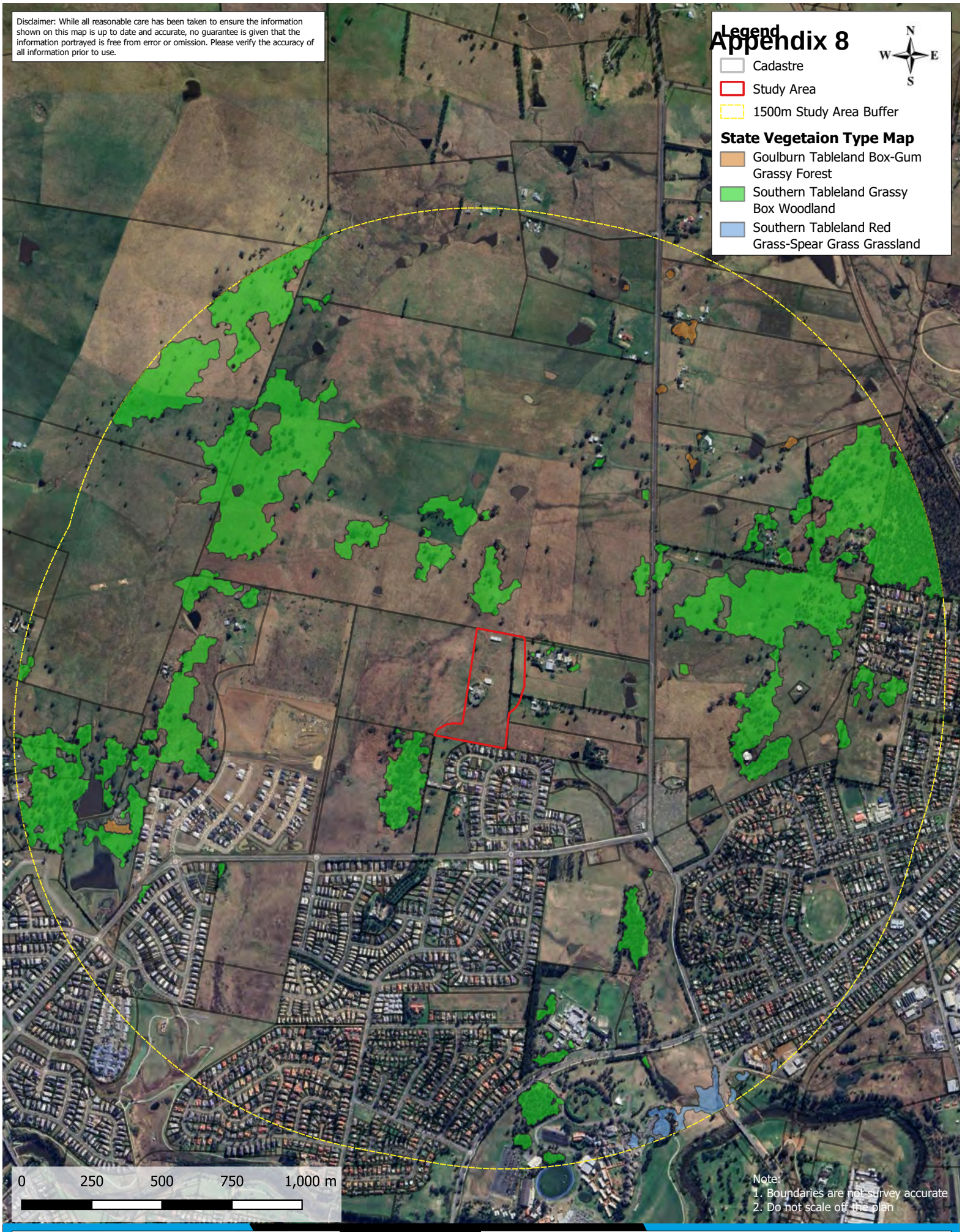
Table 3 – Field Survey Periods

Date	Time	Field Activity	No. of Persons on Site
19/12/2022	14:30 – 19:25	Site meander Bird Survey Habitat assessment Incidental flora & fauna Nocturnal survey – Spotlighting	1
20/12/2022	08:35 – 12:20	Incidental flora and fauna Koala SAT BAM Plot	1

The above survey methodology is considered to provide sufficient understanding of the biodiversity of the Subject Site.

In addition, by applying rigorous habitat assessment to more mobile species identified in BioNet Atlas records within the locality, it was ensured that all possible use of the Subject Site by notable species was considered, and accommodated within subsequent ecological assessment and management recommendations.

AEP has deemed the survey effort undertaken for the Subject Site sufficient given the disturbed and managed nature of the site, the limited amount of habitat features and resources therein, the very small area of low-quality vegetation proposed for removal and the large areas of high-quality vegetation present off site.



AEP

Title: Figure 2 - Regional Vegetation

Date: January 2023

Location: 110, 118 Middle Arm & 129 Mary's Mount Rd, Goulburn

Client: RPS Group c/- DevCore

AEP ref: 3137.01

6.0 Results

6.1 Vegetation Communities

State Vegetation Type Mapping (2022) indicates that the Subject Site contains 0.02 ha of *PCT 3376 – Southern Tableland Grassy Box Woodland.* **Figure 2** shows the extent of State mapped vegetation within and surrounding the Subject Site.

Fieldwork was conducted to ground-truth State vegetation mapping. A stand of planted native and exotic trees are located in the north-eastern section of the site, while a single remnant tree is located in the north-western section. A small portion of native groundcovers mixed in with predominantly exotic grass species is found throughout the remainder of the site. Historical underscrubbing and management of the mid and understory has been carried out consistently throughout the Site. The remaining canopy trees consist of *Eucalyptus melliodora, Eucalyptus viminalis, Eucalyptus macrorhyncha and Callitris glaucophylla*. Only *Eucalyptus mellidora* (present on the western edge of the subject site) is consistent with *PCT 3376 – Southern Tableland Grassy Box Woodland.* Thus, the remaining canopy section in the east of the subject site has been identified as a planted windbreak. PCT 3376 is mapped in patches surrounding the Subject Site (**Figure 2**) with the closest patch to the south-west of the site.

Figure 3 shows the extent of ground-truthed vegetation identified within the Subject Site.

6.2 Habitat Assessment

The Subject Site offers limited habitat for fauna. One hollow-bearing tree was observed within the Subject Site. The vegetation is a mix of native tree species on the west half of the site and highly managed, exotic ground cover. The site lacks a midstory. Canopy species present on site (*Eucalyptus melliodora, Eucalyptus viminalis, Angophora macrorhyncha*) which may constitute suitable feed trees for some bird species and arboreal mammals. However, all trees in the Subject Site will be removed as part of the development. It is unlikely the removal of such a low number of trees will impact the habitat values of the local fauna populations.

Surveys identified that off-site vegetation surrounding the Subject Site may offer potential foraging and nesting habitat for bats, birds and arboreal mammals.

6.3 Flora

Flora surveys have resulted in the identification of thirty-five (35) species within the Subject Site, including thirteen (13) exotic species, principally ornamental species in the landscaped area of the Subject Site.

No threatened species were recorded on the Subject Site.

A full list of flora species identified within the site is included in **Appendix A**.

6.4 Fauna

Fauna surveys identified eleven (11) species within the Subject Site, including nine (9) birds, one (1) mammal and one (1) frog. Nocturnal surveys, including spotlighting, identified no fauna activity on site.

No threatened species were detected on the Subject Site. No Grey-headed Flying Fox roost camps were present within the subject site.

The low number of hollows, absence of midstory and consistent historical management, suggests it is not an area of high-value habitat. The Site does not act as a corridor for fauna movement and it is not expected that the Subject Site would be utilised by threatened fauna species to any significant degree. As mentioned above, native vegetation directly to the east of the Subject Site would likely contain potential foraging habitat and nesting habitat for bats, birds and arboreal mammals.

Appendix 8

A list of fauna species present onsite has been generated for the site and is included within the Expected Fauna List in **Appendix B**.

AEP

Title: Figure 4 - Survey Effort

Date: January 2023

Location: 110, 118 Middle Arm & 129 Mary's Mount Rd, Goulburn

Client: RPS Group c/- DevCore

AEP ref: 3137.01

AEP

Title: Figure 5 - Ground-truthed Vegetation

Date: January 2023

Location: 110, 118 Middle Arm & 129 Mary's Mount Rd, Goulburn

Client: RPS Group c/- DevCore

AEP ref: 3137.01

AEP

Title: Figure 6 - Impacted Vegetation

Date: January 2023

Location: 110, 118 Middle Arm & 129 Mary's Mount Rd, Goulburn

Client: RPS Group c/- DevCore

AEP ref: 3137.01

6.5 Database Searches

Searches were undertaken of databases within a 5km radius of the Subject Site for BC Act listings and EPBC Act listings. Note that any records considered erroneous, historic only, or obviously of no relevance to the site in regards to habitat (e.g., seabirds, marine species etc.) were omitted.

The potential for listed threatened species to occur within the site is considered in **Table 4** and selection for subject species in **Table 5** below. Detailed ecological profiles of threatened species can be found at:

https://www.environment.nsw.gov.au/threatenedspeciesapp/

Table 4 – Threatened Species Appraisal

Scientific Name	Common Name	NSW status	Comm. status	BioNet Records	Likelihood of Occurrence
Flora					
Leucochrysum albicans var. tricolor	Hoary Sunray		E	16	Mapped within Goulburn area, no records in close proximity to subject site. Site subject to grazing with minimal bare ground present for species establishment. Not recorded on site. Species unlikely to be impacted.
Rutidosis leptorrhynchoides	Button Wrinklewort	E	E	3	Not recorded on site. Area subject to grazing. Species unlikely to be impacted.
Bossiaea oligosperma	Few-seeded Bossiaea	V	V	1	Not recorded on site. No recent records in proximity to subject site. Species unlikely to be impacted.
Diuris aequalis	Buttercup Doubletail	E	V	3	Not recorded on site. Lack of suitable habitat present. Species unlikely to be impacted.
Persoonia oxycoccoides		E		1	Not recorded on site. No recent records in proximity to subject site. Species unlikely to be impacted.
Pomaderris delicata	Delicate Pomaderris	E	CE	1	Not recorded on site. Lack of suitable habitat present. Species unlikely to be impacted.
Amphibians					
Litoria aurea	Green and Golden Bell Frog	E	V	1	Lack of waterbodies on site. Only incidence of *Typha spp. o*ccurred in man-made water feature in close proximity to existing residence. Species unlikely to be impacted.
Reptiles					
Suta flagellum	Little Whip Snake	V		1	Species occurs in natural temperate grasslands, grassy woodlands and secondary grasslands derived from woodland clearing. Degradation of grassland, consistent grazing and low abundance of rocks for suitable habitat, species unlikely to utilise subject site. Species unlikely to be impacted.
Birds					
Haliaeetus leucogaster	White-bellied Sea-Eagle	V		2	Habitat associated with open waterbodies, including larger rivers, swamps, lakes, and the sea. Subject site lacks proximity to significant waterbodies and does not exhibit preferred habitat for breeding. Species unlikely to be impacted.
Hieraaetus morphnoides	Little Eagle	V		4	Nest/roost recorded within 200m of subject site in 2019. Previous ecological surveys confirmed presence on adjacent land. No species detected during diurnal surveys. No stick nests detected in mature trees during surveys.
Falco subniger	Black Falcon	V		1	Species is usually associated with streams or wetlands, however it is known to utilize agricultural areas with scattered remnant trees. Habitat is typically influenced more by prey densities than floristic structure. Subject site has a low density of potential prey species. Species is unlikely to be impacted.

Scientific Name	Common Name	NSW status	Comm. status	BioNet Records	Likelihood of Occurrence
Callocephalon fimbriatum	Gang-gang Cockatoo	V	E	2	Associated with Eucalypt forests and woodlands, preferring old growth forests for roosting and nesting. Nests in hollows 7cm in diameter and 3 metres or greater from the ground. No associated habitat present on subject site. Species unlikely to be impacted.
Chthonicola sagittata	Speckled Warbler	V		2	Typical habitat includes native tussock grasses, sparse shrub layer, open canopy and some eucalypt regrowth. Large, relatively undisturbed remnants required for species to persist in the area. Disturbance and wide absence of mid and upper strata indicate lack of suitable habitat. Species unlikely to be impacted.
Anthochaera phrygia	Regent Honeyeater	E	CE	1	Known to inhabit dry open forest and woodland, particularly Box-Ironbark woodlands, and River Sheoak riparian areas. Lack of appropriate habitat and feeding trees located on site indicates species is unlikely to utilise subject site. Species unlikely to be impacted.
Epthianura albifrons	White-fronted Chat	V		1	Predominantly associated with saltmarsh vegetation, however may be present in open grasslands or low shrubs bordering wetland areas. No recent records in proximity to subject site. Lack of saltmarsh vegetation indicates species is unlikely to utilise subject site. Species unlikely to be impacted.
Daphoenositta chrysoptera	Varied Sittella	V		5	Associated with Eucalypt forests or woodlands, particularly with presence of rough-barked species or smooth barks with dead branches, mallee or *Acacia* woodland. Lack of suitable habitat present on subject site. Species unlikely to be impacted.
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V		2	Inhabits dry, open Eucalypt forests and woodlands with an open or sparse understorey, groundcover of grasses or sedges and woody debris. Occasionally found on farmland at the edges of forest or woodland. No recent records in proximity to subject site. Lack of suitable habitat on subject site. Species unlikely to be impacted.
Petroica boodang	Scarlet Robin	V		2	Associated with dry Eucalypt forests and woodlands. Abundant logs and fallen timber are key components of its habitat. Subject site mostly cleared of canopy vegetation, lack of logs or fallen timber, therefore lacking suitable habitat. Species unlikely to be impacted.
Stagonopleura guttata	Diamond Firetail	V		2	Inhabit grassy Eucalypt woodlands, open forest, mallee, natural temperate grasslands, riparian areas and lightly wooded farmland. No recent records in proximity to subject site. Subject site contains cleared farmland which lacks proximity to riparian areas. Species unlikely to be impacted.
Mammals					

Scientific Name	Common Name	NSW status	Comm. status	BioNet Records	Likelihood of Occurrence
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	21	Associated with subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit plantings. Several local records, most recently in 2019, mainly in urban areas. Limited potential for roosting habitat located on subject site. Species unlikely to be impacted.
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V		1	Found in dry sclerophyll forest, woodland, swamp forests and mangroves East of the Great Dividing Range. One record in 2019, located approximately 4km South-East of subject site. Minimal hollows and suitable roosting habitat located on subject site. Species unlikely to be impacted.
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V		1	Prefers moist habitats with trees over 20m tall. Known to roost in tree hollows or under loose tree bark or buildings. Subject site contains minimal potential hollows or buildings for roosting and lacks proximity to moist habitats. Species is unlikely to be impacted.
Miniopterus australis	Little Bent-winged Bat	V		1	Associated with well timbered areas such as moist eucalypt forest, rainforest, vine thickets, wet and dry sclerophyll forests, *Melaleuca* swamplands dense coastal forests and banksia scrub. Known to roost in caves, tunnels, abandoned mines, and sometimes buildings during the day. Forages for insects in densely vegetated areas at night. Minimal roosting habitat present on subject site. Lack of dense vegetation for foraging. Species unlikely to be impacted.
Miniopterus orianae oceanensis	Large Bent-winged Bat	V		5	One record approximately 1km South-West of subject site in 2017 and one record approximately 2km South-West of subject site in 2021. Caves are primary roosting habitat, however may utilise man-made structures. Hunt in forested areas. Minimal roosting habitat present on site and lack of forested areas for foraging. Species unlikely to be impacted.

Table Key - Status (BC Act & EPBC Act): CE: Critically Endangered, E: Endangered, EP: Endangered Populations V: Vulnerable (#) – Indicates number of Atlas Records within 5km of the Subject Site.

From **Table 4** above, the species listed in **Table 5** are considered key subject or indicator species for the Subject Site due to being recorded on site, potentially likely to forage and roost or nest on the site, the site potentially forms an important part of a local home range for resident specimens and some potential habitat may be impacted by the proposal.

Table 5 – Subject Species

Scientific Name	Common Name	BC Act	EPBC Act
Fauna			
Hieraaetus morphnoides	Little Eagle	V	

Table Key - Status (BC Act & EPBC Act):
CE: Critically Endangered, E: Endangered, V: Vulnerable

7.0 Key Species Considerations

The species identified for further consideration have been analysed in **Table 6**. By considering these species and their lifecycle needs, many other species are also inadvertently considered. The analysis below considers key lifecycle features for each guild of species in more detail, and assists in informing the subsequent 5-part test assessment.

Table 6 – Key Species

Guild / Species	Reason for Inclusion	Comment
Fauna *Hieraaetus morphnoides*	Proximity of recorded nesting site.	These species were not detected during field surveys. Recorded nest not located on subject site.

8.0 Five-part Test Assessment

Section 7.3 of the BC Act lists five factors that must be taken into account in determining the significance of potential impacts of proposed activities on threatened species, populations, ecological communities and/or their habitats as listed within the BC Act.

The 5-part test is used to determine whether there is likely to be a significant impact, and thus whether the Biodiversity Offsets Scheme (BOS) is triggered.

Table 7 – Key Species Analysis

No.	Clause	Assessment
a)	In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.	***Hieraaetus morphnoides* (Little Eagle);** This species was not observed on the Subject Site, however a recorded nest is located in close proximity to the Subject Site. Typically nests in tall living trees within remnant patches. Subject site contains one remnant tree which is less than 20m tall, unlikely to be utilised as potential nesting habitat. Species inhabits eucalypt forest, woodland or open woodland. The subject site largely lacks any canopy or midstorey, thus it is unlikely to be utilised for foraging that the key species utilises it for foraging.
b)	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.	Vegetation present within the Subject Site does not constitute an EEC. No EEC vegetation will be directly affected by the proposal.
c)	In relation to the habitat of a threatened species or ecological community: the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality.	No habitat removal or modification is proposed. No vegetation removal is proposed that would result in fragmentation or isolation of habitat.

No.	Clause	Assessment
d)	Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)	No vegetation within the site or within proximity to the site is considered to contain outstanding biodiversity values, therefore impacts are extremely unlikely.
e)	Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process (KTP).	The development has potential to contribute to the following KTPs: *Anthropogenic Climate Change* While the proposed development will have minimal direct contribution towards anthropogenic climate change, cumulative impacts should be considered. It is recommended that all construction processes and designs adopt relevant guidelines for the reduction and minimisation of actions contributing to climate change. *Clearing of Native Vegetation* The proposed development requires clearing of all native vegetation present on the subject site. As previously mentioned, the subject site contains minimal canopy and midstory layers. It is not considered that the contribution to this KTP in this instance is of a notable magnitude.

9.0 EPBC Act Assessment

A search was conducted in December 2022 for Matters of National Environmental Significance (MNES) as relevant to the *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act). The following MNES are considered in this assessment.

World Heritage Properties:

The site is not a World Heritage area and is not in close proximity to any such area.

National Heritage Places:

The site is not a National Heritage Place and does not contain any matters of national heritage.

Wetlands of International Significance (declared Ramsar wetlands):

The site is not a Wetland of International Significance (declared Ramsar wetland) and it is not in close proximity to any such area.

Great Barrier Reef Marine Park:

The site is not part of, or within close proximity to, the Great Barrier Reef Marine Park.

Commonwealth Marine Areas:

The site is not part of, or within close proximity to, any Commonwealth Marine Area.

Threatened Ecological Communities (TECs):

There are three (2) listed TECs within a 5km radius of the Subject Site:

- Natural Temperate Grassland of the South Eastern Highlands
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

Ground-truthing of vegetation within the Subject Site indicated that the canopy only vegetation (0.2ha) is not associated with any PCTs and thus is not commensurate with any TECs.

Threatened Species:

No threatened fauna species listed under the EPBC Act were recorded within Subject Site. Therefore, given that only a very small amount of seasonal foraging habitat is being removed, this development is unlikely to impact significantly on EPBC listed threatened fauna species.

No threatened flora species listed under the EPBC Act were recorded within the Subject Site. This development is unlikely to significantly impact any EPBC listed flora.

Migratory Species:

A total of 12 migratory species may occur in, or may relate to areas within 5km of the Subject Site. It is not considered that the development of this land is likely to significantly affect the availability of potential habitat for such mobile species, or disrupt migratory patterns.

EPBC Act Assessment Conclusion:

Consideration of the EPBC Act revealed that it is unlikely that significant impacts on Matters of National Environmental Significance will occur as a result of the proposal. As such a referral is not considered likely to be necessary.

10.0 State Environmental Planning Policy (Biodiversity and Conservation) 2021

The Biodiversity and Conservation SEPP commenced on 1 March 2022. This SEPP consolidated 11 other SEPPs within this SEPP on the 1 March 2022. The State Environment Planning Policy (Koala Habitat Protection) 2021 (BC SEPP) was one SEPP that was consolidated within the Biodiversity and Conservation SEPP 2021 under Chapter 4 – Koala Habitat Protection 2021. No policy changes were made as part of the consolidation nor did the legal effect of the existing SEPPs, with section 30A of the *Interpretation Act 1987* applying to the transferred provisions. The consolidation was undertaken in accordance with section 3.22 of the *Environmental Planning and Assessment Act 1979*.

The Biodiversity and Conservation SEPP 2021, aims to encourage the conservation and management of areas of natural vegetation that provide habitat for Koalas to support a permanent free-living population over their present range and reverse the current trend of Koala population decline.

The land which comprises the Subject Site is not covered by a Koala Plan of Management and hence has no approved koala plan of management. According to the BC SEPP 2021, the policy applies if:

> *4.9 Development assessment process—no approved Koala plan of management for land*
>
> *(1) This clause applies to land to which this Policy applies if the land—*
>
> *(a) has an area of at least 1 hectare (including adjoining land within the same ownership), and*
>
> *(b) does not have an approved Koala plan of management applying to the land.*

Review of the information identified that the combination of Lot 1 DP 918039, Lot 1 DP 919845, located at 110 and 118 Middle Arm Road, and Lot 1 DP 920161, located at 129 Marys Mount Road Goulburn is greater than 1ha and does not have an approved Koala plan of management. Therefore, the SEPP applies to this land.

Koala surveys were undertaken during fieldwork, including Spot Assessment Method on 30 canopy trees, in addition to nocturnal surveys which included spotlighting and call playback in various sections of the subject site. No Koala presence was detected during fieldwork and no records of the species within 18 years, therefore it has been determined that the proposed development is unlikely to affect Koala populations within the area.

11.0 Recommendations

The following general recommendations are made for consideration to minimise localised impacts on biodiversity in general as a result of the rezoning and development of the site:

- Landscaping is to utilise native species endemic to the nearby plant community types, and is to be managed ongoing as a buffer against edge effects and offsite disturbances.
- Undertake ongoing weed management within landscaped areas.
- Prior to construction commencing, exclusion flagging tape and signage will be installed to delineate construction zone from retained vegetation.
- Clearing of any vegetation on site should be undertaken at the direction of a suitably experienced Ecologist to ensure any displaced native fauna can be taken into care and dealt with appropriately.
- Prior to construction an Arborist Assessment be undertaken to determine the Tree Protection Zones for retained vegetation adjoining earthworks to ensure suitable protection measures are in place.
- Prior to construction commencing, the Project Ecologist will inspect the exclusion flagging tape alignment to ensure it is adequate for protection of retained trees and vegetation.
- No machinery or material should be stored within retained vegetation or within the dripline of retained trees.
- Equipment should be cleaned thoroughly and disinfected before entering and exiting site to prevent weed and disease introduction such as *Phytophthora cinnamomi* (Root-rot fungus), *Puccinia psidii* (Myrtle Rust) and others.

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Appendix A – Flora Species List

FLORA SPECIES LIST

The following list includes all species of vascular plants observed on site during fieldwork. It should be noted that such a list cannot be considered comprehensive, but rather indicative of the flora present on the site. It can take many years of flora surveys to record all of the plant species occurring within any area, especially plant species that are only apparent in some seasons such as Orchids.

A number of species cannot always be accurately identified during a brief survey, generally due to a lack of suitable flowering and/or fruiting material. Any such species are identified as accurately as possible, and are indicated in the list as thus:

- specimens that could only be identified to genus level are indicated by the generic name followed by the abbreviation “sp.”, indicating an unidentified species of that genus.

Authorities for the scientific names are not provided in the list. These follow the references outlined below.

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Names of families and higher taxa follow a modified Cronquist System (1981).

Introduced species are indicated by an asterisk “*”.

Threatened species listed under the *Biodiversity Conservation Act 2016* (BC Act) or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are indicated in **bold font.**

Family	Genus	Species
Apiaceae	*Foeniculum*	*vulgare*
Asteraceae	*Hypochaeris*	*radicata*
Asteraceae	*Sonchus*	*oleraceus*
Asteraceae	*Onopordum*	*acanthium*
Asteraceae	*Arctotheca*	*caladenula*
Asteraceae	*Chrysocephalum*	*apiculatum*
Boraginaceae	*Echium*	*plantagineum*
Brassicaceae	*Brassica*	*rapa*
Campanulaceae	*Wahlenbergia*	*luteola*
Cupressaceae	*Callitris*	*glaucophylla*
Cupressaceae	*Callitris*	*sp.*
Cyperaceae	*Schoenus*	*apogon*
Cyperaceae	*Cyperus*	*eragrostis*
Fabaceae	*Trifolium*	*arvense*
Fabaceae	*Trifolium*	*dubium*
Hypericaceae	*Hypericum*	*perforatum*
Juncaceae	*Juncus*	*usitatus*
Malvaceae	*Modiola*	*caroliniana*
Myrtaceae	*Eucalyptus*	*camaldulensis*
Myrtaceae	*Eucalyptus*	*viminalis*
Plantaginaceae	*Plantago*	*lanceolata*
Poaceae	*Aira*	*elegantissima*
Poaceae	*Anisopogon*	*avenaceus*
Poaceae	*Avena*	*barbata*
Poaceae	*Cenchrus*	*clandestinus*
Poaceae	*Dactylis*	*glomerata*
Poaceae	*Lolium*	*perrenne*
Poaceae	*Microlaena*	*stipoides*
Poaceae	*Paspalum*	*diatatum*
Poaceae	*Rytidosperma*	*caespitosum*
Poaceae	*Setaria*	*verticillata*
Poaceae	*Themeda*	*triandra*
Poaceae	*Vulpia*	*fasciculata*
Polygonaceae	*Rumex*	*brownii*
Polygonaceae	*Rumex*	*acetosella*
Primulaceae	*Lysimachia*	*arvensis*
Rosaceae	*Rosa*	*rubiginosa*
Rosaceae	*Rubus*	*anglocandicans*
Scrophulariaceae	*Verbascum*	*thapsus*
Solanaceae	*Lycium*	*ferocissimum*
Typhaceae	*Typha*	*orientalis*

Appendix B – Expected Fauna Species List

EXPECTED FAUNA SPECIES LIST

The following list includes fauna species that could be reasonably expected to occur on the Subject Site at some point, given site attributes and location.

* indicates exotic species.

Family Name	Common name	Scientific name	Surveyed Observations Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Survey Equipment Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Amphibia				
Myobatrachidae	Eastern Sign-bearing Froglet	*Crinia parinsignifera*		
Myobatrachidae	Common Eastern Froglet	*Crinia signifera*		
Myobatrachidae	Smooth Toadlet	*Uperoleia laevigata*		
Limnodynastidae	Eastern Banjo Frog	*Limnodynastes dumerilii*		
Limnodynastidae	Brown-striped Frog	*Limnodynastes peronii*		
Limnodynastidae	Spotted Grass Frog	*Limnodynastes tasmaniensis*	H	
Hylidae	Green and Golden Bell Frog	*Litoria aurea*		
Hylidae	Bleating Tree Frog	*Litoria dentata*		
Hylidae	Eastern Dwarf Tree Frog	*Litoria fallax*		
Hylidae	Peron's Tree Frog	*Litoria peronii*		
Hylidae	Verreaux's Frog	*Litoria verreauxii*		
Reptilia				
Chelidae	Eastern Snake-necked Turtle	*Chelodina longicollis*		
Diplodactylidae	Wood Gecko	*Diplodactylus vittatus*		
Scincidae	Robust Ctenotus	*Ctenotus robustus*		
Scincidae	Cunningham's Skink	*Egernia cunninghami*		
Scincidae	Dark-flecked Garden Sunskink	*Lampropholis delicata*		
Scincidae	Pale-flecked Garden Sunskink	*Lampropholis guichenoti*		
Scincidae	Three-toed Skink	*Saiphos equalis*		
Scincidae	Shingle-back	*Tiliqua rugosa*		
Scincidae	Eastern Blue-tongue	*Tiliqua scincoides*		
Agamidae	Eastern Water Dragon	*Intellagama lesueurii lesueurii*		

Family Name	Common name	Scientific name	Surveyed Observations	Survey Equipment
			Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Agamidae	Bearded Dragon	*Pogona barbata*		
Varanidae	Lace Monitor	*Varanus varius*		
Typhlopidae	Proximus Blind Snake	*Anilios proximus*		
Elapidae	Highland Copperhead	*Austrelaps ramsayi*		
Elapidae	Tiger Snake	*Notechis scutatus*		
Elapidae	Red-bellied Black Snake	*Pseudechis porphyriacus*		
Elapidae	Eastern Brown Snake	*Pseudonaja textilis*		
Elapidae	Dwyer's Snake	*Suta dwyeri*		
Elapidae	Little Whip Snake	*Suta flagellum*		
Aves				
Phasianidae	Stubble Quail	*Coturnix pectoralis*		
Anatidae	Chestnut Teal	*Anas castanea*		
Anatidae	Grey Teal	*Anas gracilis*		
Anatidae	Mallard	*Anas platyrhynchos**		
Anatidae	Australasian Shoveler	*Anas rhynchotis*		
Anatidae	Pacific Black Duck	*Anas superciliosa*		
Anatidae	Hardhead	*Aythya australis*		
Anatidae	Musk Duck	*Biziura lobata*		
Anatidae	Australian Wood Duck	*Chenonetta jubata*		
Columbidae	Rock Dove	*Columba livia**		
Columbidae	Crested Pigeon	*Ocyphaps lophotes*		
Columbidae	Common Bronzewing	*Phaps chalcoptera*		
Columbidae	Spotted Turtle-Dove	*Spilopelia chinensis**		
Podargidae	Tawny Frogmouth	*Podargus strigoides*		
Ardeidae	Intermediate Egret	*Ardea intermedia*		
Ardeidae	Cattle Egret	*Bubulcus ibis*		
Ardeidae	Eastern Great Egret	*Casmerodius modesta*		
Ardeidae	White-faced Heron	*Egretta novaehollandiae*		
Ardeidae	Nankeen Night Heron	*Nycticorax caledonicus*		
Threskiornithidae	Glossy Ibis	*Plegadis falcinellus*		
Threskiornithidae	Australian White Ibis	*Threskiornis moluccus*		
Threskiornithidae	Straw-necked Ibis	*Threskiornis spinicollis*		
Accipitridae	Collared Sparrowhawk	*Accipiter cirrocephalus*		
Accipitridae	Brown Goshawk	*Accipiter fasciatus*		
Accipitridae	Wedge-tailed Eagle	*Aquila audax*		
Accipitridae	Swamp Harrier	*Circus approximans*		
Accipitridae	Black-shouldered Kite	*Elanus axillaris*		

Family Name	Common name	Scientific name	Surveyed Observations	Survey Equipment
			Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Accipitridae	White-bellied Sea-Eagle	*Haliaeetus leucogaster*		
Accipitridae	Whistling Kite	*Haliastur sphenurus*		
Accipitridae	Little Eagle	*Hieraaetus morphnoides*		
Accipitridae	Black Kite	*Milvus migrans*		
Falconidae	Brown Falcon	*Falco berigora*		
Falconidae	Nankeen Kestrel	*Falco cenchroides cenchroides*	O	
Falconidae	Australian Hobby	*Falco longipennis*		
Charadriidae	Masked Lapwing	*Vanellus miles*		
Charadriidae	Banded Lapwing	*Vanellus tricolor*		
Scolopacidae	Sharp-tailed Sandpiper	*Calidris acuminata*		
Cacatuidae	Sulphur-crested Cockatoo	*Cacatua galerita*	O, H	
Cacatuidae	Little Corella	*Cacatua sanguinea*	O, H	
Cacatuidae	Long-billed Corella	*Cacatua tenuirostris*		
Cacatuidae	Gang-gang Cockatoo	*Callocephalon fimbriatum*		
Cacatuidae	Galah	*Eolophus roseicapilla*	O, H	
Cacatuidae	Cockatiel	*Nymphicus hollandicus*		
Cacatuidae	Yellow-tailed Black-Cockatoo	*Zanda funereus*		
Psittacidae	Australian King-Parrot	*Alisterus scapularis*		
Psittacidae	Crimson Rosella	*Platycercus elegans*	O, H	
Psittacidae	Eastern Rosella	*Platycercus eximius*	H	
Psittacidae	Red-rumped Parrot	*Psephotus haematonotus*	O, H	
Cuculidae	Shining Bronze-Cuckoo	*Chalcites lucidus*		
Cuculidae	Eastern Koel	*Eudynamys orientalis*	H	
Cuculidae	Pallid Cuckoo	*Heteroscenes pallidus*		
Strigidae	Southern Boobook	*Ninox novaeseelandiae*		
Tytonidae	Eastern Barn Owl	*Tyto javanica*		
Alcedinidae	Azure Kingfisher	*Ceyx azureus*		
Alcedinidae	Laughing Kookaburra	*Dacelo novaeguineae*		
Maluridae	Superb Fairy-wren	*Malurus cyaneus*		
Acanthizidae	Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	O, H	
Acanthizidae	Striated Thornbill	*Acanthiza lineata*		
Acanthizidae	Yellow Thornbill	*Acanthiza nana*		

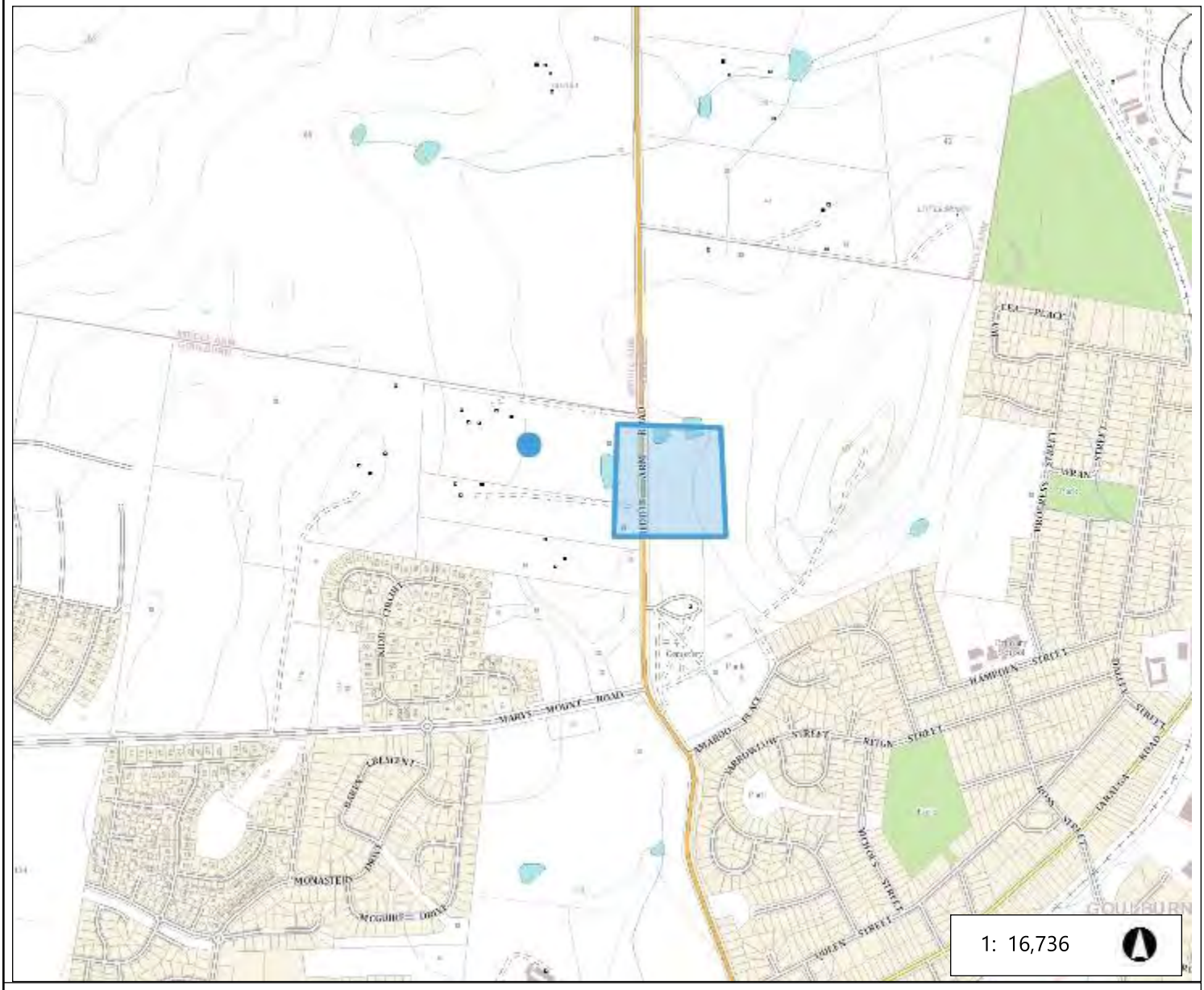
Family Name	Common name	Scientific name	Surveyed Observations	Survey Equipment
			Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Acanthizidae	Brown Thornbill	*Acanthiza pusilla*		
Acanthizidae	Buff-rumped Thornbill	*Acanthiza reguloides*		
Acanthizidae	Southern Whiteface	*Aphelocephala leucopsis*		
Acanthizidae	Speckled Warbler	*Chthonicola sagittata*		
Acanthizidae	Western Gerygone	*Gerygone fusca*		
Acanthizidae	White-throated Gerygone	*Gerygone olivacea*		
Acanthizidae	White-browed Scrubwren	*Sericornis frontalis*		
Acanthizidae	Weebill	*Smicrornis brevirostris*		
Pardalotidae	Spotted Pardalote	*Pardalotus punctatus*		
Pardalotidae	Striated Pardalote	*Pardalotus striatus*		
Meliphagidae	Eastern Spinebill	*Acanthorhynchus tenuirostris*		
Meliphagidae	Red Wattlebird	*Anthochaera carunculata*	O	
Meliphagidae	Noisy Miner	*Manorina melanocephala*		
Campephagidae	Black-faced Cuckoo-shrike	*Coracina novaehollandiae*		
Campephagidae	Cicadabird	*Edolisoma tenuirostris*		
Campephagidae	White-winged Triller	*Lalage sueurii*		
Artamidae	Masked Woodswallow	*Artamus personatus*		
Artamidae	Pied Butcherbird	*Cracticus nigrogularis*		
Artamidae	Grey Butcherbird	*Cracticus torquatus*		
Artamidae	Australian Magpie	*Gymnorhina tibicen*	O, H	
Artamidae	Pied Currawong	*Strepera graculina*	O, H	
Artamidae	Grey Currawong	*Strepera versicolor*		
Rhipiduridae	Grey Fantail	*Rhipidura albiscapa*		
Rhipiduridae	Willie Wagtail	*Rhipidura leucophrys*	O, H	
Corvidae	Australian Raven	*Corvus coronoides*	O, H	
Corvidae	Little Raven	*Corvus mellori*		
Monarchidae	Magpie-lark	*Grallina cyanoleuca*		
Monarchidae	Satin Flycatcher	*Myiagra cyanoleuca*		
Monarchidae	Leaden Flycatcher	*Myiagra rubecula*		
Corcoracidae	White-winged Chough	*Corcorax melanorhamphos*		
Petroicidae	Eastern Yellow Robin	*Eopsaltria australis*		
Petroicidae	Scarlet Robin	*Petroica boodang*		
Petroicidae	Red-capped Robin	*Petroica goodenovii*		
Alaudidae	Eurasian Skylark	*Alauda arvensis**		

Family Name	Common name	Scientific name	Surveyed Observations Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)	Survey Equipment Anabat (A), Songmeter (SM), Camera Trap (CT), Nest (N).
Cisticolidae	Golden-headed Cisticola	*Cisticola exilis*		
Acrocephalidae	Australian Reed-Warbler	*Acrocephalus australis*		
Locustellidae	Brown Songlark	*Cincloramphus cruralis*		
Locustellidae	Little Grassbird	*Poodytes gramineus*		
Hirundinidae	Welcome Swallow	*Hirundo neoxena*	O, H	
Hirundinidae	Fairy Martin	*Petrochelidon ariel*		
Hirundinidae	Tree Martin	*Petrochelidon nigricans*		
Turdidae	Eurasian Blackbird	*Turdus merula**		
Sturnidae	Common Myna	*Acridotheres tristis**	O, H	
Sturnidae	Common Starling	*Sturnus vulgaris**		
Zosteropidae	Silvereye	*Zosterops lateralis*	O, H	
Mammalia				
Ornithorhynchidae	Platypus	*Ornithorhynchus anatinus*		
Tachyglossidae	Short-beaked Echidna	*Tachyglossus aculeatus*		
Vombatidae	Bare-nosed Wombat	*Vombatus ursinus*		
Petauridae	Sugar Glider	*Petaurus breviceps*		
Pseudocheiridae	Common Ringtail Possum	*Pseudocheirus peregrinus*		
Phalangeridae	Common Brushtail Possum	*Trichosurus vulpecula*		
Macropodidae	Eastern Grey Kangaroo	*Macropus giganteus*		
Macropodidae	Red-necked Wallaby	*Notamacropus rufogriseus*		
Macropodidae	Common Wallaroo	*Osphranter robustus*		
Macropodidae	Swamp Wallaby	*Wallabia bicolor*		
Muridae	Water-rat	*Hydromys chrysogaster*		
Muridae	House Mouse	*Mus musculus**		
Muridae	Black Rat	*Rattus rattus**		
Canidae	Fox	*Vulpes vulpes**		
Felidae	Cat	*Felis catus**		
Leporidae	Rabbit	*Oryctolagus cuniculus**		
Equidae	Horse	*Equus caballus**		
Bovidae	European cattle	*Bos taurus**	O	

Appendix C – BOSET Report

Appendix 8

Biodiversity Values Map



850.2 0 425.10 850.2 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

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.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Notes

Appendix 8

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	24/02/2023 6:06 PM	**BDAR Required***
Total Digitised Area	60,553.1 sqm	
Minimum Lot Size Method	LEP	
Minimum Lot Size 10,000sqm = 1ha	700 sqm	
Area Clearing Threshold 10,000sqm = 1ha	2,500 sqm	
Area clearing trigger Area of native vegetation cleared	Unknown #	Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no	no
Date of the 90 day Expiry	N/A	

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is '"likely to significantly affect threatened species' as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BMAT user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Department of Planning and Environment and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies will all aspects of the *Biodiversity Conservation Act 2016.*

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

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_____ Date: 24/02/2023 06:06 PM

Appendix D – Site Photographs

Above: Site photo from centre of property looking North.

Below: Site photo from centre looking East towards line of planted trees..

Above: Site photo from centre of property looking South towards adjacent subdivision.

Below: Site photo from centre looking West.

Above: Dumped rubbish pile and unused shed in Northern section of site, potential habitat for reptiles and small mammals.

Below: Example of sparse rock pile found throughout subject site.

Appendix E – Author CVs

Natalie Black

Curriculum Vitae

Natalie works with AEP in the role of Senior Environmental Manager. She has extensive knowledge in environmental management, environmental planning, and report writing and assessment. With a detail understanding of planning, catchment management, coastal management and rehabilitation. Natalie has had a successful career with both state and local government in conservation, planning and field investigation roles. Natalie has also gained extensive communication skills and project management through her previous career in lecturing. Her background and experience in the ecological and planning fields is utilised in a diverse array of application in her current role.

Qualifications

- B.Sc (Hons), University of Newcastle, 2002 Sustainable Resource Management and Marine Science.
- Master Planning, University of Technology Sydney 2007.
- Certificate IV Training and Assessment at NSW TAFE 2012.
- BAM Assessor; accreditation number: BAAS19076.

Further Education & Training

- Evidence Gathering and Legal Process (Australian Institute of Environmental Health).
- Conflict Resolution Course (LGSA).
- Report Writing Course (LGSA).
- Powerful Presentation (LGSA).
- NSW Rural Fire Services Bush Fire Assessment
- Relocation of Threatened Species (Botanical Gardens Sydney).
- Sustainable Home Assessment Reduction Revolution.
- Flora and Fauna Survey Assessments Niche Environment and Heritage.
- First Aid TAFE.

Fields of Competence

- Environmental Planning
- Environmental Management and rehabilitation of catchments coastal waterways. Statement of Environmental Effects (preparation and assessing).
- Fish Passage
- Marine ecosystems including; mangroves, seagrasses, algae, Fauna and habitat assessment.
- vegetation.
- Communicating with a wide range of stakeholders.
- Development Application.
- Education in both Environmental and Planning industries.
- Koala Plans of Management.
- Policy Development.

Appendix 8

Relevant Employment History

2019 – Present	**Senior Environmental Manager**
	Anderson Environment & Planning, Newcastle
2010 - 2019	**Principal Environmental Planner**
	Black Earth
2003-2010	**Natural Resource Manager and**
	Development Assessment Officer
	Lismore City
2002- 2003	**Jervis Bay Indigenous Fishing Strategy**

THOMAS STEPHENS

Curriculum Vitae

Thomas works with AEP in the role of Ecologist. He is a graduate of environmental science and management, and has industry experience in environmental fields, involving fauna and flora surveying, consultancy projects and natural resource management. His background in environmental fields with his growing ecological knowledge is utilised in a diverse array of applications in his current role.

Qualifications

- Bachelor of Environmental Science and Management (Sustainability), The University of Newcastle (2021)

Further Education & Training

- Class C NSW Driver's License
- Work Health & Safety General Construction Induction
- Senior First Aid
- Work Safely at Heights
- Tree Access Systems Level 1

Fields of Competence

- Ecological field surveys
- Fauna surveys and trapping
- Natural resource management
- Nest box installation
- Adept experience in operating 4x4 vehicles

Relevant Employment History

March 2022 - Present — **Ecologist**
Anderson Environment & Planning, Newcastle

Currently employed by Anderson Environment & Planning to assist in the provision of consulting services to land, property, legal and government sectors. Covering ecological, project management, environmental, planning services, advices, strategy and representation. Expanding knowledge of field survey methodology, report writing, mapping and data manipulation.

January 2022 – April 2022 — **Ecologist**
Active Green Services, NSW

August 2021 – January 2022 — **Ecologist and Bushfire Consultant**
Firebird ecoSultants, Newcastle

Relevant Volunteer Experience

- Industry Placement (National Parks and Wildlife Service, 2020-2021)

WARWICK MUIR

Curriculum Vitae

Warwick works with AEP in the role of Senior Ecologist and Arborist. Whilst studying at the University of Newcastle, he conducted ecological field studies as a requirement of his degree courses, gaining experience in the field. He has also undertaken volunteering for higher-level students in field reporting to assist in completion of their studies.

Qualifications

- Bachelor of Science (Biology), University of Newcastle (2019)
- Diploma of Arboriculture (AQF5) (2021)

Further Education & Training

- First Aid Certificate
- Class C NSW Drivers Licence
- Construction White Card
- Level 1 Tree Access Systems certified.

Key Experience and Competencies (Arborist)

Warwick is experienced and competent in providing a number of arboricultural services, including but not limited to;

- Tree Field Data Collection using Tree Visual Assessment methodology including species name, common name, Structure and Health condition, SULE, TPZ, SRZ, Landscape Significance, Retention Value and general notes as required for small and large - scale projects;
- Tree stock and planting inspections for ecological rehabilitation works;
- Construction supervision, certification and long-term Tree monitoring;
- Preparation of Arboricultural Impact Assessment(s) and Tree Protection Plans as per AS4970:2009 for small and large – scale projects including but not limited to;
    - Subdivisions and associated civil works;
    - Services installations;
    - Roads and associated civil works;
    - Bushfire Asset Protection Zones (APZs); and
    - Single Lot Developments.
- Tree Hazard assessments using ISA hazard assessment methodology;
- Tree pruning specifications as per AS 4373 Pruning Amenity Trees, management and maintenance programs; and
- Tree root mapping.

Relevant Employment History

Feb 2020 – Current **Ecologist/ Arborist (AQF5)**
Anderson Environment & Planning, Newcastle

Currently employed by Anderson Environment & Planning to assist in the provision of consulting services to land, property, legal and government sectors. Covering arboricultural, ecological, project management, environmental, planning services, advices, strategy and representation.

Volunteer Experience

- Bush Regeneration Volunteer, Newcastle Landcare
- Field data collection for environmental Honours and PHD candidates in various locations.

Ecological Field Experience

University

- Riparian vegetation study, including vegetation species and cover surveys, vegetation zone classification and biobanking assessment methods to assessment methods to assess for proposed restoration works.
- Avifauna survey and observation to complete an independently hypothesised animal behaviour investigation in situ.
- Forest and woodland investigations, including vegetation species and cover surveys, habitat appraisal and leaf litter invertebrate observation.
- Macro-bat spotlighting, flight, roost and forage habitat surveys to develop a suggested management strategy for the studied species.