

EcoResolve



Environment & Design

Biodiversity Development Assessment Report Modification 5 (MP07_0087)

Bloomfield Colliery, Four Mile Creek, NSW



Prepared for Chris Knight – Group Manager Environment

M: 0403 058 777 **E:** cknight@bloomcoll.com.au

Prepared by EcoResolve Pty Ltd - Arne Bishop – Ecology Director

M: 0401 630 475 **E:** arne@ecoresolve.com.au

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EcoResolve Pty Ltd - ABN: 48 648 052 653 - www.ecoresolve.com.au

Arne Bishop m. 0401 630 465 - e. arne@ecoresolve.com.au



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Declarations

Certification under clause 6.15 Biodiversity Conservation Act 2016

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

Signature:

Date: 19/03/2025

BAM Assessor Accreditation no: BAAS 17065

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.

Conflicts of interest

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

Signature:

Date: 19/03/2025

BAM Assessor Accreditation no: BAAS 17065



Details and experience of author(s) and contributors

Name	BAM Assessor Accreditation no.	Position/Role	Tasks performed	Relevant qualifications
Arne Bishop	BAAS 17065	Director Accredited Assessor	Field surveys, BAM-C calculations, document review.	Bachelor of Environmental Science
Patrick McEvoy	BAAS 20018	Ecologist, Accredited Assessor	Field surveys, BAM-C calculations, document review	Bachelor of Environmental Science and Management Master of Research
Kelley Heath	-	Field Ecologist	Field surveys.	Bachelor of Science (Biology) Master of Environmental Management
Lucy Dunton	-	Field Ecologist	Field surveys, report preparation.	Bachelor of Science (Environmental Science)
Toneya Smith	-	Field Ecologist	Report preparation.	Bachelor of Science (Marine Systems)
Brea Heidke	BAAS24058	Ecologist/Team Lead - Accredited Assessor	Field surveys, BAM-C calculations, report preparation, GIS Analysis	Bachelor of Environmental Science and Management Master of Environmental Management
Stephanie Nieto Cordoba	-	Field Ecologist	Field surveys.	Bachelor of Science (Hons) (Zoology) Master of Environment (Biology: Conservation and Resource Management)
Melanie Thurtell		Field Ecologist	Field surveys.	Bachelor of Environmental Science (Majoring in Coastal Management)
Julian Carson		Field Ecologist	Field surveys.	Bachelor of Environmental Science
Thomas Palmer		Field Ecologist	Field surveys.	Bachelor of Environmental Science and Management

Executive Summary

The Proposal

Bloomfield Collieries Pty Limited (Bloomfield Colliery), a subsidiary of Bloomfield Group, is the operator of the open-cut mine under Project Approval 07_0087. The mine site is located 30 km north-west of the Port of Newcastle, at Four Mile Creek, NSW. The coal mine is approved to extract 1.3 million tonnes of Run of Mine (ROM) coal per annum and is approved to operate 24 hours per day, seven days per week. The mine is currently approved to operate until 31 December 2030.

This Biodiversity Development Assessment Report (BDAR) has been prepared in association with Modification 5 (Mod 5) of the Bloomfield Colliery Continuation Project, which proposes mining in an additional 58.86 ha in two additional areas (The Creek Cut and The Workshop areas) and extending the life of the mine until 31 December 2035 (MP07_0087-Mod-5) (the Project).

The Project is being assessed under State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (the Mining SEPP). EcoResolve Environment & Design (EcoResolve) were engaged by Bloomfield Colliery to assess the impacts of Mod 5 on biodiversity by preparing this BDAR.

Biodiversity impacts have been assessed through targeted field survey, mapping and assessment completed in accordance with the NSW Biodiversity Assessment Method (BAM) 2020.

Landscape Features Overview

The proposed Project occurs within one IBRA region and one IBRA subregion, being:

- Sydney Basin
 - Hunter

The main important landscape features identified within the study area are:

- Habitat connectivity
- Elwells, Four Mile and Buttai Creeks

Native Vegetation Overview

Native vegetation recorded within the proposed project area has been classified into one vegetation formation within a single IBRA subregion:

- **Dry Sclerophyll Forests (Shrub/grass sub-formation)**

This vegetation formation has been further categorized into one vegetation class, one Plant Community Type (PCT), and three vegetation zones:

- **Vegetation Class:** *Hunter-Macleay Dry Sclerophyll Forests*
- **Plant Community Type (PCT) 3433:** *Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest*

The vegetation zones are as follows:

- **3433_low:** Consists of 4.56 ha
- **3433_moderate:** Consists of 7.38 ha
- **3433_high:** Consists of 39.75 ha

One threatened ecological community, associated with all three native vegetation zones, has been recorded within the proposed project area:

- **Biodiversity Conservation Act 2016 (BC Act):** *Lower Hunter Spotted Gum—Ironbark Forest in the Sydney Basin Bioregion (Endangered Ecological Community, EEC)*

No threatened ecological communities listed under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC) were recorded.

Threatened Species Overview

In accordance with the BAM (2020) threatened species have been assessed as predicted or ecosystem credit species and species credit species.

Predicted Species (Ecosystem Credit Species)

A total of 41 threatened fauna species have been identified as predicted or ecosystem credit species within in proposed project area.

Threatened Flora (Species Credit Species)

A total of 25 candidate threatened flora species were considered to have the potential to occur within the proposed project area and were the subject of targeted surveys. Of these, none were recorded at the time of survey.

Threatened Fauna (Species Credit Species)

A total of 32 candidate threatened fauna species were considered likely to occur within the proposed subject land and were subject to targeted surveys. Of these, five species are considered to be impacted by the proposed project, being:

- Swift Parrot (*Lathamus discolor*). Endangered under the BC Act and Critically Endangered under the EPBC Act.
- Southern Myotis (*Myotis Macropus*). Vulnerable under the BC Act and not listed under the EPBC Act.
- Large-eared Pied Bat (*Chalinolobus dwyeri*). Vulnerable under the BC Act and Endangered under the EPBC Act.
- Eastern Cave Bat (*Vespadelus trougtoni*). Vulnerable under the BC Act and not listed under the EPBC Act.
- Masked Owl (*Tyto novaehollandiae*). Vulnerable under the BC Act and not listed under the EPBC Act.

Non-Ecosystem Credit Species or Species Credit Species

A more comprehensive desktop assessment resulted in 75 threatened fauna and 39 threatened flora species being identified as having at least some likelihood of occurrence within the subject land of



direct and indirect impacts. Species identified as having a moderate to high likelihood of occurrence were subject to targeted surveys.

Impact Summary

Impacts that are unable to be prevented by the Project were evaluated according to Stage 2 of the BAM (2020), Item 16 of Appendix A of the SEARs, and the EPBC Act's Matters of National Environmental Significance – Significant impact guidelines 1.1 (2013).

The unavoidable direct and indirect impacts of the Project include:

The direct impacts within the subject land include:

- The loss of approximately 51.69 ha of native vegetation which forms part of the threatened ecological community in the form of *Lower Hunter Spotted Gum—Ironbark Forest in the Sydney Basin Bioregion* which is listed as endangered under the BC Act.
 - 51.69 ha of foraging habitat for threatened bat species and bird species.
 - 15.57 ha of foraging and breeding habitat of Southern Myotis (*Myotis macropus*).
 - 45.40 ha of breeding habitat of Masked Owl (*Tyto novaehollandiae*).
 - The assumed loss of 51.69 ha of foraging and breeding habitat for the Squirrel Glider (*Petaurus norfolcensis*) and Koala (*Phascolarctos cinereus*)

The indirect impacts of the Project may include:

- Reduced viability of adjacent habitat because of edge effects.
- Reduced viability of adjacent habitat because of noise, dust, and light spill from construction areas.
- Introduction of invasive flora species to the subject land.
- Introduction of waste (rubbish, fuels and lubricants, materials) into surrounding ecosystems.
- Increased risk of starvation, exposure and loss of shade or shelter.
- Loss of breeding habitats.
- Hydrological changes.
- Increase in predatory species populations.
- Increase in pest animal populations.
- Fertiliser or herbicide drift.

The Project is likely to have the following prescribed impacts:

- Increased risk of vehicle strikes.
- Loss of habitat connectivity.
- Loss of breeding and foraging habitat.

Management and Mitigation

Measures to mitigate the impacts of the Project on biodiversity include:

- Speed limits.
- Vehicle movement windows.
- Construction work hour limits.



- Worker induction and training.
- Biodiversity management plan.
- Weed management.
- Feral predator control program.
- Fauna monitoring program.
- Erosion and sediment control.
- Pathogen risk management.
- Storage and waste management.
- Pre-clearing surveys.
- Two-stage clearing procedure.
- Unexpected threatened species finds procedure



Offsetting Biodiversity Impacts

The Project would require an offset of **1,796** ecosystem (Table E1) and **13,778** species credits (Table E2).

TABLE E1 - IMPACTS THAT REQUIRE AN OFFSET – ECOSYSTEM CREDITS

Vegetation zone	PCT	TEC	Impact area (ha)	Ecosystem credits
3433_low	3433 - Hunter Coast Foothills Spotted Gum- Ironbark Grassy Forest	BC Act E, Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions.	4.56	79
3433_moderate	3433 – Hunter Coast Foothills Spotted Gum- Ironbark Grassy Forest	BC Act E, Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions.	7.38	294
3433_high	3433 – Hunter Coast Foothills Spotted Gum- Ironbark Grassy Forest	BC Act E, Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions.	39.75	1,423
Total			51.69	1,796

TABLE E2 - IMPACTS THAT REQUIRE AN OFFSET – SPECIES CREDITS

Common name	Scientific name	Loss of habitat (ha) or individuals	Number of species credits required
Southern Myotis	<i>Myotis Macropus</i>	2 individuals, 15.6	524
Masked Owl	<i>Tyto novaehollandiae</i>	1 Individual, 45.4	1,583
Squirrel Glider	<i>Petaurus norfolcensis</i>	51.7	1,796
Koala	<i>Phascolarctos cinereus</i>	51.7	1,796
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	51.7	2,694
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	51.7	2,694
Swift Parrot	<i>Lathamus discolor</i>	51.7	2,694
Total			13,781



CONTENTS

STAGE 1: BIODIVERSITY ASSESSMENT	13
1.1.1 The Project Development overview	13
1.1.2 Location	13
1.1.3 The Project and the subject land	13
1.1.4 Assessment area	15
1.1.5 Other documentation	15
1.2 Excluded impacts.	16
1.3 Matters of National Environmental Significance	16
1.4 Information sources	17
1.5 Native vegetation threatened ecological communities and vegetation integrity.	18
1.5.1 Existing information	18
1.5.2 Plot-based vegetation survey	18
1.5.3 Plant community types	27
1.6 Threatened flora and fauna	29
1.6.1 Review of existing information	29
1.6.2 Predicted and candidate threatened species.	29
1.6.3 Field surveys	45
1.6.4 Weather conditions	50
1.7 Survey results	55
1.8 Limitations	59
STAGE 2: IMPACT ASSESSMENT	60
2.1 Avoid and minimise impacts on biodiversity	60
2.1.1 Project location and design	60
2.1.2 Alternatives considered	60
2.1.3 Assessment of Direct Impacts	60
2.1.4 Residual direct impacts	60
2.1.5 Impacts to vegetation integrity	60
2.1.6 Loss of hollow bearing trees	61
2.2 Assessment of Indirect impacts	61
2.3 Prescribed impacts	64
2.4 SAILs	65
2.5 Limitations and assumptions	67
2.6 Impact mitigation and management	68
2.7 Impact summary	70
2.7.1 Offset biodiversity credit requirement	70
2.8 Impacts that do not need further assessment	79
2.8.1 Impact not requiring offsets	79
CONCLUSION	80
REFERENCES	81
APPENDIX A – BDAR CONTENT REQUIREMENTS COMPLIANCE CHECKLIST	83



APPENDIX B – LIKELIHOOD OF OCCURRENCE (LOO) AND MATTERS REQUIRING ADDITIONAL CONSIDERATION	96
APPENDIX C – VEGETATION SURVEY DATA.....	108
APPENDIX D – BIODIVERSITY CREDIT REPORT	113
APPENDIX E – ANABAT REPORT	120
APPENDIX F – ASSESSMENT OF THE SIGNIFICANCE OF IMPACTS ON MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE	121
ATTACHMENT 3 – SURVEY TIMETABLE.....	158

List of Tables

Table 1 - Landscape assessment of the subject land.....	15
Table 2 - Site PCT characteristics	27
Table 3 - Vegetation zones and patch sizes	28
Table 4 - VI scores	28
Table 5 - Predicted ecosystem and Species credit species	30
Table 6 – Threatened species surveys on the subject land	46
Table 7 - Weather conditions during surveys	51
Table 8 - Threatened species recorded within the subject land.....	56
Table 9 - HBTs within the subject land.....	61
Table 10 - Indirect impacts.....	62
Table 11 - Direct Impacts on Identified threatened Species and Communities	63
Table 12 - Changes in Vegetation integrity (VI)	63
Table 13 - Prescribed impacts	64
Table 19 - Summary of proposed offsets for residual indirect and prescribed impacts.	65
Table 14 - SAI Species Identified within the Project	66
Table 15 - Impact mitigation measures	69
Table 16 - Impacts that require an offset – ecosystem credits	70
Table 17 - Impacts that require an offset – species credits	71
Table 18 - Ecosystem credit class and matching credit profile	78
Table 20 – Likelihood Of Occurrence Assessment.....	96
Table 21 - BAM Plot Floristic data.....	108
Table 22 - Floristics cover and abundance data.....	109
Table 23 – RDP Floristic Data	111

List of Figures

Figure 1 Site Location.....	14
Figure 2 Vegetation Mapping	20
Figure 3 Habitat Assessment.....	21
Figure 4 May 2023 & 2024 Threatened Flora Survey	22
Figure 5 June 2023 and 2024 Flora Survey	23





Figure 6 August 2023 Flora Survey	24
Figure 7 October 2023 Flora Survey	25
Figure 8 November 2023 Flora Survey.....	26
Figure 9 Fauna Surveys	49
Figure 10 Southern Myotis Species Polygon.....	72
Figure 11 Masked Owl Species Polygon – Redacted - Masked Owl is a Category 3 Sensitive Species.	73
Figure 12 Squirrel Glider Species Polygon	74
Figure 13 Species Polygon for Koala	75
Figure 14 Species polygon for Swift Parrot.....	76
Figure 15 Areas to be Offset	77

Abbreviations

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
BOS	Biodiversity Offsets Scheme
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
TBDC	Threatened Biodiversity Data Collection
TEC	Threatened Ecological Community

Stage 1: Biodiversity Assessment

1.1.1 The Project Development overview

Bloomfield Collieries Pty Limited (Bloomfield Colliery), a subsidiary of Bloomfield Group, is the operator of the open-cut mine under Project Approval 07_0087. The mine site is located 30 km north-west of the Port of Newcastle, in Black Hill, NSW. The coal mine is approved to extract 1.3 million tonnes of Run of Mine (ROM) coal per annum and is approved to operate 24 hours per day, 7 days per week. The mine is currently approved to operate until 31 December 2030.

This Biodiversity Development Assessment Report (BDAR) has been prepared in association with Modification 5 Bloomfield Colliery Continuation Project, which proposes mining in two additional areas (The Creek Cut area and The Workshop Area), expanding to an additional area of 58.86 ha and extending the life of the mine until 31 December 2035 (MP07_0087-Mod-5) (the Project).

The Project is being assessed under State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (the Mining SEPP). EcoResolve Environment & Design (EcoResolve) were engaged by Bloomfield Colliery to assess the impacts of Modification 5 on biodiversity by preparing this BDAR.

1.1.2 Location

Bloomfield Colliery is located on Four Mile Creek Road, Black Hill NSW. The subject land is directly north of the existing open-cut mine and adjacent to the office carpark (**Figure 1**)

1.1.3 The Project and the subject land

Bloomfield Colliery is located in Black Hill, 20 km northwest of Newcastle. The mine is bordered by the residential areas of Louth Park, Greenhills, Ashtonfield, Metford and Thornton to its north, the Donaldson and Abel mines to its east, and the rural residential areas of Buchanan and Black Hill to its west and south, respectively. The closest non-project related residence is located approximately 600 m from the southern boundary of the current active mining area.

The proposed Project would expand the open-cut mine by approximately 58.86 ha. Approval of the Project would:

- Allow the continuation of mining in the current area until 31 December 2035.
- Allow mining to continue into two locations: the Creek Cut and Workshop Areas.
- Not involve an increase in production, additional equipment or additional infrastructure.
- Allow continuation of noise and visual impact mitigation.
- Occur no closer to residential areas than has previously occurred.

The Project assessed in this BDAR involves the clearing of approximately 51.69 ha of native vegetation. Recovered soil materials will be reused onsite in capping overburden dumps to re-establish vegetation suitable for the approved landuse.



1.1.4 Assessment area

The assessment area includes the subject land and the area of land within a 1,500-metre buffer zone surrounding it (**Figure 1**). See **Table 1** for a summary of relevant landscape features identified within the subject land and assessment area.

TABLE 1 - LANDSCAPE ASSESSMENT OF THE SUBJECT LAND.

IBRA7 region	Sydney Basin (SYB)
IBRA7 subregion	Hunter
Rivers, streams, estuaries and wetlands	Elwells Creek, Four Mile Creek and Buttai Creek
Habitat connectivity	There is good connectivity to the north and west of Bloomfield Colliery through forest landscapes which eventually connect to Sugarloaf State Conservation Area.
Karst, caves, crevices, cliffs, rocks or other geological features of significance	None present
Areas of outstanding biodiversity value	Biodiverse riparian land (Elwells Creek, Four Mile Creek and Buttai Creek)
NSW (Mitchell) landscape	Hunter Coastal Ramp
Native vegetation cover within the assessment area	51.69 ha

1.1.5 Other documentation

A Preliminary Ecological Assessment (PEA) of Bloomfield Colliery was conducted by EcoResolve in March 2022. The aim of the assessment was to identify potential ecological constraints associated with the development of the site, and to ascertain the prescribed seasonal site survey requirements in accordance with the Biodiversity Assessment Method (BAM 2020). The PEA was informed by both a desktop assessment and site-based preliminary ecological investigations. This report provided important background information informing the surveys and assessment documented within this BDAR.

BIODIVERSITY OFFSETS SCHEME ENTRY

A Project may trigger entry into the Biodiversity Offsets Scheme (BOS) in several ways:

- Developing in or in proximity to areas mapped on the Biodiversity Values Map (BVM).
- Being deemed likely to significantly impact threatened species based on the test of significance in section 7.3 of the *Biodiversity Conservation Act 2016*.
- Being issued SEARs including a BAM assessment as a condition of development (State Significant Development and State Significant Infrastructure).
- Clearing above the threshold allowable based on the minimum lot size of the land to be cleared.
- Clearing land which requires approval by the Native Vegetation Panel under *the Local Land Services Act 2013*.

The Project requires clearing of up to 51.69 ha of native vegetation and is a modification to a SSD, triggering entry into the BOS.

1.2 Excluded impacts.

No impacts which could be excluded from assessment were identified.

1.3 Matters of National Environmental Significance

Matters of national environmental significance (MNES) and their consideration are legislated under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). They include:

- World heritage properties.
- National heritage places.
- Wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed).
- Nationally threatened species and ecological communities.
- Migratory species.
- Commonwealth marine areas.
- The Great Barrier Reef Marine Park.
- Nuclear actions (including uranium mining).
- A water resource, in relation to coal seam gas development and large coal mining development.

49 species listed under the EPBC Act were considered to have at least a moderate likelihood of occurring on the subject land based on the presence of suitable habitat (**Appendix B**). No EPBC Act listed threatened ecological communities (TECs) or any other MNES occur on the subject land nor are any likely to be impacted by the Project.

The presence of all but three (3) of these species within the subject land has been ruled out because targeted surveys did not detect them (see **Section 1.7.4**). The remaining species are the Large-eared Pied Bat (*Chalinolobus dwyeri*), identified during field surveys, the Swift Parrot (*Lathamus discolor*) and the Koala (*Phascolarctos cinereus*), which were assumed present.

Habitat descriptions below have been sourced from BioNet, for MNES species (DCCEW, 2024).

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

- Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in caves, overhangs, mine adits and concrete structures such as derelict buildings. They maintain fidelity to the same cave over many years.
- Found in well-timbered areas containing gullies.
- The relatively short, broad wing combined with the low weight per unit area of wing indicates manoeuvrable flight. This species probably forages for small, flying insects below the forest canopy.
- Likely to hibernate through the coolest months.
- It is uncertain whether mating occurs early in winter or in spring.

After extensive field surveys, it was confirmed that there are no caves present within the subject land and hence, the species detected are most likely to have been recorded in foraging habitat, not



breeding habitat. Additionally, no maternity roosts were identified on site and impact to their foraging habitat is predicted. Therefore, it was deemed necessary to perform an assessment of significance for this species.

Swift Parrot (*Lathamus discolor*):

- Migrates to the Australian south-east mainland between February and October.
- On the mainland they occur 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 Swamp Mahogany (*Eucalyptus robusta*), Spotted Gum (*Corymbia maculata*), Red Bloodwood (*C. gummifera*), Forest Red Gum (*E. tereticornis*), Mugga Ironbark (*E. sideroxylon*), and White Box (*E. albens*).
- Commonly used lerp infested trees include Inland Grey Box (*E. macrocarpa*), Grey Box (*E. moluccana*), Blackbutt (*E. pilularis*), and Yellow Box (*E. melliodora*).
- Return to some foraging sites on a cyclic basis depending on food availability
- Following winter they return to Tasmania where they breed from September to January, nesting in old trees with hollows and feeding in forests dominated by Tasmanian Blue Gum *Eucalyptus globulus*.

Field surveys confirmed that there are Swift Parrot feed trees (*Corymbia maculata* and to a lesser extent *Corymbia gummifera*) within the subject land. The presence of these feed trees alone does not usually trigger entrance into the Biodiversity Offset Scheme (BOS) under the Biodiversity Assessment Method (2020), and the trigger is ordinarily associated with the 'Important Habitat' map. However, the Swift Parrot has been assessed further (MNES assessment in **Appendix F**) and the assessment concluded that a significant impact is likely, based on critical habitat presence within the Project area. Furthermore, the *National Recovery Plan for the Swift Parrot (2024)* states that if removal of habitat critical to the survival of the species cannot be avoided or mitigated then an offset should be provided. Consequently, the species has been assumed present and a species polygon has been created accordingly.

Koala (*Phascolarctos cinereus*):

- Presence of Koala use trees

After conducting thorough field surveys, it has been confirmed that there are Koala feed trees within the subject land. During the targeted species surveys, no Koalas or evidence of their presence were observed. However, recent (October 2023) BioNet sightings of the species have been recorded approximately 1.5 kilometres from the subject land within regions that maintain habitat connectivity.

1.4 Information sources

The information sources consulted during this assessment include:

- Biodiversity Assessment Method (BAM) 2020.
- BAM Stage 1 and Stage 2 Operational Manuals.
- BioNet Threatened Biodiversity Data Collection (TBDC).
- BioNet Vegetation Identification System (VIS).
- IBRA regional and subregional mapping.
- Mitchell Landscapes mapping and associated literature.



- Latest available high-resolution imagery.
- Available drainage and wetland mapping.
- Regional vegetation mapping from the NSW State Vegetation Type Map (SVTM; C1.1.M1.1 (December 2022)) to identify Plant Community Types (PCTs) that may be occurring within the site.
- A review of existing vegetation mapping, habitat mapping and reports of relevance to the site and surrounding locality (e.g., 10km).
- Database searches to identify records of the threatened entities and MNES that may occur within 20 kilometres of the site, including:
 - NSW Government BioNET Atlas database.
 - Department of the Environment (DoE) Protected Matters Search Tool.
- A Likelihood of Occurrence (LoO) analysis for all threatened species and communities identified through desktop research.

1.5 Native vegetation threatened ecological communities and vegetation integrity.

1.5.1 Existing information

Up to date PCT mapping (the NSW SVTM) was reviewed within the assessment area. PCT profiles from the BioNet VIS PCTs mapped within the assessment area provided a reference for field validation of site vegetation conducted during the plot-based vegetation survey.

Vegetation types and condition on the subject have previously been surveyed and characterised through the PEA (EcoResolve, 2023). Further field surveys of which included RDPs and BAM plots have confirmed the subject land to be PCT 3433 - *Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest* (**Table 2**). This PCT forms part of the BC listed Endangered Ecological Community (EEC) of Lower Hunter Spotted Gum—Ironbark Forest in the Sydney Basin Bioregion. It does not however, form part of an EPBC Act listed EEC, due to the dominance of *Eucalyptus fibrosa*. Datasets from these surveys have been used to support this assessment (**Appendix C**). This data includes validated vegetation mapping and vegetation integrity (VI) plot data.

1.5.2 Plot-based vegetation survey

Field surveys were completed during May, June, August, October, November and December 2023. These surveys were completed in accordance with the BAM 2020 and informed the preparation of a vegetation map of the subject land (**Figure 2**)

Extensive flora surveys were completed during the site visits which included:

- Delineation of the type and extent of native (PCTs) vegetation cover (including any EECs) and threatened species habitat, on site (**Figure 2**).
- Collection of BAM plots (**Figure 2**).
- Targeted searches for candidate flora species identified during desktop research (**Figure 4 – Figure 8**).
- Evaluation of the presence of EECs and, where present, mapping the EECs.



- Compilation of a flora species list including the identification of native and exotic plant species, including priority weeds listed under the NSW Biosecurity Act 2015 within the Local Government Area (LGA) (**Appendix C**).
- Habitat assessments including high concentrations hollow bearing trees (**Figure 3**)
- Weed density and distribution mapping (**Figure 3**).

Rapid Data Points (RDPs) were undertaken across the subject land to assist vegetation classification and refine the boundaries and distribution of PCTs. In total, 19 RDPs were undertaken. Information recorded at each RDP included:

- Dominant canopy species.
- Main associated species.
- Landscape position.
- Characteristic mid-storey species.
- Characteristic groundcover species.

Eight (8) vegetation integrity (VI) plots were undertaken in accordance with BAM to measure the VI (i.e., composition, structure and functional components) of the sites' native vegetation cover. BAM plots were placed in locations that were representative of the vegetation zones being assessed. That is, BAM plots were placed beyond the prescribed minimum distance from ecotones, tracks and other areas of disturbance.

Each plot included:

- One standard 20 x 20 m plot, to assess the composition and structure attributes, including trees, shrubs, grasses, forbs, ferns and other growth forms;
- One standard 20 x 50 m plot (1,000 m²) to assess the function attributes: number of large trees (i.e. > 50 cm DBH), stem size class, tree regeneration, length of fallen logs, high threat exotic vegetation cover and hollow-bearing trees; and
- Five 1 m² sub-plots to assess average litter cover for the plots.

The vegetation community identified on site occurred in low, moderate and high condition, and vegetation zones were assigned accordingly. Factors that decreased vegetation condition were clearing and disturbance. The site was assessed to have some areas moderately – severely infested with *Lantana camara*. However, most of the site was in good condition and no other weeds of significance were identified. See **Appendix C** for vegetation survey data

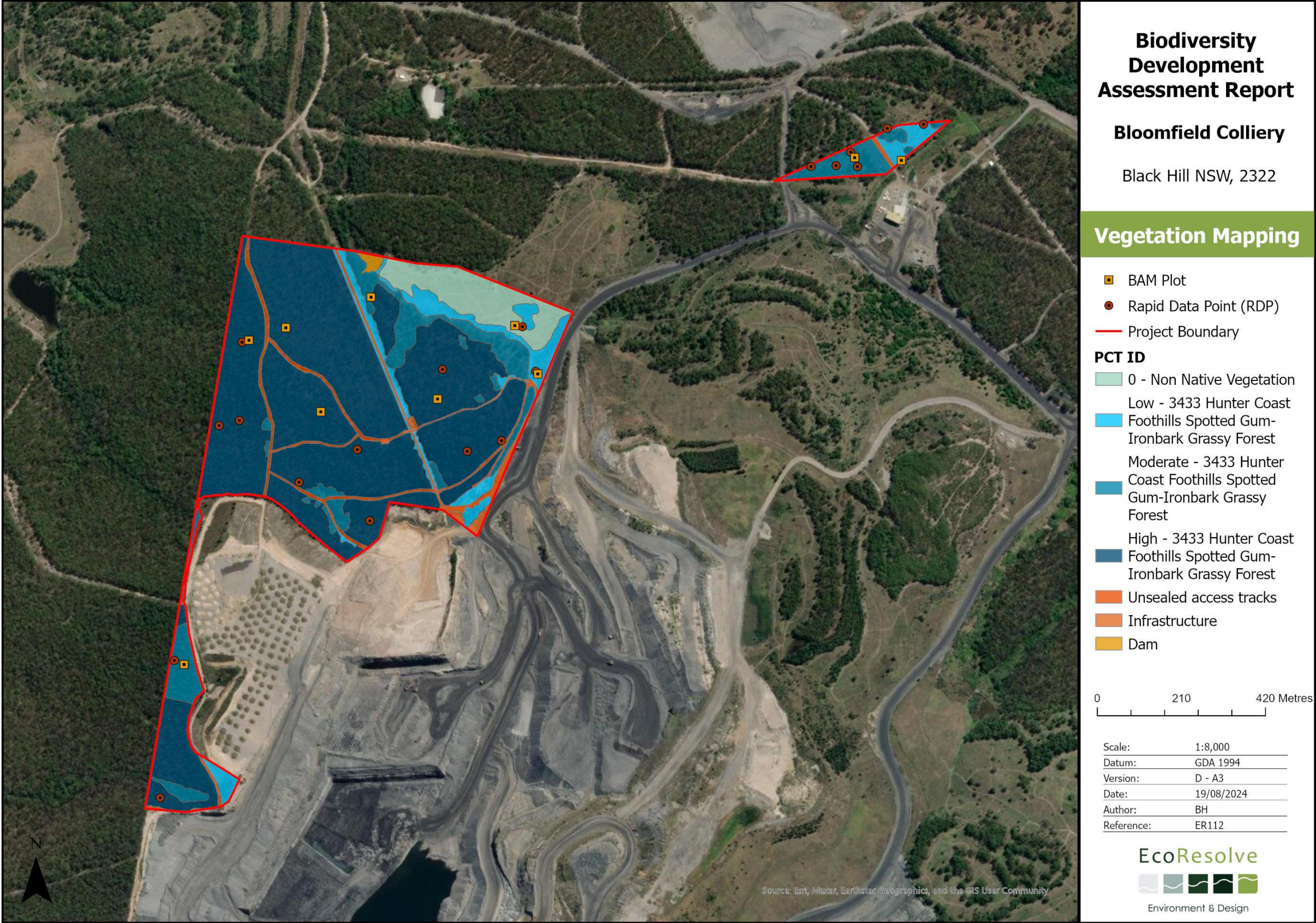


FIGURE 2 VEGETATION MAPPING

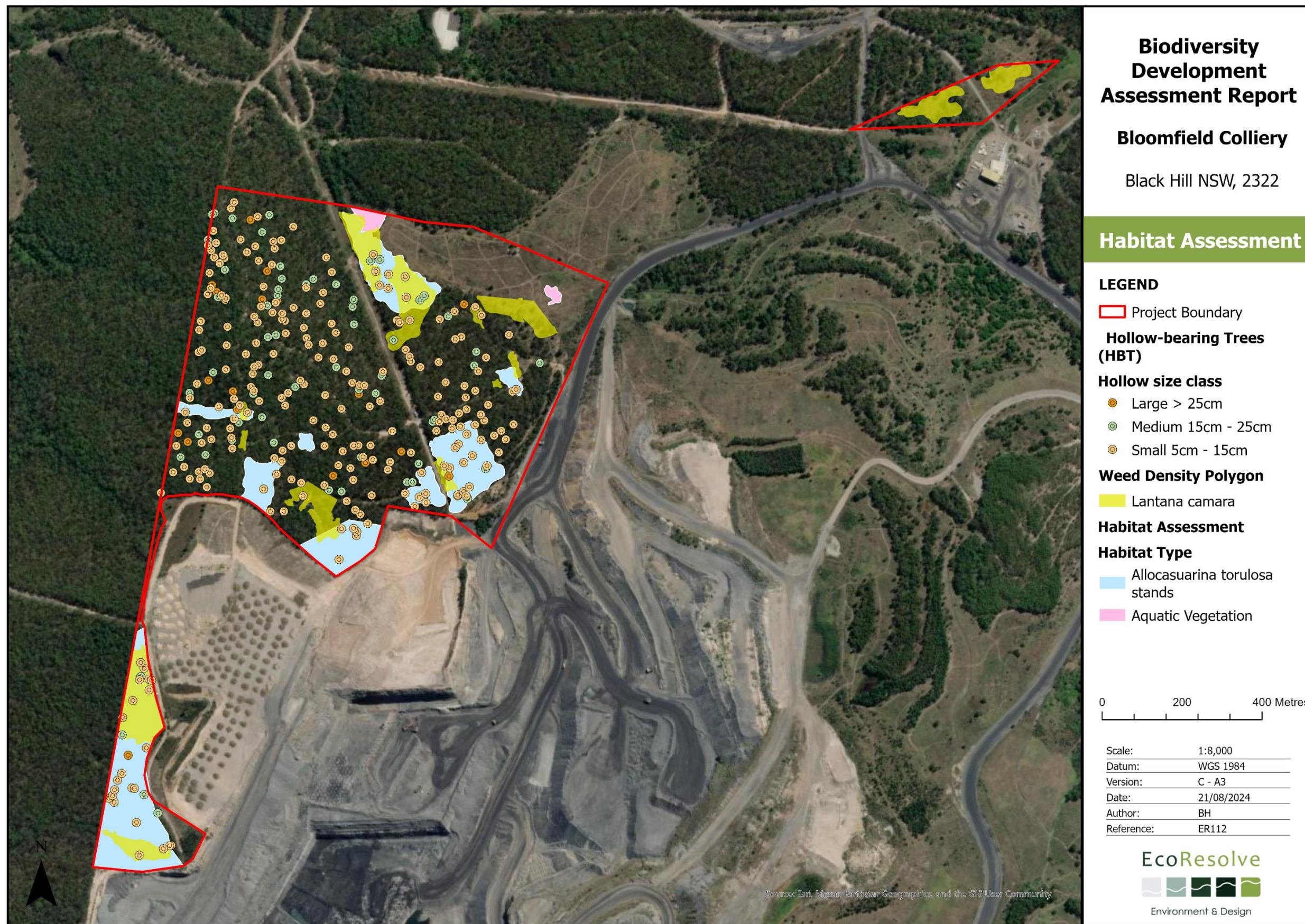


FIGURE 3 HABITAT ASSESSMENT



**Biodiversity
Development
Assessment Report
Bloomfield Colliery**

Black Hill NSW, 2322

**Threatened Flora
Transects**

LEGEND

- ▭ Project Boundary
- HydroLines
- May 2023
- May 2024

0 210 420 Metres

Scale:	1:8,000
Datum:	WGS 1984
Version:	E - A3
Date:	21/08/2024
Author:	BH
Reference:	ER112

FIGURE 4 MAY 2023 & 2024 THREATENED FLORA SURVEY

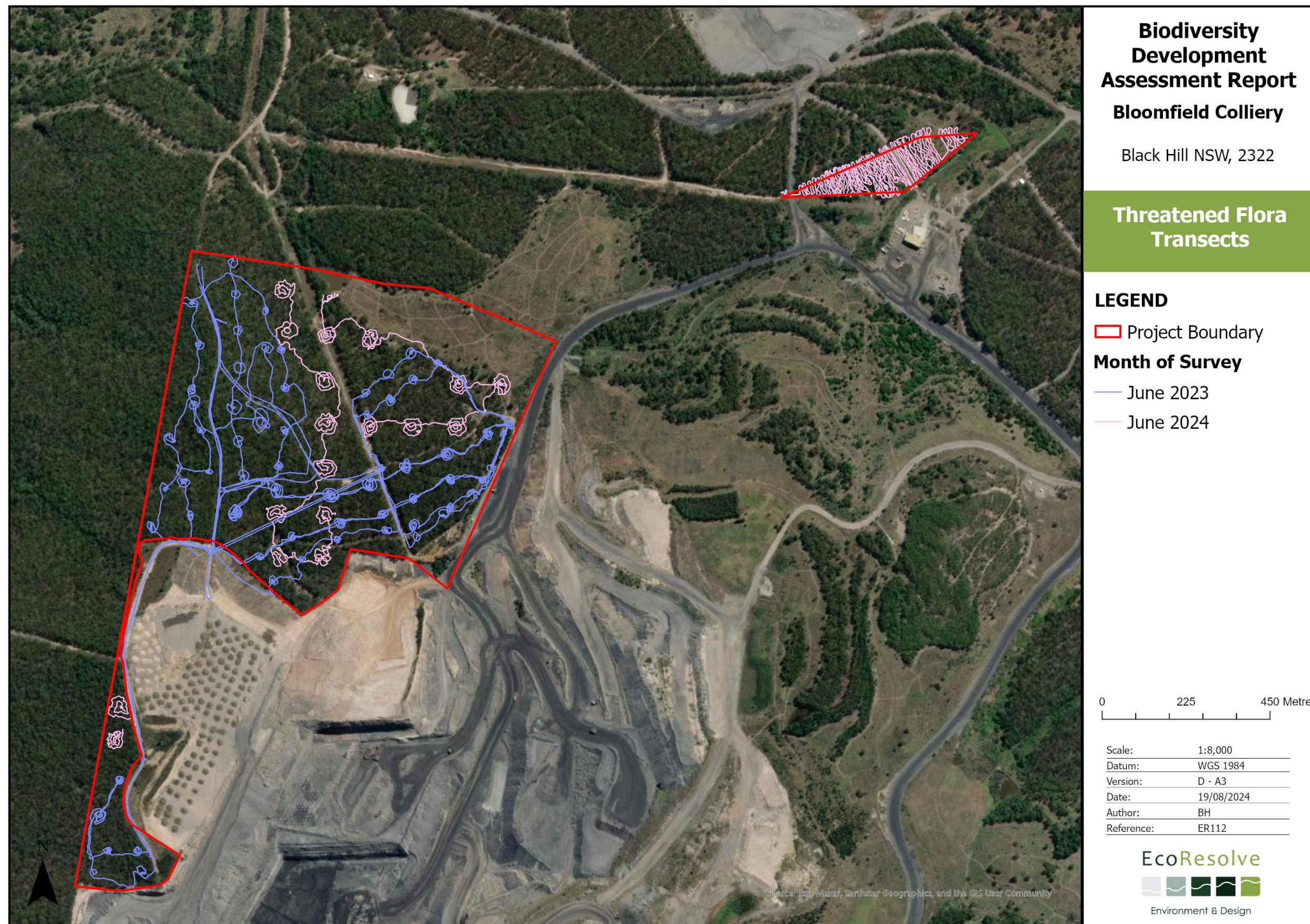


FIGURE 5 JUNE 2023 AND 2024 FLORA SURVEY

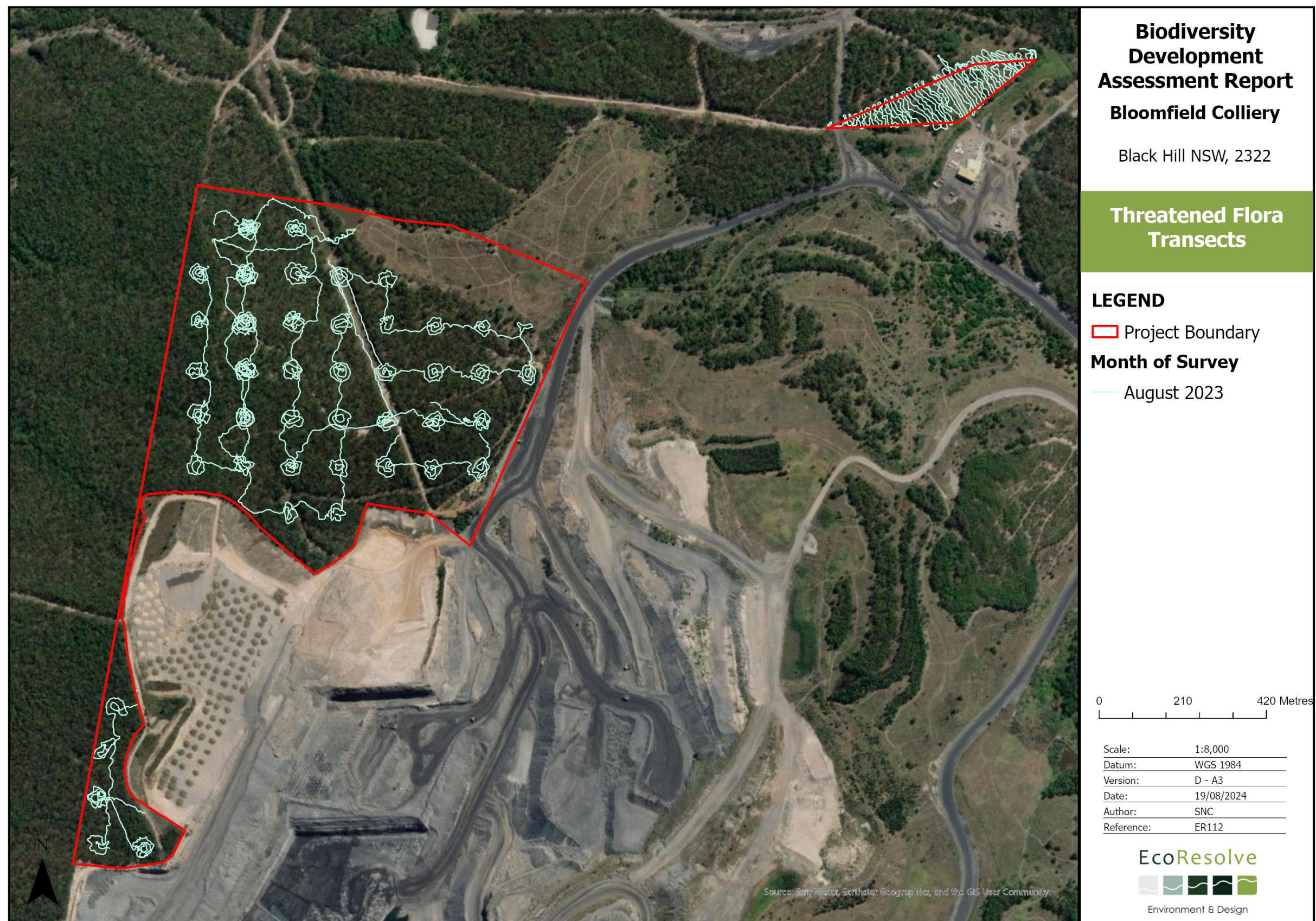


FIGURE 6 AUGUST 2023 FLORA SURVEY

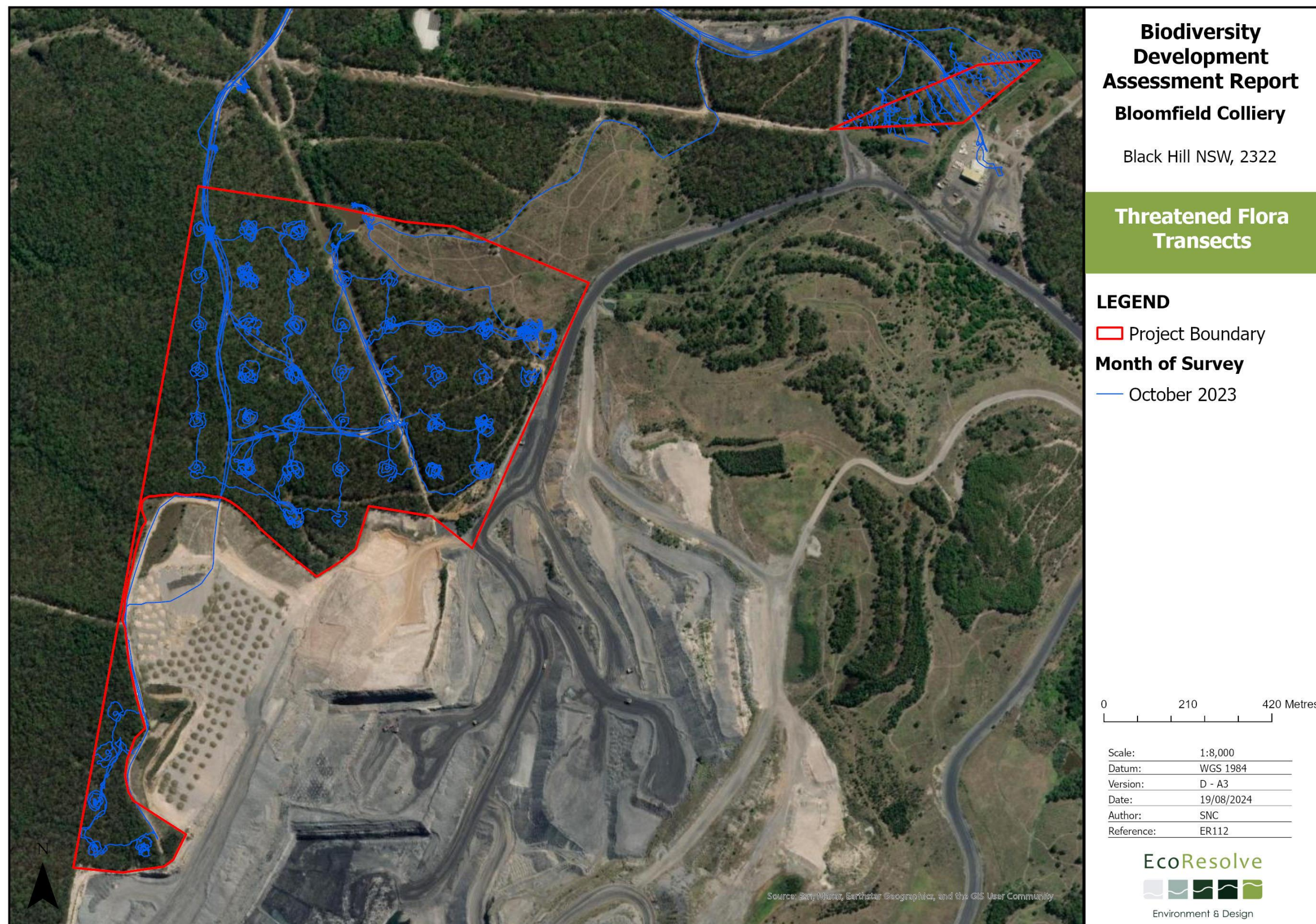


FIGURE 7 OCTOBER 2023 FLORA SURVEY



**Biodiversity
Development
Assessment Report
Bloomfield Colliery**

Black Hill NSW, 2322

**Threatened Flora
Transects**

LEGEND

Project Boundary

Month of Survey

November 2023

0 210 420 Metres

Scale:	1:8,000
Datum:	WGS 1984
Version:	D - A3
Date:	19/08/2024
Author:	SNC
Reference:	ER112

EcoResolve



Environment & Design

Source: BnI, Maxar, Earthstar Geographics, and the GIS User Community

FIGURE 8 NOVEMBER 2023 FLORA SURVEY

1.5.3 Plant community types

The vegetation community present on site was identified as PCT 3433 - *Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest* (**Table 2**). This PCT forms part of the BC Act listed EEC Lower Hunter Spotted Gum—Ironbark Forest in the Sydney Basin Bioregion. It does not, however, form part of any EPBC Act listed EEC. **Appendix C** includes a list of the plant species which were identified during the site visits. This PCT was the best fit for the vegetation on site.

TABLE 2 - SITE PCT CHARACTERISTICS

PCT ID	3433
PCT name	Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
Vegetation formation	Dry Sclerophyll Forests (Shrub/grass sub-formation)
Vegetation class	Hunter-Macleay Dry Sclerophyll Forests
Associated TEC	10942 - Lower Hunter Spotted Gum—Ironbark Forest in the Sydney Basin Bioregion.
Per cent cleared value (%)	80.2 %
Extent within subject land (ha)	51.69 ha

Condition classes, patch size and vegetation zones

Areas of native vegetation were assigned to one of three vegetation zones based on their condition ((low, moderate or high: **Table 3**) based on factors such as vegetation health, fire history, and land management. These condition classes are characterised as follows.

- **Low Condition** - areas in low condition have experienced disturbances like bushfires or other human activities that have negatively impacted the natural vegetation. Vegetation in low-condition areas may be sparse, dominated by invasive species, or struggling to regenerate naturally. This condition class also includes areas where woody vegetation has been removed but the ground layer remains dominated by native species, such as grazing paddocks.
- **Moderate Condition** - areas in moderate-condition are diverse and have a more balanced mix of native and non-native species.
- **High Condition** - areas in high condition represent the best-preserved and healthiest parts of the vegetation communities. Vegetation in high-condition areas is dominated by native species and display a high level of biodiversity.

VI scores for these three vegetation zones are presented in **Table 4**. All native vegetation within the subject land forms part of a contiguous tract extending throughout the surrounding landscape. There is relatively little cleared land in the region and the patch of connected native vegetation exceeds 30,000 square kms. The >100 ha patch size class was assigned to both patches on the subject land.



TABLE 3 - VEGETATION ZONES AND PATCH SIZES

Vegetation zone ID	Condition / other defining feature	Area (ha)	Patch size class (select multiple if areas of native vegetation are discontinuous)	No. vegetation integrity plots required	No. VI plots completed	No. VI plots used in assessment	Plot IDs of VI plots used in assessment
3433_low	Reduced native community structure, increased abundance of weed species	4.56	>100 ha	2	2	2	PM01, BHLD_1
3433_moderate	Intact canopy and community structure, invasive flora species present	7.38	>100 ha	3	3	3	BHKH1, BHKH5, BHLD_2
3433_high	Intact canopy and community structure, none to minimal invasive flora species present.	39.75	>100 ha	4	4	4	BHKH2, BHKH5, BHKH3, BHKH4

TABLE 4 - VI SCORES

Vegetation zone ID	Composition condition score	Structure condition score	Function condition score	VI score	Hollow bearing trees present?
3433_low	43.3	44.4	21.6	34.7	No
3433_moderate	62.4	87.7	92.3	79.6	Yes
3433_high	45.2	82.2	98.8	71.6	Yes





1.6 Threatened flora and fauna

1.6.1 Review of existing information

EcoResolve used a LoO assessment based on the habitat values on the subject land to determine those threatened species with potential to be impacted by the Project. The LoO generates a list of potentially occurring species by cross-referencing the list of predicted and potential candidate species generated by the BAM-C, BioNet atlas records within 10 km of the subject land and the results of a 10km PMST search. Following site surveys, the LoO incorporates information about the suitability of habitat and the level of survey effort to produce a list of species that require further consideration. Although this process is not necessary as part of a BAM assessment, it provides more scientific rigour in the assessment process by adding further inference for focussing survey effort and impact analysis. Species that have database records occurring within the assessment but are absent from BAM-C generated lists may be added to the assessment, provided they are not vagrant.

The desktop assessment resulted in 75 threatened fauna and 39 threatened flora species being identified as having at least some likelihood of occurrence (**Appendix B**). 103 of those 114 threatened species were considered to have a moderate or high LoO.

1.6.2 Predicted and candidate threatened species.

37 ecosystem and 47 species credit species were predicted to occur by the BAM-C (**Table 5**). An additional 22 dual or species credit species were identified as having a moderate or high likelihood of occurring within the subject land. Following assessment of habitat suitability and other constraints, 48 dual or species credit species were confirmed as candidate species (**Table 5**).



TABLE 5 - PREDICTED ECOSYSTEM AND SPECIES CREDIT SPECIES

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Ecosystem credit species								
Little Eagle (Foraging)	Hieraaetus morphnoides	V	-	YES	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Black Bittern	Ixobrychus flavicollis	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Black Falcon	Falco subniger	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Black-necked Stork	Ephippiorhynchus asiaticus	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Broad-billed Sandpiper	Limicola falcinellus	V	-	YES	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Corben's Long-eared Bat	Nyctophilus corbeni	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Diamond Firetail	Stagonopleura guttata	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Dusky Woodswallow	Artamus cyanopterus cyanopterus	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Eastern False Pipistrelle	Falsistrellus tasmaniensis	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Eastern Grass Owl	Tyto longimembris	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Eastern Osprey	Pandion cristatus	V	-	YES	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Flame Robin	Petroica phoenicea	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Gang-gang Cockatoo	Callocephalon fimbriatum	E	E	YES	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Greater Broad-nosed Bat	Scoteanax rueppellii	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Grey-headed Flying-fox	Pteropus poliocephalus	V	V	YES	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Large Bent-winged Bat	Miniopterus orianae oceanensis	V	-	YES	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Little Bent-winged Bat	Miniopterus australis	V	-	YES	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Little Lorikeet	Glossopsitta pusilla	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
New Holland Mouse	Pseudomys novaehollandiae	-	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Painted Honeyeater	Grantiella picta	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Regent Honeyeater	Anthochaera phrygia	CE	CE	YES	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Rose-crowned Fruit-Dove	Ptilinopus regina	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Scarlet Robin	Petroica boodang	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	V	V	YES	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
South-eastern Hooded Robin	Melanodryas cucullata cucullata	E	E	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Speckled Warbler	Chthonicola sagittata	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Spotted Harrier	Circus assimilis	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Spotted-tailed Quoll	Dasyurus maculatus	V	E	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Square-tailed Kite	Lophoictinia isura	V	-	YES	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Turquoise Parrot	Neophema pulchella	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Varied Sittella	Daphoenositta chrysoptera	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
White-bellied Sea-Eagle	Haliaeetus leucogaster	V	-	YES	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
White-throated Needletail	Hirundapus caudacutus	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Wompoo Fruit-Dove	Ptilinopus magnificus	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Yellow-bellied Glider	Petaurus australis	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Yellow-bellied Sheath-tail-bat	Saccolaimus flaviventris	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Species credit species								
Barking Owl (Breeding)	Ninox connivens	V	-	YES	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Leafless Tongue Orchid	Cryptostylis hunteriana	V	V	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Tall Knotweed	Persicaria elatior	V	V	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
White-flowered Wax Plant	Cynanchum elegans	E	E	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Prasophyllum sp. Wybong	Prasophyllum sp. Wybong	-	CE	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Pale-headed Snake	Hoplocephalus bitorquatus	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Southern Greater Glider	Petauroides volans	E	E	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Bush Stone-curlew	Burhinus grallarius	E	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Austral Toadflax	Thesium australe	V	V	NO	BAM-C, BIONET	YES	-	
Koala	Phascolarctos cinereus	E	E	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Little Eagle (Breeding)	Hieraaetus morphnoides	V	-	YES	BAM-C, BIONET	NO	Habit constraints not present (Nest trees - live (occasionally dead) large old trees within vegetation)	-
Melaleuca biconvexa	Biconvex Paperbark	V	V	NO	BAM-C, PROTECTED	YES	-	3433_low, 3433_moderate, 3433_high





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
					MATTERS, BIONET			
Black-eyed Susan	Tetratheca juncea	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Broad-billed Sandpiper	Limicola falcinellus	V	-	YES	BAM-C, BIONET	NO	Habitat constraints not present (As per Important Habitat map)	3433_low, 3433_moderate, 3433_high
Brush-tailed Phascogale	Phascogale tapoatafa	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Brush-tailed Rock-wallaby	Petrogale penicillata	E	V	NO	BAM-C, PROTECTED MATTERS, BIONET	NO	Habitat constraints not present (Land within 1 km of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or clifflines)	-
Bush Stone-curlew	Burhinus grallarius	E	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Bynoe's Wattle	Acacia bynoeana	E	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Netted Bottle Brush	Callistemon linearifolius	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Charmhaven Apple	Angophora inopina	V	V	NO	BAM-C, PROTECTED	YES	-	3433_low, 3433_moderate, 3433_high





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
					MATTERS, BIONET			
Common Planigale	Planigale maculata	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Eastern Cave Bat	Vespadelus troungtoni	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Eastern Osprey	Pandion cristatus	V	-	YES	BAM-C, BIONET	NO	Habitat constraints not present (Presence of stick-nests in living and dead trees (>15m) or artificial structures within 100m of a floodplain for nesting)	-
Eastern Pygmy-possum	Cercartetus nanus	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Dromaius novaehollandiae - endangered population	Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	EP	-	NO	BAM-C, BIONET	NO	Geographic constraint not applicable (Port Stephens LGA)	-
Eucalyptus parramattensis subsp. decadens	Eucalyptus parramattensis subsp. decadens	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Gang-gang Cockatoo	Callocephalon fimbriatum	E	E	YES	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Green and Golden Bell Frog	Litoria aurea	E	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Green-thighed Frog	Litoria brevipalmata	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Grey-headed Flying-fox	Pteropus poliocephalus	V	V	YES	BAM-C, PROTECTED MATTERS, BIONET	NO	Habitat constraints not present (Breeding camps)	-
Maundia triglochinos	Maundia triglochinos	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Heath Wrinklewort	Rutidosis heterogama	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Koala	Phascolarctos cinereus	E	E	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Large Bent-winged Bat	Miniopterus orianae oceanensis	V	-	YES	BAM-C, BIONET	NO	Habitat constraints not present (Caves; Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records with microhabitat code "IC - in cave)	-





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
							" observation type code "E nest-roost " with numbers of individuals >500)	
Large-eared Pied Bat	Chalinolobus dwyeri	V	E	NO	BAM-C, PROTECTED MATTERS, BIONET	NO	Habitat constraints not present – “Sandstone cliffs or ledges or within 100 m or Sandstone foot slopes or within 100 m”	3433_low, 3433_moderate, 3433_high
Leionema lamprophyllum subsp. fractum	Leionema lamprophyllum subsp. fractum	CE	CE	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Little Bent-winged Bat	Miniopterus australis	V	-	YES	BAM-C, BIONET	NO	Habitat constraints not present (Caves; Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records with microhabitat code "IC - in cave " observation type code "E nest-roost " with numbers of individuals >500 -Or from the scientific literature)	-





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Magenta Lilly Pilly	Syzygium paniculatum	E	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Mahony's Toadlet	Uperoleia mahonyi	E	E	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Masked Owl	Tyto novaehollandiae	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Netted Bottle Brush	Callistemon linearifolius	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Pokolbin Mallee	Eucalyptus pumila	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Powerful Owl	Ninox strenua	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Pterostylis chaetophora	Pterostylis chaetophora	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Red Helmet Orchid	Corybas dowlingii	E	-	NO	BAM-C, BIONET	NO	Geographic constraint not applicable (East of Morpeth)	3433_low, 3433_moderate, 3433_high
Regent Honeyeater	Anthochaera phrygia	CE	CE	YES	BAM-C, PROTECTED	YES	-	3433_low, 3433_moderate, 3433_high





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
					MATTERS, BIONET			
Rough Doubletail	Diuris praecox	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Scant Pomaderris	Pomaderris queenslandica	E	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Brown Pomaderris	Pomaderris brunnea	E	V	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Broad-headed Snake	Hoplocephalus bungaroides	E	E	YES	BAM-C, BIONET	NO	Habitat constraint not present: Including escarpments, outcrops and pagodas within the Sydney Sandstone geologies	3433_low, 3433_moderate, 3433_high
Singleton Mint Bush	Prostanthera cineolifera	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Slaty Red Gum	Eucalyptus glaucina	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Small-flower Grevillea	Grevillea parviflora subsp. parviflora	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Sooty Owl	Tyto tenebricosa	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	V	V	YES	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Southern Myotis	Myotis macropus	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Spyridium burragorang - endangered population	Spyridium burragorang in the Cessnock local government area	EP	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Square-tailed Kite	Lophoictinia isura	V	-	YES	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Squirrel Glider	Petaurus norfolcensis	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Stephens' Banded Snake	Hoplocephalus stephensii	V	-	NO	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Striped Legless Lizard	Delma impar	V	V	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Swift Parrot	Lathamus discolor	E	CE	YES	BAM-C, PROTECTED	YES	-	3433_low, 3433_moderate, 3433_high





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
					MATTERS, BIONET			
Wallum Froglet	Crinia tinnula	V	-		BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
White-bellied Sea-Eagle	Haliaeetus leucogaster	V	MAR	YES	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Black-breasted Buzzard	Hamirostra melanosternon	V	-	YES	BAM-C, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Dillwynia tenuifolia	Dillwynia tenuifolia	V	-	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Euphrasia arguta	Euphrasia arguta	CE	CE	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Illawarra Greenhood	Pterostylis gibbosa	E	E	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
North Rothbury Persoonia	Persoonia pauciflora	CE	CE	NO	BAM-C, PROTECTED MATTERS, BIONET	YES	-	3433_low, 3433_moderate, 3433_high
Wallum Froglet	Crinia tinnula	V	-	NO	BAM-C, PROTECTED	YES	-	3433_low, 3433_moderate, 3433_high





Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
MATTERS, BIONET								





1.6.3 Field surveys

A diverse range of threatened species were considered to have at least some likelihood of occurring on the subject land and a variety of survey methods were used to investigate their presence. Fauna surveys were conducted according to current guidelines and accepted practices across the subject land, in 2023 during May, June, August, September, October, November and December. Surveys were also conducted in January, May and June of 2024 (**Figures 3 - 7**). **Table 6** details the species targeted, survey methods used and the survey results.

TABLE 6 – THREATENED SPECIES SURVEYS ON THE SUBJECT LAND

Threatened species surveys									Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
Common name	Scientific name	BC Act	EPBC Act	Survey method	Timing of survey – within recommended period?	Effort (hours and no. people)	Present		
FLORA									
Bynoe's Wattle	<i>Acacia bynoeana</i>	E	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Angophora inopina	<i>Angophora inopina</i>	V	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Charmhaven Apple	<i>Angophora inopina</i>	V	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Thick-Lip Spider Orchid	<i>Caladenia tessellata</i>	E	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Dillwynia tenuifolia	<i>Dillwynia tenuifolia</i>	V	-	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Leafless Tongue-orchid	<i>Cryptostylis hunteriana</i>	V	V	2 Phase Grid, 5m transects	Yes (27/11/2023 – 29/11/2023)	3ppl - 21hrs	No	No	
White-flowered Wax Plant	<i>Cynanchum elegans</i>	E	E	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Rough Doubletail	<i>Diuris praecox</i>	V	V	2 Phase Grid, 5m transects	Yes (28/08/2023 - 29/08/2023)	2ppl - 8hrs	No	No	
Euphrasia arguta	<i>Euphrasia arguta</i>	CE	CE	2 Phase Grid, 5m transects	Yes (28/08/2023 - 29/08/2023)	2ppl - 8hrs	No	No	
Slaty Red Gum	<i>Eucalyptus glaucina</i>	V	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Eucalyptus parramattensis subsp. decadens	<i>Eucalyptus parramattensis subsp. decadens</i>	V	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Pokolbin Mallee	<i>Eucalyptus pumila</i>	V	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Small-flowered Grevillea	<i>Grevillea parviflora subsp. parviflora</i>	V	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Illawarra Greenhood	<i>Pterostylis gibbosa</i>	E	E	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Maundia triglochinoxides	<i>Maundia triglochinoxides</i>	V	-	2 Phase Grid, 5m transects	Yes (27/11/2023 – 29/11/2023)	3ppl - 21hrs	No	No	
Biconvex Paperbark	<i>Melaleuca biconvexa</i>	V	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Netted Bottle Brush	<i>Callistemon linearifolius</i>	V	-	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Ozothamnus tessellatus	<i>Ozothamnus tessellatus</i>	V	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Tall Knottweeed	<i>Persicaria elatior</i>	V	V	5m transects	Yes (03/05/2023) & 13/05/2024	4 hrs 4ppl	No	No	
Hairy Geebung	<i>Persoonia hirsuta</i>	E	E	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
North Rothbury Persoonia	<i>Persoonia pauciflora</i>	CE	CE	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Scant Pomaderris	<i>Pomaderris queenslandica</i>	E	-	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
A leek orchid	<i>Prasophyllum sp. Wybong</i>	-	CE	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Singleton Mint Bush	<i>Prostanthera cineolifera</i>	V	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Pterostylis chaetophora	<i>Pterostylis chaetophora</i>	V	-	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Eastern Australian Underground Orchid	<i>Rhizanthella slateri</i>	V, EP (Great Lakes)	E	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Brown Pomaderris	<i>Pomaderris brunnea</i>	E	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Native Guava	<i>Rhodomyrtus psidioides</i>	CE	CE	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Heath Wrinklewort	<i>Rutidosis heterogama</i>	V	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Spyridium burragorang	<i>Spyridium burragorang</i> (This project is not located in Cessnock LGA)	E	-	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Magenta Lilly Pilly	<i>Syzygium paniculatum</i>	E	V	2 Phase Grid, 5m transects	Yes (05/06/2023 - 07/06/2023)	3ppl - 21hrs	No	No	
Black-eyed Susan	<i>Tetradlea juncea</i>	V	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
Austral Toadflax	<i>Thesium australe</i>	V	V	2 Phase Grid, 5m transects	Yes (09/10/2023 - 10/10/2023)	3ppl - 12hrs	No	No	
FAUNA									

Threatened species surveys								
Common name	Scientific name	BC Act	EPBC Act	Survey method	Timing of survey – within recommended period?	Effort (hours and no. people)	Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
Pink-tailed Legless Lizard	<i>Aprasia parapulchella</i>	V	V	Artificial cover checks	Yes (16/10/2023 – 4/12/2023)	2ppl - 51hrs	No	No
Dusky Wood swallow	<i>Artamus cyanopterus cyanopterus</i>	V	-	Opportunistic	N/A	N/A	No	No
Diamond Firetail	<i>Stagonopleura guttata</i>	V	V	Opportunistic	N/A	N/A	No	No
Red Goshawk	<i>Erythrotriorchis radiatus</i>	E	E	Opportunistic	N/A	N/A	No	No
Little Eagle	<i>Hieraetus morphnoides</i>	V	-	Opportunistic	N/A	N/A	No	No
Dromaius novaehollandiae - endangered population	<i>Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area</i>	EP	-	Opportunistic	N/A	N/A	No	No
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	V	MAR	Opportunistic	N/A	N/A	No	No
Black-breasted Buzzard	<i>Hamirostra melanosternon</i>	V	-	Opportunistic	N/A	N/A	No	No
Bush Stone-curlew	<i>Burhinus grallarius</i>	E	-	Opportunistic	N/A	N/A	No	No
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	V	E	Opportunistic	N/A	N/A	No	No
South-eastern Glossy Black-Cockatoo	<i>Calyptorhynchus lathami</i>	V	V	Opportunistic & Camera Trap	Yes – (16/07/2024 – 15/08/2024)	21 Camera Traps, 29 Trap nights on all potential nest hollows	No	No
Eastern Pygmy-possum	<i>Cercartetus nanus</i>	V	-	Camera trap	Yes (6/11/2023 - 20/11/2023)	N/A	No	No
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	V	E	Anabat deployment	Yes (10/10/2023 – 14/10/2023)	N/A	Yes	Yes
Spotted Harrier	<i>Circus assimilis</i>	V	-	Opportunistic	N/A	N/A	No	No
Wallum Froglet	<i>Crinia tinnula</i>	V	-	Spotlighting and Call Playback	Yes (23/01/2024 – 25/01/2024)	2 ppl – 2 hours	No	No
Varied Sittella	<i>Daphoenositta chrysoptera</i>	V	-	Opportunistic	N/A	N/A	No	No
Spotted tailed quoll	<i>Dasyurus maculatus maculatus</i>	V	E	Camera trap	Yes (6/11/2023 - 20/11/2023)	N/A	No	No
Striped Legless Lizard	<i>Delma impar</i>	V	V	Artificial cover checks	Yes (16/10/2023 – 4/12/2023)	2ppl - 51hrs	No	No
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	E	-	Opportunistic	N/A	N/A	No	No
Grey Falcon	<i>Falco hypoleucos</i>	V	V	Opportunistic	N/A	N/A	No	No
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	V	-	Anabat Deployment	Yes (10/10/2023 – 14/10/2023)	N/A	Yes	Yes
Little Lorikeet	<i>Glossopsitta pusilla</i>	V	-	Opportunistic	N/A	N/A	No	No
Painted Honeyeater	<i>Grantiella picta</i>	V	V	Opportunistic	N/A	N/A	No	No
White-throated Needletail	<i>Hirundapus caudacutus</i>	-	V	Opportunistic	N/A	N/A	No	No
Pale-headed snake	<i>Hoplocephalus bitorquatus</i>	V	-	Spotlighting	Yes (23/01/2024 – 25/01/2024)	2ppl - 6hrs	No	No
		V	-	Funnel trap	Yes (6/11/2023 - 10/11/2023)	72 trap nights, 24 traps (<50 ha)	No	No
Broad-headed Snake	<i>Hoplocephalus bungaroides</i>	E	E	Spotlighting	Yes (23/01/2024 – 25/01/2024)	2ppl - 6hrs	No	No
		E	E	Funnel trap	Yes (6/11/2023 - 10/11/2023)	72 trap nights, 24 traps (<50 ha)	No	No
Stephens' Banded Snake	<i>Hoplocephalus stephensii</i>	V	-	Spotlighting & Nocturnal Road surveys	Yes (23/01/2024 – 25/01/2024)	2ppl - 6hrs	No	No
Swift Parrot	<i>Lathamus discolor</i>	E	CE	Opportunistic	N/A	N/A	Assumed	Yes
Broad-billed Sandpiper	<i>Limicola falcinellus</i>	V	-	Opportunistic	N/A	N/A	No	No
Bar Tailed Godwit	<i>Limosa lapponica baueri</i>	-	V	Opportunistic	N/A	N/A	No	No
Green and Golden Bell Frog	<i>Litoria aurea</i>	E	V	Spotlighting and Call Playback	Yes (23/01/2024 – 25/01/2024)	2 ppl – 2 hours	No	No
Green-thighed Frog	<i>Litoria brevipalmata</i>	V	-	Spotlighting and Call Playback	Yes (23/01/2024 – 25/01/2024)	2 ppl – 2 hours	No	No
Square-tailed Kite	<i>Lophoictinia isura</i>	V	-	Opportunistic	N/A	N/A	No	No
(Black-chinned Honeyeater (eastern subspecies))	<i>Melithreptus gularis gularis</i>	V	-	Opportunistic	N/A	N/A	No	No
Eastern Coastal Free-tail Bat	<i>Micronomus norfolkensis</i>	V	-	Anabat deployment	Yes (10/10/2023 – 14/10/2023)	N/A	Yes	Yes
Little Bentwing-bat	<i>Miniopterus australis</i>	V	-	Anabat deployment	Yes (10/10/2023 – 14/10/2023)	N/A	Yes	Yes
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	V	-	Anabat deployment	Yes (10/10/2023 – 14/10/2023)	N/A	Yes	Yes
Southern Myotis	<i>Myotis macropus</i>	V	-	Anabat deployment	Yes (10/10/2023 – 14/10/2023)	N/A	Yes	Yes
Turquoise Parrot	<i>Neophema pulchella</i>	V	-	Opportunistic	N/A	N/A	No	No

Threatened species surveys									Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
Common name	Scientific name	BC Act	EPBC Act	Survey method	Timing of survey – within recommended period?	Effort (hours and no. people)	Present		
Barking Owl	<i>Ninox connivens</i>	V	-	Yes (28/08/2023 - 30/08/2023) & (03/06/2024) – 05/06/2024)	2ppl - 12hrs	Yes (28/08/2023 - 30/08/2023) & (03/06/2024) – 05/06/2024)	No	No	
Powerful Owl	<i>Ninox strenua</i>	V	-	Yes (28/08/2023 - 30/08/2023) & (03/06/2024) – 05/06/2024)	2ppl - 12hrs	Yes (28/08/2023 - 30/08/2023) & (03/06/2024) – 05/06/2024)	No	No	
Parma wallaby	<i>Notamacropus parma</i>	V	V	Camera trap	Yes (6/11/2023 - 20/11/2023)	N/A	No	No	
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>	V	-	Camera trap	Yes (6/11/2023 - 20/11/2023)	N/A	No	No	
Blue Billed Duck	<i>Oxyura australis</i>	V	-	Opportunistic	N/A	N/A	No	No	
Eastern Osprey	<i>Pandion cristatus</i>	V	-	Opportunistic	N/A	N/A	No	No	
Southern Greater Glider	<i>Petauroides volans</i>	E	E	Spotlighting	Yes (28/08/2023 - 30/08/2023)	2ppl - 6hrs	No	No	
Yellow Bellied Glider	<i>Petaurus australis</i>	V	V	Spotlighting and Call Playback	Yes (28/08/2023 - 30/08/2023)	2ppl - 6hrs	No	No	
Squirrel Glider	<i>Petaurus norfolcensis</i>	V	-	Spotlighting and Call Playback	Yes (28/08/2023 - 30/08/2023)	2ppl - 6hrs	Assumed	Yes	
Brush-tailed rock wallaby	<i>Petrogale penicillata</i>	E	V	Camera trap	Yes (6/11/2023 - 20/11/2023)	N/A	No	No	
Scarlet Robin	<i>Petroica boodang</i>	V	-	Opportunistic	N/A	N/A	No	No	
Koala	<i>Phascolarctos cinereus</i>	E	E	SAT & Spotlighting	Yes 30/08/2023 & (23/01/2024 – 24/01/2024)	N/A	Assumed	Yes	
Common planigale	<i>Planigale maculata</i>	V	-	Camera trap	Yes (6/11/2023 - 20/11/2023)	N/A	No	No	
Grey-crowned Babbler (eastern subspecies	<i>Pomatostomus temporalis temporalis</i>	V	-	Opportunistic	N/A	N/A	No	No	
New Holland mouse	<i>Pseudomys novaehollandiae</i>	-	V	Camera trap	Yes (6/11/2023 - 20/11/2023)	N/A	No	No	
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	V	V	Day time Camp Survey & Opportunistic	Yes (09/10/2023 - 10/10/2023) & (27/11/2023 – 29/11/2023)	3ppl - 24hrs	No	No	
Wompoo Fruit-Dove	<i>Ptilinopus magnificus</i>	V	-	Opportunistic	N/A	N/A	No	No	
Australian Painted Snipe	<i>Rostratula australis</i>	E	E	Opportunistic	N/A	N/A	No	No	
Yellow-bellied Sheathtail-bat	<i>Saccolaimus flaviventris</i>	V	-	Anabat deployment	Yes (10/10/2023 – 14/10/2023)	N/A	Yes	Yes	
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	V	-	Anabat deployment	Yes (10/10/2023 – 14/10/2023)	N/A	Yes	Yes	
Masked Owl	<i>Tyto novaehollandiae</i>	V	-	Spotlighting and Call Playback	Yes (28/08/2023 - 30/08/2023) & (03/06/2024) – 05/06/2024)	2ppl - 12hrs	Yes	Yes	
Sooty Owl	<i>Tyto tenebricosa</i>	V	-	Spotlighting and Call Playback	Yes (28/08/2023 - 30/08/2023)	2ppl - 12hrs	No	No	
Mahony's Toadlet	<i>Uperoleia mahonyi</i>	E	E	Spotlighting and Call Playback	Yes (23/01/2024 – 25/01/2024)	2 ppl – 2 hours	No	No	
Eastern Cave Bat	<i>Vespadelus troungtoni</i>	V	-	Anabat deployment	Yes (10/10/2023 – 14/10/2023)	N/A	Yes	Yes	
Corben's Long-eared Bat	<i>Nyctophilus corbeni</i>	V	V	Anabat deployment	Yes (10/10/2023 – 14/10/2023)	N/A	No	No	



FIGURE 9 FAUNA SURVEYS



1.6.4 Weather conditions

Weather conditions are known to significantly affect the likelihood of detection of some threatened species. Fauna surveys were conducted at times when weather conditions were neutral, if not optimal for the detection of weather-sensitive species, and in accordance with relevant guidelines and recommendations **Table 7** details the timing and environmental conditions of fauna surveys on the subject land at BoM Station 61428 (BoM, 2023).

TABLE 7 - WEATHER CONDITIONS DURING SURVEYS

Targeted species	Date	Time	Temperature (°C)		Relative humidity (%)		Rainfall (mm)		Max wind speed (km/h)		Cloud cover (oktas)		Moon Phase
			Min	Max	48 hours prior	On day of survey	48 hours prior	On day of survey	48 hours prior	On day of survey	48 hours prior	On day of survey	
SPOTLIGHTING & CALL PLAYBACK													
Squirrel Glider (<i>Petaurus norfolcensis</i>)	28/08/2023 – 30/08/2023	6:15pm – 8:00pm	4.6	22.4	100	100	0.2	0	35	31	0.0	2.5	N/A
Yellow Bellied Glider (<i>Petaurus australis</i>)			4.4	24.8	100	89	0	0.2	31	22	2.0	2.0	
Southern Greater Glider (<i>Petauroides volans</i>)			5.7	27.3	100	67	0	0	31	52	2.9	1.5	
Sooty Owl (<i>Tyto tenebricosa</i>)													
Barking Owl (<i>Ninox connivens</i>)													
Masked Owl (<i>Tyto novaehollandiae</i>)													
Powerful Owl (<i>Ninox strenua</i>)													
Barking Owl (<i>Ninox connivens</i>)	3/06/2024 – 5/06/2024	5:35pm – 7:00pm	9.6	16.3	100	56	32.6	0.2	13	22	8	8	N/A
Masked Owl (<i>Tyto novaehollandiae</i>)			9.5	16.0	88	57	30.6	0	15	20	8	8	
Powerful Owl (<i>Ninox strenua</i>)			5.3	18.1	56	67	0.2	0	22	6	8	3	
Green-thighed Frog (<i>Litoria brevipalmata</i>)	23/01/2024 – 25/01/2024)	8:10pm – 8:37pm	19.4	28.9	72	71	0	0.4	46	37	0.3	2.9	Waxing Gibbous
Green and Golden Bell Frog (<i>Litoria aurea</i>)		8:43pm – 9:09pm	14.0	37.6	60	69	0	0	39	31	3.3	0.0	(93% illuminated)
Wallum Froglet (<i>Crinia tinnula</i>)		9:30pm – 9:48pm	22.1	41.7	71	44	0.4	0	37	41	2.9	0.4	Waxing Gibbous (97% illuminated) Waxing Gibbous (99%)
SPOTLIGHTING													
Broad-headed Snake (<i>Hoplocephalus bungaroides</i>)	23/01/2024 – 25/01/2024)	8:45pm – 10:30pm	19.4	28.9	72	71	0	0.4	46	37	0.3	2.9	Waxing Gibbous
		9:15pm – 10:45pm	14.0	37.6	60	69	0	0	39	31	3.3	0.0	(93% illuminated)
Pale-headed Snake (<i>Hoplocephalus bitorquatus</i>)		8:30pm – 9:30pm	22.1	41.7	71	44	0.4	0	37	41	2.9	0.4	Waxing Gibbous (97% illuminated)
Koala (<i>Phascolarctos cinereus</i>)	Waxing Gibbous												
Stephens' Banded Snake (<i>Hoplocephalus stephensii</i>)	(99%)												
ARTIFICIAL COVER CHECK													
Hunter Valley Delma (<i>Delma vascolineata</i>)	16/10/2023	9:00am-12:00pm	No data	No data	52	No data	No data	No data	No data	No data	No data	No data	Waxing Crescent
Pink-tailed Legless Lizard (<i>Aprasia parapulchella</i>)	17/10/2023	9:00am-11:30pm	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data	(2% illuminated)
Striped Legless Lizard (<i>Delma impar</i>)	23/10/2023	9:00am - 12:00pm	8.9	31	77	37	0	0	33	41	No data	No data	Waxing Crescent (6% illuminated)
	24/10/2023	9:00am - 10:00am	8	35.5	66	60	0	0	48	31	1	No data	Waxing Gibbous (61% illuminated)
	30/10/2023	9:00am - 11:00am	8.4	33.2	97	60	9.8	0	30	52	5	No data	Waxing Gibbous (72% illuminated)
	31/10/2023	9:00am - 11:00am	16.3	32.7	74	27	0	0	31	No data	No data	No data	Wanning Gibbous (98% illuminated)
	6/11/2023	9:00am - 10:00am	10.5	22	77	72	0	11.8	39	33	2	8	Wanning Gibbous (94% illuminated)
	7/11/2023	9:00am - 10:00am	10.2	26.9	81	75	0	0	35	35	8	1	Wanning Crescent (43% illuminated)
	8/11/2023	9:00am - 10:00am	9.8	29.9	72	77	11.8	0	33	33	8	5	Wanning Crescent (34% illuminated)
													Wanning Crescent (25% illuminated)

Targeted species	Date	Time	Temperature (°C)		Relative humidity (%)		Rainfall (mm)		Max wind speed (km/h)		Cloud cover (oktas)		Moon Phase
			Min	Max	48 hours prior	On day of survey	48 hours prior	On day of survey	48 hours prior	On day of survey	48 hours prior	On day of survey	
	13/11/2023	9:00am - 1:00pm	18.3	25.1	99	66	0	0	31	43	No data	5	New Moon (0% illuminated)
	20/11/2023	9:00am - 1:00pm	16.4	No data	No data	90	0.4	0	No data	No data	1	8	First Quarter (46% illuminated)
	27/11/2023	9:00am - 1:00pm	15.2	29.5	97	69	8.6mm	No data	19	No data	8	No data	Full Moon (100% illuminated)
	4/12/2023	9:00am - 1:00pm	16.7	26.4	90	70	No data	0.6	35	33	8	5	Wanning Gibbous (61% illuminated)
FUNNEL TRAPS													
Pale-headed snake (<i>Hoplocephalus bitorquatus</i>)	6/11/2023	12:00pm – 1:00pm	10.5	22	77	72	0	11.8	39	33	2	8	Wanning Crescent (43% illuminated)
Broad-headed Snake (<i>Hoplocephalus bungaroides</i>)	7/11/2023	12:29pm – 12:40pm and 3:41pm-3:56pm	10.2	26.9	81	75	0	0	35	35	8	1	Wanning Crescent (34% illuminated)
	8/11/2023	10:24am-10:30am and 4:03pm-4:18pm	9.8	29.9	72	77	11.8	0	33	33	8	5	Wanning Crescent (25% illuminated)
	9/11/2023	10:38am-11:18am and 3:31pm-3:47pm	14.6	29.9	75	95	0	0	35	69	1	1	Wanning Crescent (18% illuminated)
	10/11/2023	10:25am-10:42am	14.7	28.8	77	80	0	17.6	33	37	5	No data	Wanning Crescent (11% illuminated)
CAMERA TRAPPING													
Eastern Pygmy-possum (<i>Cercartetus nanus</i>)	6/11/2023 – 20/11/2023	Cam4	13.1	27.5	81	87	3.1	2.2	37	41	3	3	N/A
Spotted Tailed Quoll (<i>Dasyurus maculatus maculatus</i>)		1:29pm (6/11) – 10:55am (20/11)											
Parma Wallaby (<i>Notamacropus parma</i>)	8/11/2023 - 20/11/2023	Cam1	13.1	27.5	81	87	3.1	2.2	37	41	3	3	N/A
Brush-tailed Rock Wallaby (<i>Petrogale penicillata</i>)		1:20pm (6/11) – 10:57am (20/11)											
Common Planigale (<i>Planigale maculata</i>)		Cam6											
New Holland Mouse (<i>Pseudomys novaehollandiae</i>)		2:23pm (8/11) – 11:00am (20/11)											
Brush-tailed Phascogale (<i>Phascogale tapoatafa</i>)	22/01/2024 – 25/01/2024	Cam2	18.9	33	68	61	0.1	0.1	31	37	4	6	N/A
		2:36pm (8/11) – 11:02am (20/11)											
		Cam5											
		2:45pm (8/11) – 10:41am (20/11)											
		Cam8											
		3:25pm (8/11) – 11:35am (20/11)											
		Cam3											
		12:44pm (8/11) – no data (20/11)											
		4:56pm (22/01) – 8:22pm (25/01)											
SPOT ASSESSMENT METHOD (SAT)													
Koala (<i>Phascolarctos cinereus</i>)	30/08/2023	3:30pm- 5:30pm	5.7	27.3	100	67	0	0	31	52	No data	1	Waxing Gibbous (98% illuminated)

Targeted species	Date	Time	Temperature (°C)		Relative humidity (%)		Rainfall (mm)		Max wind speed (km/h)		Cloud cover (oktas)		Moon Phase	
			Min	Max	48 hours prior	On day of survey	48 hours prior	On day of survey	48 hours prior	On day of survey	48 hours prior	On day of survey		
ACOUSTIC RECORDER (ANABAT)														
Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>) Little Bentwing-bat (<i>Miniopterus australis</i>) Large Bent-winged Bat (<i>Miniopterus orianae oceanensis</i>) Eastern Coastal Free-tail Bat (<i>Micronomus norfolkensis</i>) Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>) Eastern Cave Bat (<i>Vespadelus troughtoni</i>) Southern Myotis (<i>Myotis macropus</i>) Eastern False Pipistrelle (<i>Falsistrellus tasmaniensis</i>) Corben's Long-eared Bat (<i>Nyctophilus corbeni</i>)	10/10/2023 – 14/10/2023	N/A	9.9	16.8	72	60	0	0	26	13	1	1	N/A	
THREATENED FLORA TWO PHASE GRID (5m or 10m TRANSECTS)														
<i>Acacia bynoeana</i> (Bynoe's Wattle)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3 (Avg)	27 (Avg)	74% (Avg)	70 (Avg)	0.3(Avg)	0(Avg)	34 (Avg)	34 (Avg)	No data	1 (Avg)	N/A	
<i>Cynanchum elegans</i> (White-flowered Wax Plant)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3 (Avg)	27 (Avg)	74% (Avg)	70 (Avg)	0.3(Avg)	0(Avg)	34 (Avg)	34 (Avg)	No data	1 (Avg)	N/A	
<i>Angophora inopina</i> (Charmhaven Apple)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3 (Avg)	27 (Avg)	74% (Avg)	70 (Avg)	0.3 (Avg)	0(Avg)	34(Avg)	34(Avg)	No data	1 (Avg)	N/A	
<i>Caladenia tessellate</i> (Thick-Lip Spider Orchid)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3 (Avg)	27 (Avg)	74% (Avg)	70%(Avg)	0.3(Avg)	0 (Avg)	34 (Avg)	34(Avg)	No data	1 (Avg)	N/A	
<i>Callistemon linearifolius</i> (Netted Bottle Brush)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3 (Avg)	27 (Avg)	74 (Avg)	70 (Avg)	0.3 (Avg)	0 (Avg)	34 (Avg)	34 (Avg)	No data	1 (Avg)	N/A	
<i>Corybas dowlingii</i> (Red Helmet Orchid)	3/06/2024 - 4/06/2024	2:00pm – 5:00pm	9.5 (Avg)	16.2 (Avg)	94 (Avg)	56.5 (Avg)	31.6 (Avg)	0.1 (Avg)	14 (Avg)	21 (Avg)	8 (Avg)	8 (Avg)		
<i>Dillwynia tenuifolia</i>	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3 (Avg)	27 (Avg)	74(Avg)	70 (Avg)	0.3 (Avg)	0 (Avg)	34 (Avg)	34 (Avg)	No data	1 (Avg)	N/A	
<i>Diuris praecox</i> (Rough Doubletail)	28/08/2023- 29/08/2023	1:00pm- 5:00pm	5.1 (Avg)	24 (Avg)	100 (Avg)	95 (Avg)	0 (Avg)	0 (Avg)	33 (Avg)	27 (Avg)	No data	No data	N/A	
<i>Euphrasia arguta</i> (<i>Euphrasia arguta</i>)	28/08/2023- 29/08/2023	1:00pm- 5:00pm	5.1 (Avg)	24 (Avg)	100 (Avg)	95 (Avg)	0 (Avg)	0 (Avg)	33 (Avg)	27 (Avg)	No data	No data	N/A	
<i>Eucalyptus glaucina</i> (Slaty Red Gum)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A	
<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A	
<i>Eucalyptus pumila</i> (Pokolbin Mallee)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A	
<i>Grevillea parviflora</i> subsp. <i>parviflora</i> (Small-flowered Grevillea)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A	
<i>Melaleuca biconvexa</i> (Biconvex Paperbark)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A	
<i>Ozothamnus tesselatus</i>	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A	
<i>Persicaria elatior</i> (Tall Knottweeed)	13/05/2024	9:00am – 11:00am	13.4	21.9	100	89	11	0	26	37	8	7	N/A	
<i>Persicaria elatior</i> (Tall Knottweeed)	03/05/2023	9:00am – 11:00am	13.9 °C (Avg)	19.7 °C (Avg)	93 °C (Avg)	100 °C (Avg)	57.8 mm (Avg)	4.4 mm (Avg)	11 km/h (Avg)	2 km/h (Avg)	No data	1 (Avg)	N/A	
<i>Persoonia hirsuta</i> (Hairy Geebung)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A	
<i>Persoonia pauciflora</i> (North Rothbury Persoonia)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A	
<i>Pomaderris brunnea</i> (Brown Pomaderris)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A	
<i>Pomaderris queenslandica</i> (Scant Pomaderris)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A	
<i>Prasophyllum</i> sp. <i>Wybong</i> (A leek orchid)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A	
<i>Prostanthera cineolifera</i> (Singleton Mint Bush)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A	
<i>Pterostylis chaetophora</i>	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A	

Targeted species	Date	Time	Temperature (°C)		Relative humidity (%)		Rainfall (mm)		Max wind speed (km/h)		Cloud cover (oktas)		Moon Phase
			Min	Max	48 hours prior	On day of survey	48 hours prior	On day of survey	48 hours prior	On day of survey	48 hours prior	On day of survey	
<i>Pterostylis gibbosa</i> (Illawarra Greenhood)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A
<i>Rhizanthella slateri</i> (Eastern Australian Underground Orchid)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A
<i>Rhodomyrtus psidioides</i> (Native Guava)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A
<i>Rutidosia heterogama</i> (Heath Wrinklewort)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A
<i>Spyridium burragorang</i> (This project is not located in Cessnock LGA)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A
<i>Syzygium paniculatum</i> (Magenta Lily Pilly)	05/06/2023 - 07/06/2023	8:30am - 3:30pm	8:30am-3:30pm	8.4°C (Avg)	20.5°C (Avg)	84% (Avg)	89°C (Avg)	0mm (Avg)	0mm (Avg)	29km/h (Avg)	20km/h (Avg)	5 (Avg)	N/A
<i>Tetradthea juncea</i> (Black-eyed Susan)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A
<i>Thesium australe</i> (Austral Toadflax)	09/10/2023-10/10/2023	9:00am- 3:00pm	7.3°C (Avg)	27°C (Avg)	74% (Avg)	70% (Avg)	0.3mm (Avg)	0mm (Avg)	34km/h (Avg)	34km/h (Avg)	No data	1 (Avg)	N/A



1.7 Survey results

The surveys detected ten (10) threatened fauna species (**Table 8**). No threatened flora species were recorded. The nine threatened bats were detected via acoustic recorder, analysed by Wingbeat Ecology (**Appendix E**).

The *Calyptorhynchus lathami* (Glossy Black-Cockatoo) is a dual credit species (ecosystem and species credit species) and further investigations were undertaken to establish if the habitat constraints associated with the species credits (breeding habitat in the form of actual nest trees) were present. In this case it required additional surveys with reference to BioNet and EcoResolve conducted additional surveys as outlined briefly below.

EcoResolve conducted surveys for the Glossy Black-Cockatoo to identify signs of breeding and mapped potential nest trees where hollows were at least 8 m above the ground; and hollow diameter is at least 15 cm. Trees that contained these parameters were marked and Camera traps were deployed (16/07/2024 – 15/08/2024) to monitor these 21 tree hollows during the breeding season to confirm presence of any actual nest trees on site. Because no actual nest trees were identified during the further comprehensive surveys, it can be deduced that there is no breeding currently taking place within the site. Given there were no individuals recorded and there were no secondary observations (i.e., chewed orts) this species is only considered to be retained as an ecosystem credit species.

TABLE 8 THREATENED SPECIES RECORDED WITHIN THE SUBJECT LAND

Common name	Scientific name	Date(s) observed	Surveyor(s)	Biodiversity risk weighting (BAM-C & TBDC*)	SAIL entity	Individuals recorded	Habitat Constraints / micro-habitat present on the subject land / vegetation zone	Extent (ha) of suitable habitat present on site (flora or fauna with unit of measure of area)	TBDC species specific recommendations e.g. buffers, general comments (where relevant)	Habitat condition (VI score for each vegetation zone in the polygon – area species only)
Large-eared Pied Bat	Chalinolobus dwyeri	10-14/10/2023	Wingbeat Ecology	BAM-C - 3 TBDC - 3	No	21	None - Habitat Constraints being, within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels (BIONET, 2024).	51.69 ha (foraging)	TBDC comments being, “Species mapping polygon for breeding habitat must use high resolution aerial imagery and topographic maps to identify features on the subject land (caves, scarps, cliffs etc). Polygon must be at least 100m wide (or 50m radius for point locations such as caves) with the breeding habitat features (may be multiple) as the centroid (see Threatened Bat Survey Guide). All breeding habitat on or within 100m of the subject land and the area immediately surrounding the feature must be identified. All habitat on the subject land should also be mapped if present. Use high resolution aerial imagery and topographic maps to identify potential roost habitat features on the subject land within 2km caves, scarps, cliffs etc. Species polygon boundary should align with PCTs on the subject land to which the species is associated that are within 2km of identified potential roost habitat features” (BIONET, 2024)	NA
Eastern False Pipistrelle	Falsistrellus tasmaniensis	10-14/10/2023	Wingbeat Ecology	BAM-C - NA TBDC - NA	No	2	Potential – Species roost constraints poorly understood, paddock trees area considered as potential roosting habitat (BIONET, 2024).	51.69 ha	TBDC general notes being, “Selected <1 for have number of offspring because females do not give birth every (often miscarry etc). Roost requirements poorly known, paddock trees should be flagged as potential roosts” (BIONET, 2024)	NA
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis	10-14/10/2023	Wingbeat Ecology	BAM-C - NA TBDC - NA	No	3	Present - Frequently changes breeding sites, making it challenging to confirm locations. Although it breeds in hollows, it exhibits a nomadic breeding behaviour, occasionally forming large breeding groups, even in man-made structures (BIONET, 2024).	51.69 ha	TBDC general notes being, “Selected <1 for ave number of offspring because females do not give birth every (often miscarry etc). Roost requirements poorly known, paddock trees should be flagged as potential roosts” (BIONET, 2024)	NA
Little Bent-winged Bat	Miniopterus australis	10-14/10/2023	Wingbeat Ecology	BAM-C - 3 TBDC - 3	Yes	80	None - Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records (BIONET, 2024).	51.69 ha (foraging)	TBDC general notes being, “Any impacts on breeding habitat could be considered potentially serious and irreversible. The is retained as dual credit because foraging habitat is broad ranging but breeding habitat is highly specific. Additionally, selected <1 for average number of offspring because females do not give birth every (often miscarry etc) (BIONET, 2024).	NA
Large Bent-winged Bat	Miniopterus orianae oceanensis	10-14/10/2023	Wingbeat Ecology	3	Yes	40	None - Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding (BIONET, 2024).	51.69 ha (foraging)	TBDC General Comments being, “Any impacts on breeding habitat could be considered potentially serious and irreversible. This species is retained as dual credit because foraging habitat is broad ranging but breeding habitat is highly specific. At lower altitudes this species is usually more abundant during winter months, the lower numbers of individuals from October to February are due to females moving to maternity sites. Additionally, selected <1 for average number of offspring because females do not give birth every (often miscarry etc)” (BIONET, 2024).	NA
Southern Myotis	Myotis macropus	10-14/10/2023	Wingbeat Ecology	2	No	2	Present - Waterbodies with permanent pools/stretches 3m or wider, including	15.57 ha	TBDC General Comments being, “The species was allocated to species credit because it is dependent on waterways with pools of 3m wide or	3433_Low – 2.43 ha

Common name	Scientific name	Date(s) observed	Surveyor(s)	Biodiversity risk weighting (BAM-C & TBDC*)	SAIL entity	Individuals recorded	Habitat Constraints / micro-habitat present on the subject land / vegetation zone	Extent (ha) of suitable habitat present on site (flora or fauna with unit of measure of area)	TBDC species specific recommendations e.g. buffers, general comments (where relevant)	Habitat condition (VI score for each vegetation zone in the polygon – area species only)
							rivers, large creeks, billabongs, lagoons, estuaries, dams and other waterbodies, on or within 200m of the site (BIONET, 2024).		greater for foraging (which will be protected under legislation). Habitat surrounding waterways is used for breeding and roosting. Additionally, selected <1 for average number of offspring because females do not give birth every year “(BIONET, 2024).	3433_Moderate 2.86 ha 3433_High – 10.27 ha
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	10-14/10/2023	Wingbeat Ecology	BAM-C - NA TBDC - NA	No	1	Present	51.69 ha	TBDC General Comments being, “The likely response to likely management prescriptions varies from fairly predictable to highly uncertain. For example, limiting visitation to breeding sites may lower the risk to roosting aggregations from human carried pathogens but not for a pathogen that is transmitted between bats from roost to roost. Roost requirements poorly known, paddock trees should be flagged as potential roosts. Additionally, selected <1 for ave number of offspring because females do not give birth every (often miscarry etc”) (BIONET, 2024).	NA
Greater Broad-nosed Bat	Scoteanax rueppellii	10-14/10/2023	Wingbeat Ecology	BAM-C - NA TBDC - NA	No	6	Present – No Habitat constraints identified. Precautionarily considered.	51.69 ha	TBDC General Comments being, “Selected <1 for ave number of offspring because females do not give birth every (often miscarry etc”) (BIONET, 2024).	NA
Eastern Cave Bat	Vespadelus troughtoni	10-14/10/2023	Wingbeat Ecology	BAM-C - 3 TBDC - 3	Yes	4	None - 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 (BIONET, 2024).	51.69 ha (foraging)	TBDC General Comments being, “The species is a full species credit because it cannot reliably be predicted to occur on a site based on the vegetation and other landscape features (for breeding or foraging). Any impacts on breeding habitat used by this species could be considered potentially serious and irreversible. Potential breeding habitat is PCTs associated with the species within 100m of rocky areas, caves, overhangs crevices, cliffs and escarpments, or old mines or tunnels, old buildings and sheds within the potential habitat. When the species is present on the subject land and the proposed impact is not a potential SAIL, standard species credits will be generated. All habitat on the subject land where the subject land is within 2km of caves, scarps, cliffs, rock overhangs and disused mines must be mapped. Use high resolution aerial imagery and topographic maps to identify potential roost habitat features on the subject land within 2km caves, scarps, cliffs etc. Species polygon boundary should align with PCTs on the subject land to which the species is associated that are within 2km of identified potential roost habitat features” (BIONET, 2024).	NA
Masked Owl	Tyto novaehollandiae	5/06/2024	Brea Heidke, Lucy Dunton	BAM-C - 2 TBDC – 2	No	1	Present – lives in dry eucalypt forests and woodlands from sea level to 1100m. Uses large tree hollows for nesting. “A living or dead tree with a hollow >20 cm diameter that occurs >4 metres above the ground” (BioNet, 2024).	45.40 ha	TBDC General comments being, “Masked Owls will use patches of habitat within fragmented areas especially as foraging habitat but also for roosting and occasionally nesting. Hollows in dead stags are commonly selected for roosting and nesting habitat and are a limited resource due to natural attrition. Hollows in live trees are also used, and the prey of owls are often hollow-dependent. Masked Owls may be found nesting in paddock trees and caves. Masked Owls need large home ranges to provide adequate prey resources, with 2000 hectares being a reasonable estimated standard to	3433_Low – 3.51 ha 3433_Moderate 5.34 ha 3433_High – 36.57 ha

Common name	Scientific name	Date(s) observed	Surveyor(s)	Biodiversity risk weighting (BAM-C & TBDC*)	SAIL entity	Individuals recorded	Habitat Constraints / micro-habitat present on the subject land / vegetation zone	Extent (ha) of suitable habitat present on site (flora or fauna with unit of measure of area)	TBDC species specific recommendations e.g. buffers, general comments (where relevant)	Habitat condition (VI score for each vegetation zone in the polygon – area species only)
									expect in many habitats occupied by the species. Care must be taken to avoid disturbing nesting pairs” (BioNet, 2024).	



1.8 Limitations

Targeted surveys were not conducted for Barking Owl (*Ninox connivens*), Bush Stone-curlew (*Burhinus grallarius*), Little Eagle (*Hieraaetus morphnoides*), Broad-billed Sandpiper (*Limicola falcinellus*), Bush Stone-curlew (*Burhinus grallarius*), Eastern Osprey (*Pandion cristatus*), Gang-gang Cockatoo (*Callocephalon fimbriatum*), Square-tailed Kite (*Lophoictinia isura*), Swift Parrot (*Lathamus discolor*) and the White-bellied Sea-Eagle (*Haliaeetus leucogaster*) Black-breasted Buzzard (*Hamirostra melanosternon*). However, the intensive survey coverage of the subject land during the recommended survey periods for these species, trapping, vegetation plots and threatened flora transects provided numerous opportunities to detect them if they had been present.

This assessment considers the maximum extent of the Project based on preliminary information about the Project.

All floristics data was collected under the guidance and supervision of accredited BAM assessors (Arne Bishop and Patrick McEvoy). All fauna surveys were conducted by personnel licensed under a current Animal Research Authority (license no. RVF21/600 (2)). All survey data and associated files are held by EcoResolve.

Stage 2: Impact Assessment

2.1 Avoid and minimise impacts on biodiversity

The proponent will adopt a hierarchy of management principles during the Project, taking into consideration environmental and engineering constraints. These management principles are:

- **Avoidance** – Avoid direct and indirect risk of adverse impacts to Threatened species and their habitats where feasible.
- **Minimise** – Minimise the risk of adverse impacts to Threatened species and their habitats where they cannot be avoided.
- **Mitigate** – Implement mitigation and displacement measures to manage the risk of adverse direct, indirect and cumulative impacts to Threatened species and their habitats.
- **Rehabilitation** – Areas no longer required for operations will be rehabilitated.
- **Provide Offsets** – Where required, offsets will be provided in accordance with the Biodiversity Offset Scheme (BOS) under the *Biodiversity Conservation Act 2016* (NSW) (BC Act).

2.1.1 Project location and design

The location of the Project has considered biodiversity constraints and sought to use previously disturbed areas where possible to minimise vegetation clearing. The proposed location would allow use of the existing road network.

2.1.2 Alternatives considered

There are no alternatives considered. The Project location was determined by the location of coal resources and proximity to existing mine workings.

2.1.3 Assessment of Direct Impacts

Despite the avoidance and mitigation measures considered and recommended, residual impacts will occur under the Project.

2.1.4 Residual direct impacts

The impacts considered in this assessment represent the maximum extent likely to be affected under the Project. The area of native vegetation and threatened species habitat to be impacted is presented in **Figure 2**. A species polygon was constructed for each candidate species detected by targeted surveys according to the advice in their TBDC records.

2.1.5 Impacts to vegetation integrity

This assessment assumes the complete removal of all vegetation within the Project footprint, represented by the reduction of all VI components and scores to 0 (**Table 10 and Table 12**).



2.1.6 Loss of hollow bearing trees

There are numerous hollow bearing trees (HBTs) within in the development site. These are located within all native vegetation zones. A total of 604 individual HBTs were mapped within the subject land (**Table 9**). Some of these contain multiple hollows.

Of the 414 HBTs with medium to large size hollows only 30 were deemed to be potential roosting and nest trees for Masked Owls, i.e., having at least one hollow greater than 20 cm diameter, at least 4m above ground level. An 800m buffer was mapped around each potential nest tree and included as the species home range. An 800m buffer was also mapped around the detected location of the species, which formed a species polygon of 52.36 ha.

TABLE 9 HBTs WITHIN THE SUBJECT LAND

	Number of HBTs
Trees with small hollows (<5 cm)	190
Trees with medium hollows (5-20 cm)	370
Trees with large hollows (> 20 cm)	44
Total number of individual HBTs	604

2.2 Assessment of Indirect impacts

Despite the implementation of appropriate mitigation measures, indirect impacts will be unavoidable under the Project. These impacts are primarily related to the construction and operation phase and are listed in **Table 10**. They include soil and water contamination, barriers to fauna movement, and the generation of excessive dust, light, and noise. Detailed information on these indirect impacts can be found in **Table 10**.

TABLE 10 INDIRECT IMPACTS

Indirect impact (Describe impact, e.g., transport of weeds and pathogens from the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g., construction, operation, rehabilitation)	Likelihood and consequences
Reduced viability of adjacent habitat because of edge effects	All vegetation, all fauna, including identified threatened bat and owl species.	Long-term	Construction and operation	Some loss of viability is almost certain. The effects would be local and limited to a marginal proportion of habitat within the subject land and surrounding landscape.
Reduced viability of adjacent habitat because of noise, dust and light spill from construction areas	All fauna, including identified threatened bat and owl species.	Short-term	Construction	Likely but limited to areas adjacent to construction activity. Consequences dependent on intensity and duration of activity. Fauna may avoid affected habitat or be less successful there. The area affected is unlikely to be a significant proportion of the distribution of most species.
Introduction of invasive flora species to the subject land	All vegetation, all fauna, all fauna, including identified threatened bat and owl species.	Long-term	Construction and operation	Likely. May result in the establishment of new invasive flora species and degradation of native vegetation, although infestations would be relatively easy to identify and control during the construction phase.
Introduction of waste (rubbish, fuels and lubricants, materials) into surrounding ecosystems	All vegetation, all fauna, all fauna, including identified threatened bat and owl species.	Long-term	Construction and operation	Possible, if effective materials storage and waste management systems are not implemented. Consequences may include harm to fauna through ingestion or exposure to rubbish, contamination of soil and waterways etc.
Increased risk of starvation, exposure and loss of shade or shelter	All fauna, all fauna, including identified threatened and owl bat species.	Long-term	Construction and operation	Likely to occur, but the impact on most species is likely to be marginal given the abundance of similar habitat in the surrounding landscape. Less mobile species with smaller ranges may experience greater local competition for these resources.
Loss of breeding habitats	All fauna, all fauna, including identified threatened bat and owl species.	Long-term	Construction and operation	Certain to occur for many species, although impact on hollow-dependent species is directly proportional to the number of hollows removed. As with the increased risks of exposure, starvation etc., most species will not be significantly impacted because of the abundance of similar habitat available.
Hydrological changes	All vegetation	Long-term	Construction and operation	Certain. Mining excavation is likely to have significant permanent effects on local hydrology. Effects on groundwater are uncertain. The viability and health of affected vegetation may be reduced.
Increase in predatory species populations	All fauna, all fauna, including identified threatened bat species.	Long-term	Construction and operation	Possible, although the Project does not include any activities likely to directly promote predator population growth. The presence of waste and disturbance may attract feral predators. This would promote a local decline in species affected by increased predation, however, the consequences for wider populations are impossible to predict as little information about them exists.
Increase in pest animal populations	All fauna, all fauna, including identified threatened bat and owl species.	Long-term	Construction and operation	Possible, although the Project does not include any activities likely to directly promote pest population growth. Some species may benefit from disturbance caused by Project activities, resulting in increased competition in the subject land.
Fertiliser or herbicide drift	All vegetation	Short-term	Construction	Possible. Herbicide drift could kill or sicken native vegetation in areas adjacent to treated sites. Best practice herbicide application minimises the risk of drift by avoiding spraying when drift is likely to cause harm.
Sedimentation and contaminated/nutrient-rich runoff	All vegetation and all fauna, all fauna, including identified threatened bat and owl species.	Short-term	Construction and operation	High, especially during heavy rainfall or storm events in the construction phase. Potential short-term impacts on water quality and adjacent vegetation and species, affecting soil stability and aquatic habitats.
Vehicle strike	All fauna, all fauna, including identified threatened bat and owl species.	Long-term	Construction and operation	Possible, although the risk would be addressed by construction site safety measures, including speed limits and driver training.

TABLE 11 DIRECT IMPACTS ON IDENTIFIED THREATENED SPECIES AND COMMUNITIES

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 3433 Endangered Ecological Community (EEC) of Lower Hunter Spotted Gum—Ironbark Forest in the Sydney Basin Bioregion	E	-	No	Construction	51.69 ha
Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>)	V	E	No	Construction and operation	51.69 ha (foraging)
Eastern False Pipistrelle (<i>Falsistrellus tasmaniensis</i>)	V	-	No	Construction and operation	51.69 ha (foraging)
Eastern Coastal Free-tailed Bat (<i>Micronomus norfolkensis</i>)	V	-	No	Construction and operation	51.69 ha (foraging)
Little Bent-winged Bat (<i>Miniopterus australis</i>)	V	-	Yes	Construction and operation	51.69 ha (foraging)
Large Bent-winged Bat (<i>Miniopterus orianae oceanensis</i>)	V	-	Yes	Construction and operation	51.69 ha (foraging)
Southern Myotis (<i>Myotis Macropus</i>)	V	-	No	Construction and operation	15.57 ha (breeding)
Yellow-bellied Sheathtail-bat (<i>Saccolaimus flaviventris</i>)	V	-	No	Construction and operation	51.69 ha (foraging)
Greater Broad-nosed Bat (<i>Scoteanax rueppellii</i>)	V	-	No	Construction and operation	51.69 ha (foraging)
Eastern Cave Bat (<i>Vespadelus troughtoni</i>)	V	-	Yes	Construction and operation	51.69 ha (foraging)
Masked Owl (<i>Tyto novaehollandiae</i>)	V	-	No	Construction and operation	45.40 (breeding) & 51.69 ha (foraging)
Squirrel Glider (<i>Petaurus norfolcensis</i>)	V	-	No	Construction and operation	51.69 ha (foraging & breeding)
Koala (<i>Phascolarctos cinereus</i>)	E	E	No	Construction and operation	51.69 ha (foraging & breeding)
Swift Parrot (<i>Lathamus discolor</i>)	E	EC	Yes	Construction and operation	51.69 ha (foraging)

TABLE 12 - CHANGES IN VEGETATION INTEGRITY (VI)

Vegetation zone	PCT ID	Management zone	Area (ha)	Before development				After development			Change	
				Composition	Structure	Function	VI score	Composition	Structure	Function	VI score	Change in VI score
Low	3433	Zone 1	4.56	43.3	44.4	21.6	34.7	0	0	0	0	-34.7
Moderate	3433	Zone 2	7.38	62.4	87.7	92.3	79.6	0	0	0	0	-79.6
High	3433	Zone 3	39.75	45.2	82.2	98.8	71.6	0	0	0	0	-71.6

2.3 Prescribed impacts

Prescribed impacts are impacts on threatened species which are not accounted for during assessment of native vegetation disturbance impacts within the BAM-C. They include impacts to:

- Karst, caves, crevices, cliffs, rocks and other geological features of significance.
- Human-made structures or non-native vegetation.
- Habitat connectivity.
- Water bodies, water quality and hydrological processes.
- Wind turbine strikes.
- Vehicle strikes.

Two types of prescribed impact are expected to occur under the Project. These include impacts to habitat connectivity and vehicle strikes. The nature and extent of these impacts is detailed in this section.

The prescribed impacts on threatened species which are likely to occur under the Project are presented in **Table 13**.

TABLE 13 - PRESCRIBED IMPACTS

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
Karst, caves, crevices, cliffs, rocks or other geological features of significance	No	-	-
Human-made structures	No	-	N/A
Non-native vegetation	No	-	N/A
Habitat connectivity	Yes	While the Project will not introduce any impermeable linear barriers to fauna movement within the subject land, the new open-cut expansion area will be avoided by fauna moving through it, thus reducing habitat connectivity.	• Southern Myotis, Masked Owl, Squirrel Glider, Koala, Large Bent-winged Bat, Large-eared Pied Bat, Little Bent-winged Bat, Eastern Cave Bat, Eastern False Pipistrelle, Eastern Coastal Free-tailed Bat, Yellow-bellied Sheath-tail-bat, Greater Broad-nosed Bat and Swift Parrot



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
Waterbodies, water quality and hydrological processes	Yes	Sedimentation dam in the north of the larger section of the subject land contains significant open water. Likely to be foraging habitat.	Southern Myotis
Wind turbine strikes (wind farm development only)	No	-	-
Vehicle strikes	Yes	Vehicle movements on the subject land will increase because of construction-related traffic during construction of the Project.	Ten (10) confirmed present threatened species. Three (3) assumed present threatened species.

TABLE 14. SUMMARY OF PROPOSED OFFSETS FOR RESIDUAL INDIRECT AND PRESCRIBED IMPACTS.

Residual indirect or prescribed impact (identified in Sections 2.2 and 2.3)	Proposed offset (additional biodiversity credit requirement and/or other conservation measures)
Vehicle strikes	Monitoring of the affected species on Bloomfield Colliery site. To include searches for breeding habitat/roosts.
Habitat connectivity	

2.4 SALLs

An impact is to be regarded as serious and irreversible impact (SAIL) if it is likely to contribute significantly to the risk of a threatened species or an ecological community becoming extinct based on the following four (4) principles set out in clause 6.7 of the NSW Biodiversity Conservation Regulation 2017 (DPIE, 2024):

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

Field surveys identified three (3) SAI species (**Table 15**). In addition, the Swift Parrot (*Lathamus discolor*), another SAI species, is assumed present based off presence of critical habitat as defined in the *National Recovery Plan for the Swift Parrot (2024)*.

These SAI species will be assessed against their habitat preferences and SAI thresholds (where available). Potential impacts to these species are required to be avoided and minimised.

TABLE 15 - SAI SPECIES IDENTIFIED WITHIN THE PROJECT

Scientific name	Common Name	Principle 1	Principle 2	Principle 3	Principle 4
<i>Lathamus discolor</i>	Swift Parrot	1			
<i>Miniopterus australis</i>	Little Bent-winged Bat	-	-	-	4
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	-	-	-	4
<i>Vespadelus troungtoni</i>	Eastern Cave Bat	-	-	-	4

Habitat descriptions below have been sourced from BioNet, for each SAI species (DCCEW, 2024).

Swift Parrot (*Lathamus discolor*):

- Migrates to the Australian south-east mainland between February and October.
- On the mainland they occur 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 Swamp Mahogany (*Eucalyptus robusta*), Spotted Gum (*Corymbia maculata*), Red Bloodwood (*C. gummifera*), Forest Red Gum (*E. tereticornis*), Mugga Ironbark (*E. sideroxylon*), and White Box (*E. albens*).
- Commonly used lerp infested trees include Inland Grey Box (*E. macrocarpa*), Grey Box (*E. moluccana*), Blackbutt (*E. pilularis*), and Yellow Box (*E. melliodora*).
- Return to some foraging sites on a cyclic basis depending on food availability
- Following winter they return to Tasmania where they breed from September to January, nesting in old trees with hollows and feeding in forests dominated by Tasmanian Blue Gum *Eucalyptus globulus*.

The impact is unlikely to cause further decline of the species given it is only foraging habitat being removed and it is not mapped as 'Important Habitat'. This SAI species has been further assessed in accordance with the EPBC Act (**Appendix F**) and this MNES assessment has concluded that a significant impact is likely, and an offset liability has been calculated on this basis.

Little Bent-winged Bat (*Miniopterus australis*):

- Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas.
- Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats.
- They often share roosting sites with the Common Bentwing-bat, and, in winter, the two species may form mixed clusters.



- In NSW the largest maternity colony is in close association with a large maternity colony of Eastern Bentwing-bats (*Miniopterus schreibersii*) and appears to depend on the large colony to provide the high temperatures needed to rear its young.
- Maternity colonies form in spring and birthing occurs in early summer. Males and juveniles disperse in summer.
- Only five nursery sites /maternity colonies are known in Australia.

Large Bent-winged Bat (*Miniopterus orianae oceanensis*):

- Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures.
- Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young.
- Maternity caves have very specific temperature and humidity regimes.
- At other times of the year, populations disperse within about 300 km range of maternity caves.
- Cold caves are used for hibernation in southern Australia.
- Breeding or roosting colonies can number from 100 to 150,000 individuals.
- Hunt in forested areas, catching moths and other flying insects above the treetops.

Eastern Cave Bat (*Vespadelus troughtoni*):

- Very little is known about the biology of this uncommon species.
- A cave-roosting species that is usually found in dry open forest and woodland, near cliffs or rocky overhangs; has been recorded roosting in disused mine workings, occasionally in colonies of up to 500 individuals.
- Occasionally found along cliff-lines in wet eucalypt forest and rainforest.
- Little is understood of its feeding or breeding requirements or behaviour.

After extensive field surveys, it can be confirmed that there are no caves present within the subject land and hence, the species detected are most likely to have been recorded in foraging habitat, not breeding habitat. These three SAI Bat species are not currently listed under the EPBC Act and therefore, an assessment of significance is not required.

2.5 Limitations and assumptions

The limitations and assumptions applying to this assessment include:

- All calculations of direct impacts assume clearing of vegetation to the maximum extent of the proposed Project footprint indicated in **Figure 1**.
- The likelihood of indirect and prescribed impacts can generally be estimated with reasonable accuracy, however, their magnitude and consequences for any individual species or ecosystem can rarely be reliably quantified, even where specialist information (e.g., noise assessments, hydrological studies) is available for the potential impacts.



2.6 Impact mitigation and management

Some Project impacts could not be avoided or minimised by the Project design and must be mitigated instead. These include standard construction impacts and those specific to the Project. Mitigating the Project's impacts on threatened species known or likely to be present on the subject land is a particular focus of the mitigation measures (**Table 16**).

TABLE 16 - IMPACT MITIGATION MEASURES

Mitigation measure	Method/technique	Timing	Frequency	Responsibility
Speed limits	Speed limits maintained and enforced for Project traffic.	Construction, post-construction	N/A	Construction contractor
Vehicle movement windows	Vehicle movements would be restricted to windows which minimise the likelihood of vehicle strikes, e.g., limit driving between dawn and dusk.	Construction, post-construction	N/A	Construction contractor
Construction work hour limits	Hours of construction would be restricted where possible to reduce overall noise, dust, light spill etc. Activities such as vegetation clearing, and topsoil removal could be limited to daylight hours	Construction	N/A	Construction contractor
Worker induction and training	Site personnel would be provided with information about biodiversity management issues relating to construction, including the presence of threatened species. Any relevant procedures (fauna injury reporting, covering trenches, speed limits, vehicle movement windows) would be detailed.	Construction, post-construction	As required	Construction contractor
Biodiversity management plan	A biodiversity management plan detailing all biodiversity-related impact mitigation and management measures would be prepared and implemented prior to construction. This plan would include details about all measures relating to biosecurity, control of feral predators, monitoring of native fauna, unexpected threatened species finds and vegetation clearing.	Pre-construction	N/A	Project manager, ecology contractor
Weed management	A surveillance and treatment of weeds in areas of rehabilitation. A Vehicle washdown procedure before entering the rehabilitation or retained native vegetation areas	Construction, post-construction	As required	Construction contractor
Fauna monitoring program	A native fauna monitoring program would be implemented using appropriate techniques to monitor the presence of fauna on the subject land and inform adaptive management of project impacts. The plan would include monitoring using spotlighting, camera traps etc. and a roadkill census to monitor vehicle strike impacts.	Pre-construction to post-construction	As required	Project manager, ecology contractor
Erosion and sediment control	Appropriate erosion and sediment control measures will be managed via the implementation of an erosion and sediment control plan, in accordance with Managing Urban Stormwater: Soils and Construction 4th Ed. 'The Blue Book' (Landcom 2004).	Construction	As required	Construction contractor
Pathogen risk management	If machinery is transported from an area of confirmed infection of Phytophthora or Chytrid fungus to the construction areas, stringent wash down will be completed before leaving the area, removing all soil and vegetative material from cabins, trays, and under carriages;	Construction	As required	Construction contractor
Storage and waste management	To minimise potential impacts on adjacent land and waterways all liquids (fuel, oil, cleaning agents, drilling liquids etc.) will be stored appropriately and disposed of at suitably licensed facilities. Spill management procedures will be implemented as required. Rubbish will be collected and removed from the subject land;	Construction	As required	Construction contractor
Pre-clearing survey	A pre-clearing survey would be conducted by a qualified ecologist to detect any threatened species and native fauna present within the area to be cleared. Fauna would be removed where possible or their locations marked for appropriate clearing procedures.	Pre-construction	Before all clearing activities	Project manager, ecology contractor
Two-stage clearing procedure	Clearing of native vegetation would take place using a two-stage clearing process, e.g., underscrubbing would be completed at least 24 hours before clearing of HBTs and other habitat features to allow fauna to relocate. All clearing would be supervised by an ecologist or team trained to detect and relocate fauna from clearing sites.	Pre-construction	During all clearing activities	Construction contractor, ecology contractor
Unexpected threatened species finds procedure	A procedure would be developed and implemented to respond to the unexpected detection of threatened species during activity on the subject land. This would include plans for providing appropriate veterinary care in the event of injuries, e.g., vehicle strike.	Pre-construction, construction	As required	Ecology contractor, construction contractor

2.7 Impact summary

2.7.1 Offset biodiversity credit requirement

The Project would require an offset of **1,796** ecosystem biodiversity credits if clearing to the maximum extent considered in this assessment occurred (**Table 17; Figure 14**).

Under the like-for-like offsetting rules, the ecosystem credits used to offset development impacts to native vegetation that is part of a TEC must be from the same PCT or different PCTs that form part of that same TEC. The TEC becomes the offset trading group for such vegetation. These ecosystem credits must be from within the same IBRA subregion, adjacent subregions or subregions within 100 km of the subject land and must also match the HBT status of the impacted vegetation. The attributes of like-for-like credits suitable for offsetting the Project's ecosystem credit impacts are presented in **Table 19**. Species credits may not be substituted in this way and can only be offset with credits from the species that has been impacted without applying the variation rules.

TABLE 17 - IMPACTS THAT REQUIRE AN OFFSET – ECOSYSTEM CREDITS

Vegetation zone	PCT name	TEC/Offset Trading Group	Impact area (ha)	Current VI score	Future VI score	Change in VI score	Biodiversity risk weighting	Number of ecosystem credits required
Low	Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	BC Act E, Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions.	4.56	34.7	0	-34.7	2	79
Moderate	Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	BC Act E, Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions.	7.38	79.6	0	-79.6	2	294
High	Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	BC Act E, Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions.	39.75	71.6	0	-71.6	2	1,423
Total								1,796



TABLE 18 - IMPACTS THAT REQUIRE AN OFFSET – SPECIES CREDITS

Common name	Scientific name	BC Act status	EPBC Act status	Loss of habitat (ha) or individuals	Biodiversity risk weighting	Number of species credits required
Southern Myotis	<i>Myotis Macropus</i>	V	-	15.57	2	524
Masked Owl	<i>Tyto novaehollandiae</i>	V	-	45.23	2	1,583
Squirrel Glider	<i>Petaurus norfolcensis</i>	V	-	51.69	2	1,796
Koala	<i>Phascolarctos cinereus</i>	E	E	51.69	2	1,796
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	V	E	51.69	3	2,694
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	V	-	51.69	3	2,694
Swift Parrot	<i>Lathamus discolor</i>	E	EC	51.69	3	2,694
Total						13,781

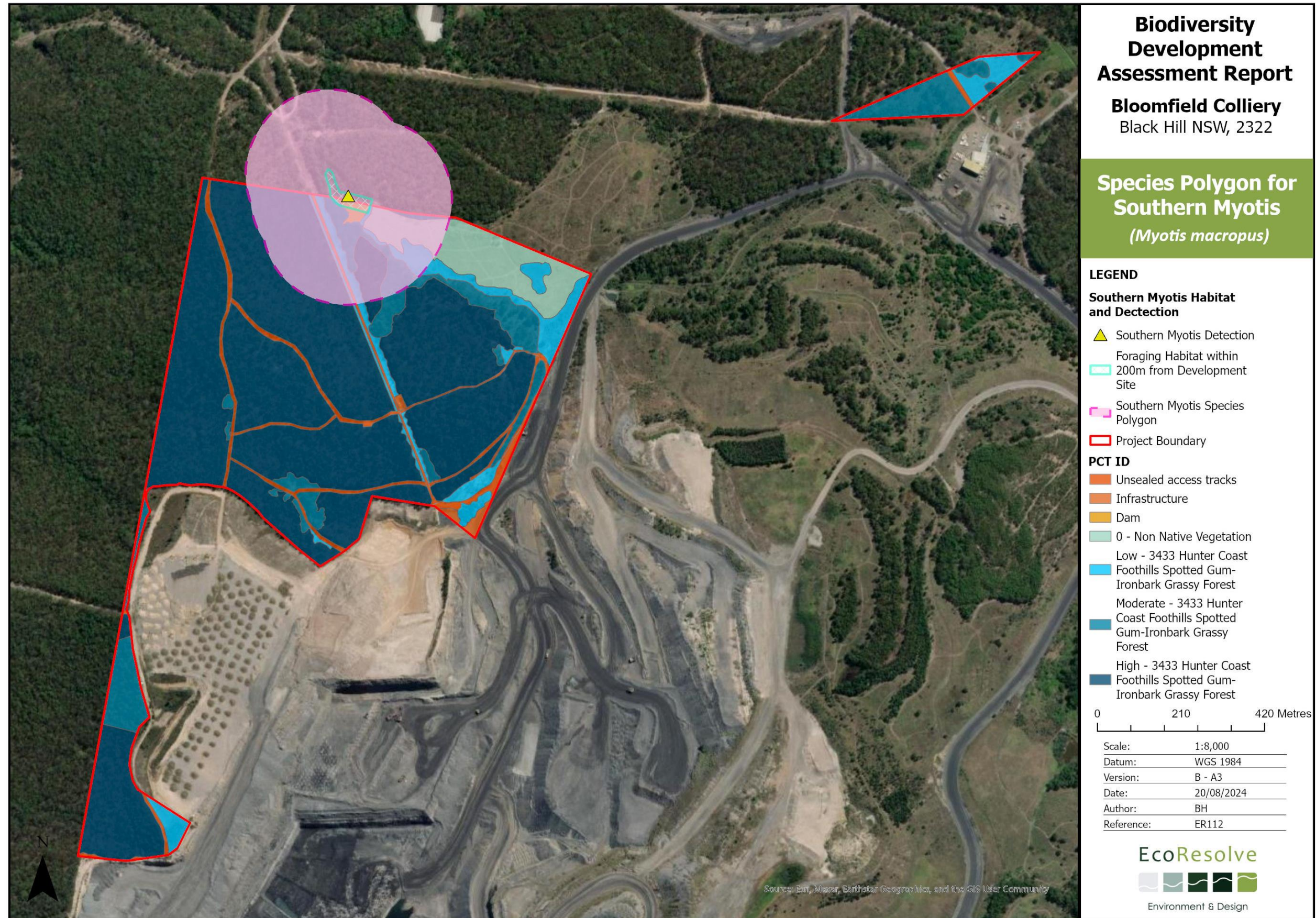


FIGURE 10 SOUTHERN MYOTIS SPECIES POLYGON



FIGURE 11 MASKED OWL SPECIES POLYGON – REDACTED BECAUSE THE MASKED OWL IS A CATEGORY 3 SENSITIVE SPECIES IN NSW.

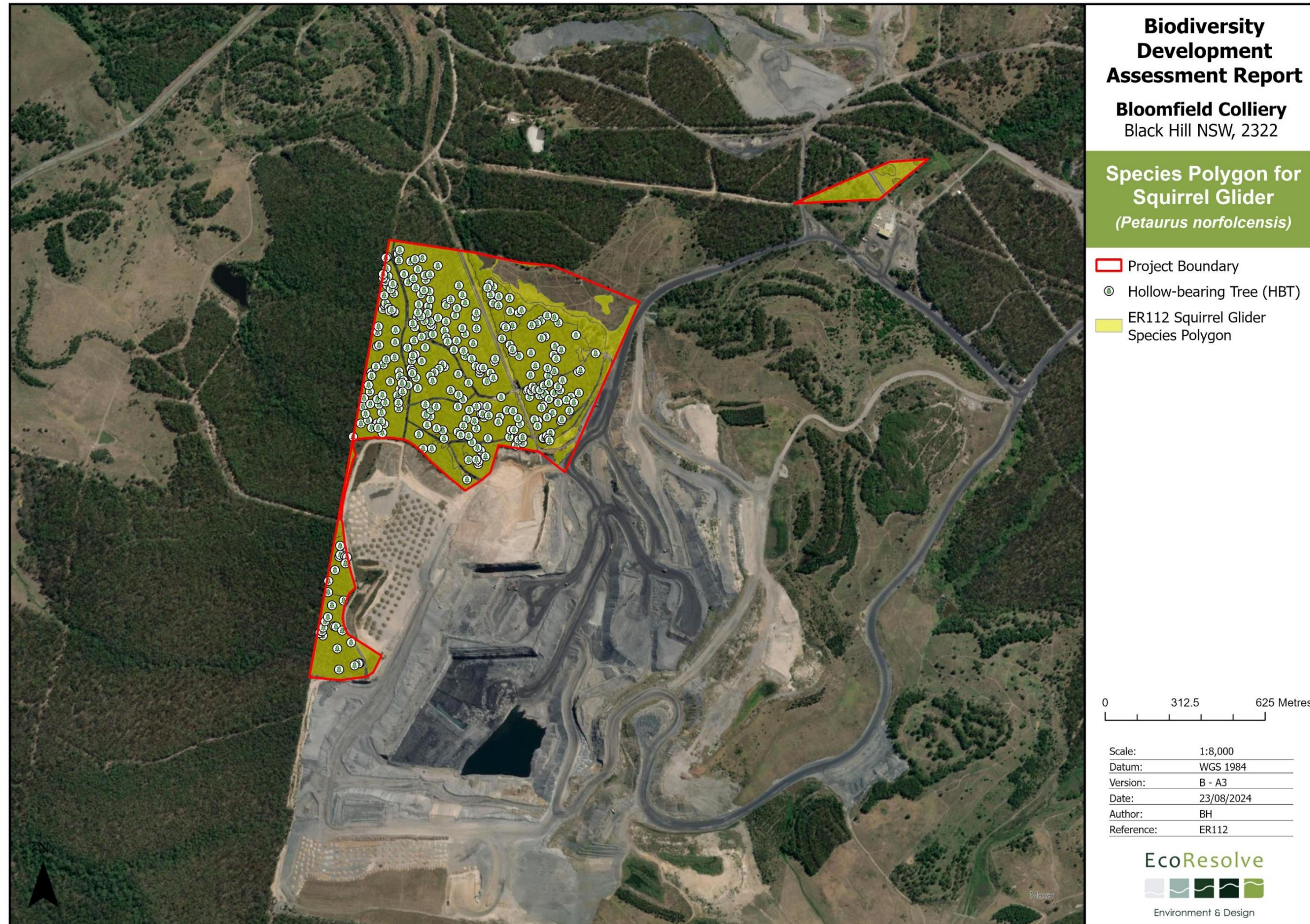


FIGURE 12 SQUIRREL GLIDER SPECIES POLYGON



Biodiversity Development Assessment Report

Bloomfield Colliery
Black Hill NSW, 2322

Species Polygon for Koala

(*Phascolarctos cinereus*)

- ▬ Project Boundary
- ▬ Koala Species Polygon

0 210 420 Metres

Scale:	1:8,000
Datum:	WGS 1984
Version:	A - A3
Date:	11/06/2024
Author:	BH
Reference:	ER112

EcoResolve



Environment & Design

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

FIGURE 13 SPECIES POLYGON FOR KOALA

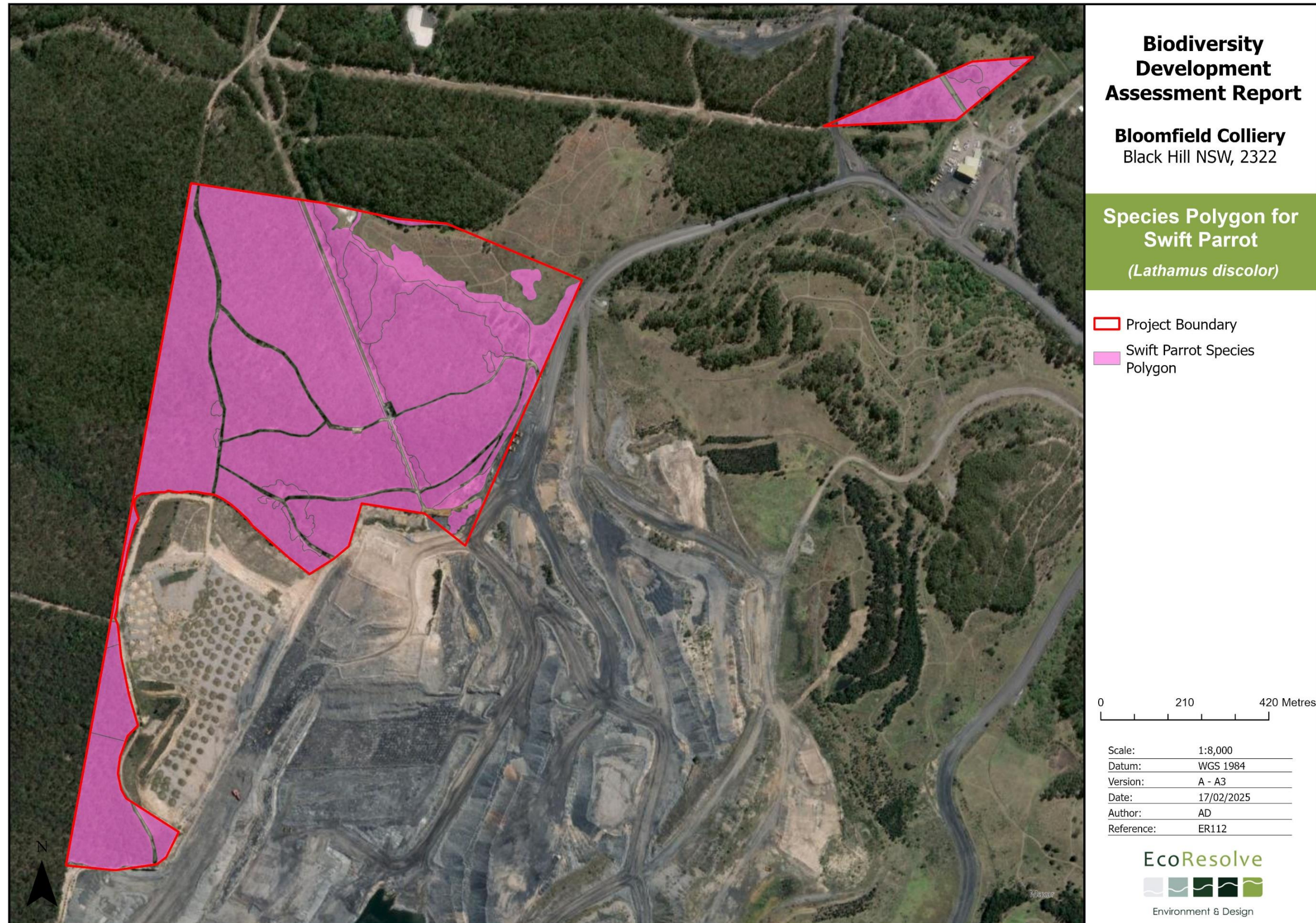


FIGURE 14 SPECIES POLYGON FOR SWIFT PARROT



Biodiversity Development Assessment Report

Bloomfield Colliery

Black Hill NSW, 2322

Areas to be offset

Legend

-  No offset Required
-  Offset Required
-  Project Boundary

0 200 400 Metres

Scale: 1:8,000
Datum: WGS 1984
Version: B - A3
Date: 20/08/2024
Author: BH
Reference: ER112

EcoResolve



Environment & Design



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

FIGURE 15 AREAS TO BE OFFSET



TABLE 19 - ECOSYSTEM CREDIT CLASS AND MATCHING CREDIT PROFILE

Ecosystem credit	PCT name	PCT vegetation class	PCT vegetation formation	Attributes shared with matching credits			HBTs present?	IBRA subregions
				Associated TEC or EC	Offset trading group (BAM Section 10.2, Tables 4 & 5)			
1,796	3433 - Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	Hunter-Macleay Dry Sclerophyll Forests	Dry Sclerophyll Forests (Shrub/grass sub-formation)	BC Act E, Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions.	<i>Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions.</i>		YES	Hunter, Ellerston, Karuah Manning, Kerrabee, Liverpool Range, Peel, Tomalla, Upper Hunter, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometres of the outer edge of the impacted site.



2.8 Impacts that do not need further assessment

All impacts to native vegetation require offsetting. Offset credits have not been generated for indirect impacts.

2.8.1 Impact not requiring offsets

Impacts to roads and exotic vegetation do not require offsets. Approximately 6.12 hectares of cleared roads, tracks, non-native vegetation and dams have been excluded from the assessment area. These exclusions are illustrated in **Figure 13**.



Conclusion

Up to 51.69 ha of native vegetation belonging to PCT 3433 - *Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest* was identified as being impacted by the Project. This PCT forms part of the BC Act listed Endangered Ecological Community (EEC) *Lower Hunter Spotted Gum—Ironbark Forest in the Sydney Basin Bioregion*. It does not, however, form part of an EPBC Act listed EEC.

The desktop assessment resulted in 75 threatened fauna and 39 threatened flora species being identified as having at least some likelihood of occurrence within the subject land of direct and indirect impacts. Ten (10) threatened fauna species were recorded during field surveys and will suffer impacts under the Project:

- Large-eared Pied Bat (*Chalinolobus dwyeri*)
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)
- Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*)
- Little Bent-winged Bat (*Miniopterus australis*)
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*)
- Southern Myotis (*Myotis Macropus*)
- Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*)
- Greater Broad-nosed Bat (*Scoteanax rueppellii*)
- Eastern Cave Bat (*Vespadelus troughtoni*)
- Masked Owl (*Tyto novaehollandiae*)

Two threatened fauna species have been assumed present based on habitat connectivity and recent BioNet sightings approximately 1.5 kilometres from the subject land. These are:

- Koala (*Phascolarctos cinereus*)
- Squirrel Glider (*Petaurus norfolcensis*)
- In addition, the Swift Parrot (*Lathamus discolor*) has been assumed present based on critical habitat presence

The Project would require an offset consisting of up to **1,796** ecosystem credits that are equivalent to PCT 3433 - *Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest* and within the Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions Offset Trading Group under the like-for-like offsetting rules and **13,781** species credits for the seven (7) species credit species. Prescribed impacts to habitat connectivity and the increased risk of vehicle strike would be offset by fauna monitoring programs.



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Appendix A – BDAR content requirements compliance checklist

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Introduction	Chapters 2 and 3	Information	
		Introduction to the biodiversity assessment including:	
		☐ brief description of the proposal	1.1.1 (Page 8)
		☐ identification of subject land boundary, including:	1.1.3 (Page 8)
		☐ operational footprint	
		☐ construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure	
		☐ general description of the subject land	1.1.3 (Page 8)
		☐ sources of information used in the assessment, including reports and spatial data	1.4 (Page 12)
		☐ identification and justification for entering the BOS	1.1.5 (Page 10)
		Maps and tables	
		☐ Map of the subject land boundary showing the final proposal footprint, including the construction footprint for any clearing associated with temporary/ancillary construction facilities and infrastructure	Figure 1 (Page 9)
Landscape	Sections 3.1 and 3.2, Appendix E	Information	
		Identification of site context components and landscape features, including:	
		☐ general description of subject land topographic and hydrological setting, geology and soils	1.1.4 (Page 10)
		☐ per cent native vegetation cover in the assessment area (as described in BAM Section 3.2)	1.1.4, Table 1 (Page 10)
		☐ IBRA bioregions and subregions (as described in BAM Subsection 3.1.3(2.))	1.1.4 Table 1 (Page 10)
		☐ rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3(3.) and Appendix E)	1.1.4, Table 1 (Page 10)
		☐ wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(3.))	1.1.4, Table 1 (Page 10)
		☐ connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5–6.))	1.1.4, Table 1 (Page 10)
		☐ 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.))	1.1.4 (Page 10)



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ areas of outstanding biodiversity value occurring on the subject land and assessment area (as described in BAM Subsection 3.1.3(8–9.))	1.1.4 (Page 10)
		☐ any additional landscape features identified in any SEARs for the proposal	N/A
		☐ NSW (Mitchell) landscape on which the subject land occurs	1.1.4, Table 1 (Page 10)
		☐ 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)	1.6.4 Table 6 (Page 37)
		Maps and tables	
		☐ Site Map	Figure 1 (Page 9)
		☐ Property boundary	
		☐ Boundary of subject land	
		☐ Cadastre of subject land (including labelling of Lot and DP or section plan if relevant)	
		☐ Landscape features identified in BAM Subsection 3.1.3	
		☐ Location Map	
		☐ Digital aerial photography at 1:1,000 scale or finer	
		☐ Boundary of subject land	
		☐ Assessment area (i.e. the subject land and either 1500 m buffer area or 500 m buffer for linear development)	
		☐ Landscape features identified in BAM Subsection 3.1.3	
		☐ 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:	
		☐ IBRA bioregions and subregions	1.1.4, Table 1 (Page 10)
		☐ rivers, streams and estuaries	
		☐ wetlands and important wetlands	
		☐ connectivity of different areas of habitat	
		☐ karst, caves, crevices, cliffs, rocks and other geological features of significance and if required, soil hazard features	
		☐ areas of outstanding biodiversity value occurring on the subject land and assessment area	
		☐ any additional landscape features identified in any SEARs for the proposal	
		☐ NSW (Mitchell) landscape on which the subject land occurs	
		Data	
		☐ All report maps as separate jpeg files	–



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		Individual digital shape files of:	–
		☐ subject land boundary	–
		☐ assessment area (i.e. subject land and 1500 m buffer area) boundary	–
		☐ cadastral boundary of subject land	–
		☐ areas of native vegetation cover	–
		☐ landscape features	–
Native vegetation	Chapter 4, Appendix A and Appendix H	Information	
		☐ 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)	1.5 Figure 2 (Page 13 - 15)
		☐ Provide justification for all parts of the subject land that do not contain native vegetation (as described in BAM Subsection 4.1.2)	1.5 Figure 2 (Page 13 – 14) Appendix C (Page 100 – 104)
		☐ 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)	1.6.1 (Page 24)
		☐ Describe the systematic field-based floristic vegetation survey undertaken in accordance with BAM Section 4.2	1.5.2 (Page 13)
		☐ 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)	N/A
		For each PCT within the subject land, describe:	
		☐ PCT name and ID	1.5.3, Table 2 (Page 22)
		☐ vegetation class	1.5.3, Table 2 (Page 22)
		☐ extent (ha) within subject land	1.5.3, Table 2 (Page 22)
		☐ evidence used to identify a PCT including any analyses undertaken, references/sources, existing vegetation maps (BAM Section 4.2(1–3.))	1.5.3, Table 2 (Page 22)
		☐ plant species relied upon for identification of the PCT and relative abundance of each species	Appendix C (Page 100)
		☐ if relevant, TEC status including evidence used to determine vegetation is the TEC (BAM Subsection 4.2.2(1–2.))	N/A
		☐ estimate of per cent cleared value of PCT (BAM Subsection 4.2.1(5.))	1.5.3, Table 2 (Page 22)



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		Describe the vegetation integrity assessment of the subject land, including:	
	☐	identification and mapping of vegetation zones (as described in BAM Subsection 4.3.1)	Figure 2 (Page 15)
	☐	description of vegetation zones within the subject land (as described in Operational Manual Stage 1 Table 2 and Subsection 3.3.2)	1.5.3, Tables 3 & 4 (Page 22)
	☐	area (ha) of each vegetation zone	1.5.3, Table 3 (Page 22)
	☐	assessment of patch size (as described in BAM Subsection 4.3.2)	1.5.3 (Page 22)
	☐	survey effort (i.e. number of vegetation integrity survey plots) as described in BAM Subsection 4.3.4(1–2.)	1.5.2 (Page 15)
	☐	use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsection 4.3.3(5.))	1.5.3 (Page 22)
		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):	
	☐	identify the PCT or vegetation class for which local benchmark data will be applied	N/A
	☐	identify published sources of local benchmark data (if benchmarks obtained from published sources)	N/A
	☐	describe methods of local benchmark data collection (if reference plots used to determine local benchmark data)	N/A
	☐	provide justification for use of local data rather than BioNet Vegetation Classification benchmark values	N/A
	☐	provide written confirmation from the decision-maker that they support the use of local benchmark data	N/A
		Maps and tables	
	☐	Map of native vegetation extent within the subject land at scale not greater than 1:10,000 including identification of all areas of native vegetation including areas that are ground cover only, 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 2 (Page 15)
	☐	Map of PCTs within the subject land (as described in BAM Section 4.2(1.))	Figure 2 (Page 15)
	☐	Map of vegetation zones within the subject land (as described in BAM Subsection 4.3.1)	Figure 2 (Page 15)
	☐	Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCT boundaries	Figure 2 (Page 15)
	☐	Map of TEC distribution on the subject land and table of TEC listing, status and area (ha)	Figure 2 (Page 15)
	☐	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 2 (Page 15)
		Table of current vegetation integrity scores for each vegetation zone within the site and including:	
	☐	Composition condition score	1.6.3, Table 4 (Page 24)
	☐	Structure condition score	



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ function condition score	
		☐ presence of hollow bearing trees	
		Data	
		☐ All report maps as separate jpeg files	-
		☐ Plot field data (MS Excel format)	-
		☐ Plot field datasheets	-
		Digital shape files of:	
		☐ PCT boundaries within subject land	-
		☐ TEC boundaries within subject land	-
		☐ vegetation zone boundaries within subject land	-
		☐ floristic vegetation survey and vegetation integrity plot locations	-
Threatened species	Chapter 5	Information	
		Identify ecosystem credit species likely to occur on the subject land, including:	
		☐ list of ecosystem credit species derived from the BAM-C (as described in BAM Subsection 5.1.1 and Section 5.2(1.))	1.7.3, Table 5 (Page 26)
		☐ 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)	1.7.3, Table 5 (Page 26)
		☐ justification for addition of any ecosystem credit species to the list	N/A
		Identify species credit species likely to occur on the subject land, including:	
		☐ list of species credit species derived from the BAM-C (as described in BAM Subsection 5.1.1)	1.7.3, Table 5 (Page 26)
		☐ 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)	1.7.3, Table 5 (Page 26)
		☐ 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)	1.7.3, Table 5 (Page 26)
		☐ justification for addition of any species credit species to the list	N/A
		From the list of candidate species credit species, identify:	
		☐ species assumed present within the subject land (if relevant) (as described in BAM Subsection 5.2.4(2. a.))	1.7.4, Table 6 (Page 29)



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ 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.)) ☐ species for which targeted surveys are to be completed to determine species presence (BAM Subsection 5.2.4(2. b.)) ☐ 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:	
		☐ threatened species survey (as described in BAM Section 5.2.4)	1.7.4, Table 6 (Page 29)
		☐ 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)	N/A
		Where survey has been undertaken include detailed information on:	
		☐ survey method and effort (as described in BAM Section 5.3)	1.7.4, Table 6 (Page 29)
		☐ 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	N/A
		☐ 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	1.7.4, Table 6 (Page 29)
		☐ survey personnel and relevant experience	(Page 3)
		☐ describe any limitations to surveys and how these were addressed/overcome	1.8
		Where an expert report has been used in place of survey (as described in BAM Section 5.3, Box 3), include:	
		☐ justification of the use of an expert report	N/A
		☐ identify the expert, provide evidence of their expert credentials and departmental approval of expert status	
		☐ all requirements of Box 3 have been addressed in the expert report	
		Where use of local data is proposed (BAM Subsection 1.4.2):	
		☐ identify relevant species	N/A
		☐ identify data to be amended	
		☐ identify source of information for local data, e.g. published literature, additional survey data, etc.	
		☐ justify use of local data in preference to VIS Classification or TBDC data	
		☐ provide written confirmation from the decision-maker that they support the use of local data	N/A
		Species polygon completed for species credit species present within the subject land (assumed present or determined based on survey, expert report or important habitat map) ensuring that:	
		☐ the unit of measure for each species is documented	1.6, Table 8 (Page 50)



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		for species assessed by area:	
		☐ the polygon includes the extent of suitable habitat for the target species within the subject land (as described in BAM Subsection 5.2.5)	1.6, Table 8 (Page 50)
		☐ 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	1.6, Table 8 (Page 50)
		for species assessed by counts of individuals:	
		☐ the number of individual plants present on the subject land (as described in BAM Subsection 5.2.5(3.))	N/A
		☐ the method used to derive this number (i.e. threatened species survey or expert report) and evidence-based justification for the approach taken	N/A
		☐ 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	N/A
		☐ Identify the biodiversity risk weighting for each species credit species identified as present within the subject land (as described in BAM Section 5.4)	1.6, Table 8 (Page 5)
		Maps and tables	
		☐ Table showing ecosystem credit species in accordance with BAM Subsection 5.1.1, and identifying:	1.6.3, Table 5 (Page 25)
		☐ the ecosystem credit species removed from the list	1.6.3, Table 5 (Page 25)
		☐ the sensitivity to gain class of each species	1.6.3, Table 5 (Page 25)
		☐ Table detailing species credit species in accordance with BAM Section 5.2 and identifying:	1.6.3, Table 5 (Page 25)
		☐ 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	1.6.3, Table 5 (Page 25)
		☐ the candidate species credit species not recorded on the subject land as determined by targeted survey, expert report or important habitat map	1.6.4, Table 6 (Page 39)
		☐ 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)	1.6.3, Table 5 (Page 25)
		☐ 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)	2.8 Figure 10 – Figure 14 (Page 66 – Page 69)
		Data	
		☐ Digital shape files of suitable habitat identified for survey for each candidate species credit species	
		☐ Survey locations including GPS coordinates of any plots, transects, grids	



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ Digital shape files of each species polygon including GPS coordinates of located individuals	
		☐ Species polygon map in jpeg format	
		☐ Expert reports and any supporting data used to support conclusions of the expert report	
		☐ Field datasheets detailing survey information including prevailing conditions, date, time, equipment used, etc.	
Prescribed impacts	Chapter 6	Information	
		Identify potential prescribed biodiversity impacts on threatened entities, including:	
		☐ karst, caves, crevices, cliffs, rocks and other geological features of significance (as described in BAM Subsection 6.1.1)	2.2.4, Table 13 (Page 58)
		☐ occurrences of human-made structures and non-native vegetation (as described in BAM Subsection 6.1.2)	
		☐ corridors or other areas of connectivity linking habitat for threatened entities (as described in BAM Subsection 6.1.3)	
		☐ waterbodies or any hydrological processes that sustain threatened entities (as described in BAM Subsection 6.1.4)	
		☐ 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)	N/A
		☐ 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)	2.2.4, Table 13 (Page 58)
		☐ Identify a list of threatened entities that may be dependent upon or may use habitat features associated with any of the prescribed impacts	2.2.4, Table 13 (Page 58)
		☐ 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)	2.2.4, Table 13 (Page 58)
		Where the proposed development is for a wind farm:	
		☐ 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)	N/A
		☐ provide details of targeted survey for candidate species of wind farm developments undertaken in accordance with BAM Subsection 6.1.5(2–3.)	N/A
		☐ predict the habitual flight paths for nomadic and migratory species likely to fly over the subject land and map the likely habitat for resident threatened aerial and raptor species (BAM Subsection 6.1.5(4.))	N/A
		Where the proposal may result in vehicle strike:	



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ 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	N/A
		Maps and tables	
		☐ Map showing location of any prescribed impact features (i.e. karst, caves, crevices, cliffs, rocks, human-made structures, etc.)	N/A
		☐ Map showing location of potential vehicle strike locations	N/A
		☐ Maps of habitual flight paths for nomadic and migratory species likely to fly over the site and maps of likely habitat for threatened aerial species resident on the site (for wind farm developments only)	N/A
		Data	
		☐ Digital shape files of prescribed impact feature locations	-
		☐ Prescribed impact features map in jpeg format	-
Avoid and minimise impacts	Chapter 7	Information	
		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:	
		☐ modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology	2.7 Table 15 (Page 63)
		☐ routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route	2.7 Table 15 (Page 63)
		☐ alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location	2.7 Table 15 (Page 63)
		☐ 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	2.7 Table 15 (Page 63)
		☐ 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)	2.7 Table 15 (Page 63)
		☐ 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.))	2.5, Table 15 (Page 56)
		☐ Detail measures or options considered but not implemented because they are not feasible and/or practical (e.g. due to site constraints)	N/A
		Maps and tables	



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ Table of measures to be implemented to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility	N/A
		☐ Map of alternative footprints considered to avoid or minimise impacts on biodiversity values; and of the final proposal footprint, including construction and operation	N/A
		☐ Maps demonstrating indirect impact zones where applicable	N/A
		Data	
		Digital shape files of:	
		☐ alternative and final proposal footprint	N/A
		☐ direct and indirect impact zones	N/A
		☐ Maps in jpeg format	N/A
Assessment of impacts	Chapter 8, Sections 8.1 and 8.2	Information	
		☐ 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)	2.2 (Page 54)
		Assessment of indirect impacts on vegetation and threatened species and their habitat including (as described in BAM Section 8.2):	
		☐ description of the nature, extent, frequency, duration and timing of indirect impacts of the proposal	2.3, Table 10 (Page 49)
		☐ documenting the consequences to vegetation and threatened species and their habitat including evidence-based justifications	2.3, Table 10 (Page 50)
		☐ reporting any limitations or assumptions, etc. made during the assessment	2.6 (Page 62)
		☐ identification of the threatened entities and their habitat likely to be affected	2.3, Tables 10 & 11 (Page 55)
		Assessment of prescribed biodiversity impacts (as described in BAM Section 8.3) including:	
		assessment of the nature, extent frequency, duration and timing of impacts on the habitat of threatened species or ecological communities associated with:	
		☐ karst, caves, crevices, cliffs, rocks and other features of geological significance	2.4, Table 13 (Page 58)
		☐ human-made structures	2.4, Table 13 (Page 58)
		☐ non-native vegetation	2.4, Table 13 (Page 58)



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range	2.4, Table 13 (Page 58)
		☐ movement of threatened species that maintains their life cycle	2.4, Table 13 (Page 58)
		☐ water quality, waterbodies and hydrological processes that sustain threatened species and threatened ecological communities	2.4, Table 13 (Page 58)
		☐ assessment of the impacts of wind turbine strikes on protected animals	N/A
		☐ assessment of the impacts of vehicle strikes on threatened species of animals or on animals that are part of a TEC	2.4, Table 13 (Page 58)
		☐ evaluate the consequences of prescribed impacts	2.4 (Page 58)
		☐ describe impacts that are uncertain	2.4 (Page 58)
		☐ document limitations to data, assumptions and predictions	2.4 (Page 58)
		Maps and tables	
		☐ Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts	Table 12 (Page 57)
		Data	
		N/A	
Mitigation and management of impacts	Chapter 8, Sections 8.4 and 8.5	Information	
		Identification of measures to mitigate or manage impacts in accordance with the recommendations in BAM Sections 8.4 and 8.5 including:	
		☐ techniques, timing, frequency and responsibility	Table 15 (Page 63)
		☐ identify measures for which there is risk of failure	
		☐ evaluate the risk and consequence of any residual impacts	
		☐ document any adaptive management strategy proposed	2.4 Table 19 (Page 59)
		Identification of measures for mitigating impacts related to:	
		☐ displacement of resident fauna (as described in BAM Subsection 8.4.1(2.))	2.4 Table 19 (Page 59)
		☐ indirect impacts on native vegetation and habitat (as described in BAM Subsection 8.4.1(3.))	
		☐ mitigating prescribed biodiversity impacts (as described in BAM Subsection 8.4.2)	
		☐ Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM Section 8.5)	Table 15 (Page 63)
		Maps and tables	



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ 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 14 (Page 57)
		Data	
		N/A	
Impact summary	Chapter 9	Information	
		Identification and assessment of impacts on TECs and threatened species that are at risk of a serious and irreversible impacts (SAII, in accordance with BAM Section 9.1) including:	
		☐ addressing all criteria in Subsection 9.1.1 for each TEC listed as at risk of an SAII present on the subject land	
		☐ for each TEC, report the extent of the TEC in NSW	N/A
		☐ addressing all criteria in Subsection 9.1.2 for each threatened species at risk of an SAII present on the subject land	N/A
		☐ for each threatened species, report the population size in NSW	N/A
		☐ documenting assumptions made and/or limitations to information	N/A
		☐ documenting all sources of data, information, references used or consulted	
		☐ clearly justifying why any criteria could not be addressed	
		☐ Identification of impacts requiring offset in accordance with BAM Section 9.2	N/A
		☐ Identification of impacts not requiring offset in accordance with BAM Subsection 9.2.1(3.)	N/A
		☐ Identification of areas not requiring assessment in accordance with BAM Section 9.3	N/A
		Maps and tables	
		☐ Map showing the extent of TECs at risk of an SAII within the subject land	N/A
		☐ Map showing location of threatened species at risk of an SAII within the subject land	N/A
		Map showing location of:	
		☐ impacts requiring offset	2.8.1 Figure 15 (Page 70)
		☐ impacts not requiring offset	2.8.1 Figure 15 (Page 70)
		☐ areas not requiring assessment	N/A
		Data	
		Digital shape files of:	
		☐ extent of TECs at risk of an SAII within the subject land	-
		☐ location of threatened species at risk of an SAII within the subject land	-
		☐ boundary of impacts requiring offset	-



BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ boundary of impacts not requiring offset	-
		☐ boundary of areas not requiring assessment	-
		☐ Maps in jpeg format	-
Impact summary	Chapter 10	Information	
		Ecosystem credits and species credits that measure the impact of the development on biodiversity values, including:	
		☐ future vegetation integrity score for each vegetation zone within the subject land (Equation 25 and Equation 26 in BAM Appendix H)	Table 12 (Page 57)
		☐ change in vegetation integrity score (BAM Subsection 8.1.1)	
		☐ 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)	
		☐ biodiversity risk weighting for each	1.6, Table 8 (Page 5)
		☐ number of required species credits for each candidate threatened species that is directly impacted on by the proposal (BAM Subsection 10.1.3)	Tables 15 & 16 (Page 64)
		Maps and tables	
		☐ Table of PCTs requiring offset and the number of ecosystem credits required	Table E1 (Page 5)
		☐ Table of threatened species requiring offset, and the number of species credits required	Table E1 (Page 5)
		Data	
		☐ Submitted proposal in the BAM Calculator	
Biodiversity credit report	Chapter 10	Information	
		☐ 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 18 (Page 71)
		☐ BAM credit report in pdf format	Appendix D (Page 105)
		Maps and tables	
		☐ Table of credit class and matching credit profile	Table 18 (Page 71)
		Data	
		☐ BAM credit report in pdf format	Appendix D (Page 105)

Appendix B – Likelihood of Occurrence (LoO) and matters requiring additional consideration

Stage 1 involved a preliminary desktop ‘likelihood of occurrence’ (LoO) assessment for threatened species identified in **Table 21**. NSW BioNet records, habitat requirements and breeding and foraging behaviour were considered in relation to the habitat and location of the proposed action. Stage 2 involved refining the threatened species LoO assessment following field observations and further assessment of habitat constraints and the potential impact of the proposed action. The classifications were assigned to each threatened species based on the criteria set out in below.

Likelihood of Occurrence criteria:

- **None:** Habitat features within the area of interest are unsuitable for the species e.g., aquatic species within a terrestrial environment.
- **Low:** The area of interest seldom contains suitable habitat for the species, no recent records (i.e., NSW BioNet records) occur with the area of interest.
- **Moderate:** Important habitat features occur within the area of interest for the species. The area of interest may or may not be within the species indicative ‘known or predicted mapped distribution’. Species may or may not have been detected recently within the locality i.e., within NSW BioNet records.
- **High:** High quality habitat features specifically associated with the species generally occur within the area of interest and is within the species known distribution. Recent NSW BioNET records have recently observed the species within the location.
- **Known:** The species has been identified on site by Eco Resolve following field surveys.

TABLE 20 – LIKELIHOOD OF OCCURRENCE ASSESSMENT

Scientific name	Common Name	BC Act	EPBC Act	Habitat & Ecology	Number of Records (DPIE 2023)	Likelihood of Occurrence
<i>Acacia bynoeana</i>	Bynoe's Wattle	E	V	Grows mainly in heath and dry sclerophyll forest in sandy soils. Mainly south of Dora Creek-Morisset area to Berrima and the Illawarra region, west to the Blue Mountains, also recorded from near Kurri Kurri in the Hunter Valley and from Morton National Park.	0	Moderate
<i>Angophora inopina</i>	Charmhaven Apple	V	V	Endemic to the Central Coast region of NSW. The known northern limit is near Karuah where a disjunct population occurs; to the south populations extend from Toronto to Charmhaven with the main population occurring between Charmhaven and Morisset. Occurs most frequently in red bloodwood – scribbly gum woodland, wet heath, red mahogany – paperbark sedge woodland and stringybark – red bloodwood forest.	0	Moderate
<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	CE	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. The distribution of the species has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests.	0	Moderate
<i>Dromaius novaehollandiae</i> - endangered population	Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	EP	-	The primary environments where Emus are commonly found include sclerophyll forest and savanna woodland, with infrequent sightings in rainforest or extremely dry regions.	0	Low
<i>Aprasia parapulchella</i>	Pink-tailed Legless Lizard	V	V	Inhabits sloping, open woodland areas with predominantly native grassy ground layers, particularly those dominated by kangaroo grass. Sites are typically well-drained, with rocky outcrops or scattered, partially buried rocks.	0	Moderate
<i>Artamus cyanopterus cyanopterus</i>	Dusky Wood swallow	V	-	"The Dusky Wood swallow is widespread in eastern, southern and southwestern Australia. In New South Wales it is widespread from coast to inland, including the western slopes of the Great Dividing Range and farther west. It is sparsely scattered in, or largely absent from, much of the Upper Western region. The Dusky Wood swallow is often reported in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and	0	Moderate



Scientific name	Common Name	BC Act	EPBC Act	Habitat & Ecology	Number of Records (DPIE 2023)	Likelihood of Occurrence
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E	E	The Australasian Bitterns is widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes and spike rushes.	0	Low
<i>Burhinus grallarius</i>	Bush Stone-curlew	E	-	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and, in the south-east, it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy ground layer and fallen timber. Largely nocturnal, being especially active on moonlit nights.	0	Moderate
<i>Caladenia tessellata</i>	Thick-lip Spider Orchid	E	V	The Tessellated Spider Orchid is found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. Known from the Sydney area (old records), Wyong, Ulladulla and Braidwood in NSW. Populations in Kiama and Queanbeyan are presumed extinct.	0	Low
<i>Calidris ferruginea</i>	Curlew Sandpiper	E	CE, MAR, MIG	The Curlew Sandpiper is distributed around most of the coastline of Australia. It occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes the inland	0	Low
<i>Calidris tenuirostris</i>	Great Knot	V	V	In NSW, the species has been recorded at scattered sites along the coast to about Narooma. It has also been observed inland at Tullakool, Armidale, Gilgandra and Griffith. Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons. Often recorded on sandy beaches with mudflats nearby, sandy spits and islets and sometimes on exposed reefs or rock platforms.	0	Low
<i>Callistemon linearifolius</i>	Nettle Bottle Brush	V	-	Recorded from the Georges River to Hawkesbury River in the Sydney area, and north to the Nelson Bay area of NSW. Recorded in 2000 at Coalcliff in the northern Illawarra. For the Sydney area, recent records are limited to the Hornsby Plateau area near the Hawkesbury River. Grows in dry sclerophyll forest on the coast and adjacent ranges.	244	High
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V	E	In summer, occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Also occur in subalpine snow gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed.	0	Moderate
<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo	V	-	Inhabits forest with low nutrients, characteristically with key Allocasuarina spp. Tends to prefer drier forest types with a middle stratum of Allocasuarina below Eucalyptus or Angophora. Often confined to remnant patches in hills and gullies. Breed in hollows stumps or limbs, either living or dead. Endangered population in the Riverina.	3	High
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V	-	Inhabits rainforest through to sclerophyll forest and tree heath. Banksias and myrtaceous shrubs and trees are a favoured food source. Will often nest in tree hollows but can also construct its own nest. Because of its small size it is able to utilise a range of hollow sizes including very small hollows. Individuals will use several different hollows and an individual has been recorded using up to 9 nest sites within a 0.5ha area over a 5-month period.	0	Moderate
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	E	Located in a variety of drier habitats, including the dry sclerophyll forests and woodlands to the east and west of the Great Dividing Range. Can also be found on the edges of rainforests and in wet sclerophyll forests. This species roosts in caves and mines in groups of between 3 and 37 individuals.	1	Known
<i>Charadrius leschenaultii</i>	Greater Sand-plover	V	-	Occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons. Non-breeding in Australia.	0	Low
<i>Charadrius mongolus</i>	Lesser Sand-plover	V	-	Inhabits large intertidal sandflats or mudflats in sheltered bays, harbours and estuaries, and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops. Non-breeding in Australia.	0	Moderate
<i>Circus assimilis</i>	Spotted Harrier	V	-	The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.	0	Moderate
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V	V	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forests on the inland slopes and plains west of the Great Dividing Range, this species mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, typically with an open grassy understory and occasionally with shrub species. It is also present in mallee and River Red Gum (<i>Eucalyptus camaldulensis</i>) forests bordering wetlands, with an open understory of acacias, saltbush, lignum, cumbungi, and grasses. It usually avoids woodlands with dense shrub layers, and fallen timber is crucial for foraging. Less commonly, it is also found in similar woodland habitats on coastal ranges and plains. The species is sedentary and considered resident in many areas throughout its range, present year-round or in all seasons at many sites. It is territorial throughout the year, though some birds may disperse locally after breeding. They are gregarious and usually seen in pairs or small groups of 8 to 12 birds, equally terrestrial and arboreal. Active, noisy, and conspicuous while foraging on trunks, branches, and among fallen timber, they spend more time foraging on the ground and fallen logs compared to other treecreepers. When foraging, they peck and probe for insects, primarily ants, among the litter, tussocks, and fallen timber, as well as along trunks and branches. Ants make up about 80% of their diet, with other invertebrates (including spiders, insect larvae, moths, beetles, flies, hemipteran bugs, cockroaches, termites, and lacewings)	1	Moderate

Scientific name	Common Name	BC Act	EPBC Act	Habitat & Ecology	Number of Records (DPIE 2023)	Likelihood of Occurrence
				comprising the rest. They also consume nectar from Mugga Ironbark (<i>Eucalyptus sideroxylon</i>) and paperbarks, sap from unidentified eucalypts, lizards, and food scraps. Young birds are fed ants, insect larvae, moths, craneflies, spiders, and butterfly and moth larvae.		
				Hollows in standing dead or live trees and tree stumps are essential for nesting. The species breeds in pairs or cooperatively within territories ranging from 1.1 to 10.7 hectares (mean = 4.4 hectares). Each group consists of a breeding pair with retained male offspring and, rarely, retained female offspring. They are often seen in pairs or cooperative breeding groups of two to five birds.		
<i>Corybas dowlingii</i>	Red Helmet Orchid	E	-	The species predominately inhabits sheltered areas like gullies and south-facing slopes within tall open forests, particularly on well-drained gravelly soil, found at elevations ranging from 10 to 200 meters. However, there have been observations of the species in sandy soils within in swamp forest regions, such as Medowie, Anna Bay, Wauchope, and Port Macquarie. It is primarily pollinated by flies, and flowering primarily takes place between June and July, although there may be some instances extending into August.	0	Low
<i>Crinia tinnula</i>	Wallum Froglet	V	-	Wallum Froglets inhabits a variety of environments, typically found in acidic swamps on coastal sand plains, sedgelands, and wet heathlands. They are also present along drainage lines in other vegetation communities, disturbed areas, and occasionally in swamp sclerophyll forests. This species breeds in both permanent swamps and shallow ephemeral pools and drainage ditches. Breeding likely peaks during colder months but can happen year-round after rainfall. The eggs, measuring 1.1-1.2 mm, are laid in water with a pH below 6, and tadpoles develop into frogs over 2-6 months. Wallum Froglets seek shelter under leaf litter, vegetation, debris, or in the burrows of other species. These shelters are wet or very damp and typically near the water's edge. Males may call throughout the year and at any time of day, with activity peaking after rain.	0	Moderate
<i>Cryptostylis hunteriana</i>	Leafless Tongue-orchid	V	V	Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by Scribbly Gum (<i>Eucalyptus sclerophylla</i>), Silvertop Ash (<i>E. sieberi</i>), Red Bloodwood (<i>Corymbia gummifera</i>) and Black Sheoak (<i>Allocasuarina littoralis</i>); appears to prefer open areas in the understorey of this community and is often found in association with the Large Tongue Orchid (<i>C. subulata</i>) and the Tartan Tongue Orchid (<i>C. erecta</i>).	0	Moderate
<i>Cynanchum elegans</i>	White-flowered Wax Plant	E	E	Recorded from rainforest gullies scrub and scree slopes from the Gloucester district to the Wollongong area and inland to Mt Dangar.	1	Moderate
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	-	Inhabits wide variety of dry eucalypt forests and woodlands, usually with either shrubby under storey or grassy ground cover or both, in all climatic zones of Australia. Usually in areas with rough-barked trees, such as stringybarks or ironbarks, but also in paperbarks or mature Eucalypts with hollows.	1	High
<i>Dasyurus maculatus maculatus</i>	Spotted-tailed Quoll	V	E	Spotted-tailed Quoll are found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Queensland. Only in Tasmania is it still considered common. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.	0	Moderate
<i>Delma impar</i>	Striped Legless Lizard	V	V	Found mainly in natural temperate grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near natural temperate grassland and occasionally in open box-gum woodland. Sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter.	0	Moderate
<i>Dichanthium setosum</i>	Bluegrass	V	V	Occurs on the New England Tablelands, Northwest Slopes and Plains and the Central Western Slopes of NSW, as well as in Queensland and Western Australia. It occurs widely on private property, including in the Inverell, Guyra, Armidale and Glen Innes areas. Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture.	0	Low
<i>Dillwynia tenuifolia</i>	<i>Dillwynia tenuifolia</i>	V	-	The core distribution is the Cumberland Plain from Windsor to Penrith east to Deans Park. Other populations in western Sydney are recorded from Voyager Point and Kemps Creek in the Liverpool LGA, Luddenham in the Penrith LGA and South Maroota in the Baulkham Hills Shire. Disjunct localities include: the Bulga Mountains at Yengo in the north, Kurrajong Heights and Woodford in the Lower Blue Mountains. In western Sydney, may be locally abundant particularly within scrubby-dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays. May also be common in transitional areas where these communities adjoin Castlereagh Scribbly Gum woodland. At Yengo, is reported to occur in disturbed escarpment woodland on Narrabeen sandstone.	1	High
<i>Diuris praecox</i>	Rough Doubletail	V	V	Occurs between Ourimbah and Nelson Bay. Grows on hills and slopes of near-coastal districts in open forests which have a grassy to dense understorey. Exists as subterranean tubers most of the year. It produces leaves and flowering stems in winter.	0	Moderate
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E	-	Mainly found on shallow, permanent, freshwater terrestrial wetlands, and surrounding marginal vegetation, including swamps, floodplains, watercourses and billabongs, freshwater meadows, wet heathland, farm dams and shallow floodwaters, as well as extending into adjacent grasslands, paddocks and open savannah woodlands. They also forage within or around estuaries and along intertidal shorelines, such as saltmarshes, mudflats and sandflats, and mangrove vegetation.	0	Moderate
<i>Erythrotriorchis radiatus</i>	Red Goshawk	CE	E	The Red Goshawk occurs in coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia.	0	Moderate
<i>Eucalyptus camaldulensis</i>	Eucalyptus camaldulensis population in the Hunter catchment	EP	-	The Hunter population occurs from the west at Bylong, south of Merriwa, to the east at Hinton, on the bank of the Hunter River.	1	Low



Scientific name	Common Name	BC Act	EPBC Act	Habitat & Ecology	Number of Records (DPIE 2023)	Likelihood of Occurrence
<i>Eucalyptus camfieldii</i>	Camfield's Stringybark	V	V	Rare and localized, in coastal shrub heath on sandy soils on sandstone, often of restricted drainage; from Gosford to Royal N.P. NSW subdivisions: NC, CC (PlantNet, 2024).	0	Low
<i>Eucalyptus glaucina</i>	Slaty Red Gum	V	V	Found only on the north coast of NSW and in separate districts: near Casino where it can be locally common, and farther south, from Taree to Broke, west of Maitland. Grows in grassy woodland and dry eucalypt forest. Grows on deep, moderately fertile and well-watered soils.	0	Moderate
<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>	<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>	V	V	Generally, occupies deep, low-nutrient sands, often those subject to periodic inundation or where water tables are relatively high. It occurs in dry sclerophyll woodland with dry heath understorey. It also occurs as an emergent in dry or wet heathland. Often where this species occurs, it is a community dominant.	0	Moderate
<i>Eucalyptus pumila</i>	Pokolbin Mallee	V	V	The single known population inhabits northwest-facing slopes derived from sandstone. It is a mid-canopy species reaching up to 6 meters in height within dry sclerophyll woodland, which has a canopy primarily consisting of <i>Eucalyptus fibrosa</i> , <i>Callitris endlicheri</i> , and, to a lesser extent, <i>Corymbia maculata</i> . Very little is known about its biology or ecology. It is believed to flower in April-May, but like many eucalypts, it does not flower every year. Individual plants are known to regrow by sprouting from a basal lignotuber, allowing them to persist after fires. However, this vegetative reproduction may inhibit the production of fruits and seeds necessary for the recruitment of new individuals, and the time between such disturbances and the onset of sexual reproduction is unknown.	0	Moderate
<i>Euphrasia arguta</i>	<i>Euphrasia arguta</i>	CE	CE	Occur in eucalypt forest with a mixed grass and shrub understorey within Nundle State Forest. Sites have either been logged in the last few decades or appear to have regrown from past clearing.	0	Moderate
<i>Falco hypoleucos</i>	Grey Falcon	E	V	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey.	0	Moderate
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	-	Inhabit sclerophyll forests, preferring wet habitats where trees are more than 20 m high. Two observations have been made of roosts in stem holes of living eucalypts. There is debate about whether this species moves to lower altitudes during winter, or whether they remain sedentary but enter torpor. This species also appears to be highly mobile and records showing movements of up to 12 km between roosting and foraging sites.	16	Moderate
<i>Glossopsitta pusilla</i>	Little Lorikeet	V	-	Distributed in forests and woodlands from the coast to the western slopes of the Great Dividing Range in NSW, extending westwards to the vicinity of Albury, Parkes, Dubbo and Narrabri. Mostly occur in dry, open eucalypt forests and woodlands. They feed primarily on nectar and pollen in the tree canopy. Nest hollows are located at heights of between 2 m and 15 m, mostly in living, smooth-barked eucalypts. Most breeding records come from the western slopes.	15	High
<i>Grantiella picta</i>	Painted Honeyeater	V	V	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits boree, brigalow and box-gum woodlands and box-ironbark forests.	0	Moderate
<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	Small-flowered Grevillea	V	V	Grows in sandy or light clay soils usually over thin shales. Occurs in a range of vegetation types from heath and shrubby woodland to open forest. Found over a range of altitudes from flat, low-lying areas to upper slopes and ridge crests. Often occurs in open, slightly disturbed sites such as along tracks.	0	Moderate
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V	MAR	Inhabits coastal and near coastal areas, building large stick nests, and feeding mostly on marine and estuarine fish and aquatic fauna.	2	High
<i>Hamirostra melanosternon</i>	Black-breasted Buzzard	V	-	The Black-breasted Buzzard is found sparsely in areas of less than 500mm rainfall, from north-western NSW and north-eastern South Australia to the east coast at about Rockhampton, then across northern Australia south almost to Perth, avoiding only the Western Australian deserts.	0	Moderate



Scientific name	Common Name	BC Act	EPBC Act	Habitat & Ecology	Number of Records (DPIE 2023)	Likelihood of Occurrence
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V	V	The Giant Burrowing Frog has been recorded breeding in a range of water bodies associated with more sandy environments of the coast and adjacent ranges from the Sydney Basin south the eastern Victoria. It breeds in hanging swamps, perennial non-flooding creeks and occasionally permanent pools, but permanent water must be present to allow its large tadpoles time to reach metamorphosis.	0	Low
<i>Hieraaetus morphnoides</i>	Little Eagle	V	-	Most abundant in lightly timbered areas with open areas nearby. Often recorded foraging in grasslands, crops, treeless dune fields, and recently logged areas. May nest in farmland, woodland and forest in tall trees.	0	Moderate
<i>Hirundapus caudacutus</i>	White-throated Needletail	-	M, MAR, V	An aerial species found in feeding concentrations over cities, hilltops and timbered ranges.	1	High
<i>Hoplocephalus bitorquatus</i>	Pale-headed Snake	V	-	The Pale-Headed Snake has a patchy distribution from north-east Queensland to north-east NSW. In NSW it occurs from the coast to the western side of the Great Divide as far south as Tuggerah and out to the western plains. It is found mainly in dry eucalypt forests and woodlands, cypress woodland and occasionally in rainforest or moist eucalypt forest where it favours streamside areas, particularly in drier habitats. They shelter during under loose bark or in hollows and prefer frogs as prey, although lizards and small mammals are also taken. This species breeds and shelters in hollows in live and dead trees and in and under fallen timber. It is best detected from mid spring to mid-autumn and is mostly nocturnal.	0	High
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	E	V	Occurs almost exclusively in association with communities occurring on Triassic sandstone within the Sydney Basin. Typically found among exposed sandstone outcrops with vegetation types ranging from woodland to heath. Within these habitats they spend most of the year sheltering in and under rock crevices and exfoliating rock. However, some individuals will migrate to tree hollows to find shelter during hotter parts of summer.	0	Moderate
<i>Hoplocephalus stephensii</i>	Stephens' Banded Snake	V	-	Rainforest and eucalypt forests, as well as rocky areas up to 950 meters in altitude, are the habitats for Stephens' Banded Snake. This nocturnal species takes shelter during the day under loose bark, between tree trunks, among vines, or in hollow trunks and limbs, rock crevices, or beneath slabs. At night, it hunts frogs, lizards, birds, and small mammals.	0	Moderate
<i>Lathamus discolor</i>	Swift Parrot	E	CE	The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. This species is migratory, breeding in Tasmania and also nomadic, moving about in response to changing food availability.	0	Moderate
<i>Leionema lamprophyllum subsp. fractum</i>	<i>Leionema lamprophyllum subsp. fractum</i>	CE	CE	Leionema lamprophyllum subsp. fractum is found in sparse heathland or very open low woodland on skeletal sandy soils in exposed rocky areas. It commonly grows alongside Corymbia maculata, Eucalyptus sparsifolia, Pultenaea spinosa, Leptospermum trinervium, Acacia parvipinnula, Dillwynia sieberi, Persoonia linearis, Leucopogon muticus, Astrotricha sp. Quorrobolong (S. Lewer 40), Correa reflexa var. reflexa, Patersonia sericea, Entolasia stricta, Cleistochloa rigida, Pomax umbellata, Lepidosperma gunnii, and Lomandra confertifolia subsp. rubiginosa. The threatened species Eucalyptus fracta and Prostanthera cineolifera are also present in or near this habitat. The total population of mature Leionema lamprophyllum subsp. fractum individuals is very low, with only 38 known individuals. These plants are located on skeletal sandy soils on a rocky, north to northwest-facing outcrop at 515 meters above sea level.	0	Low
<i>Limicola falcinellus</i>	Broad-billed Sandpiper	V	-	Broad-billed Sandpipers prefer sheltered coastal areas such as estuarine sandflats and mudflats, harbors, embayments, lagoons, saltmarshes, and reefs for feeding and roosting. Occasionally, they can be found in sewage farms or shallow freshwater lagoons. They roost on banks of sheltered sand, shell, or shingle beaches. These birds are active foragers, typically feeding by quickly and repeatedly jabbing their bills into soft, wet mud. They also feed while wading, often in water deep enough that they must submerge their heads and necks to reach the mud below. Their diet includes insects, crustaceans, mollusks, worms, and seeds. Broad-billed Sandpipers are strongly migratory and only mildly social when not breeding. Large flocks are rare, and they are often seen alone or feeding with other waders like Red-necked Stints or Curlew Sandpipers.	0	Low

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<i>Limosa lapponica baueri</i>	Bar-tailed Godwit	-	E, MIG	"The Bar-tailed Godwit is a migratory wader which undertakes the largest non-stop flight of any bird. The trans-Pacific route from its breeding grounds in the Arctic to its non-breeding grounds in the southern hemisphere covers over 11,000 km. Birds arrive in New South Wales between August and October and then leave between February and April, with a small number of individuals overwintering. The subspecies is most frequently recorded along major coastal river estuaries and sheltered embayment's, particularly the Tweed, Richmond, Clarence, Macleay, Hastings, Hunter and Shoalhaven River estuaries, Port Stephens and Botany Bay. It is a rare visitor to wetlands away from the coast with scattered records as far west as along the Darling River and the Riverina. It is found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. Less frequently it occurs in salt lakes and brackish wetlands, sandy ocean beaches and rock platforms.	0	Low
<i>Litoria aurea</i>	Green and Golden Bell Frog	E	V	Inhabits a very wide range of water bodies including marshes, dams and streams, particularly those containing emergent vegetation such as bullrushes or spikerushes. It also inhabits numerous types of man-made water bodies including quarries and sand extraction sites. Optimum habitat includes waterbodies that are un-shaded, free of predatory fish such as Plague Minnow, have a grassy area nearby and diurnal sheltering sites available.	0	Moderate
<i>Litoria brevipalmata</i>	Green-thighed Frog	E	V	This species is distributed from south-east Queensland to the NSW Central Coast. It occurs in a range of habitat types including rainforest, moist eucalypt forest, dry eucalypt forest and heath, but is most closely associated with wetter forest types in the southern part of its range. Calling and breeding is highly correlated with heavy rainfalls that lead to the formation of large ephemeral pools in a range of sites, but always in association with some native vegetation. Calling occurring only for one or two nights at a time anywhere between September and May.	0	Moderate
<i>Lophoictinia isura</i>	Square-tailed Kite	V	-	Typically inhabits coastal forested and wooded lands of tropical and temperate Australia. In NSW it is often associated with ridge and gully forests dominated by Eucalyptus longifolia, Corymbia maculata, E. elata or E. smithii. Individuals appear to occupy large hunting ranges of more than 100km2. They require large living trees for breeding, particularly near water with surrounding woodland -forest close by for foraging habitat. Nest sites are generally located along or near watercourses, in a tree fork or on large horizontal limbs.	0	Moderate
<i>Macropus parma</i>	Parma Wallaby	V	V	Once occurred from north-eastern NSW to the Bega area in the southeast. Their range is now confined to the coast and ranges of central and northern NSW from the Gosford district to the Queensland border. Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest.	0	Moderate
<i>Maundia triglochinoxides</i>	Maundia triglochinoxides	V	-	Grows in swamps, creeks or shallow freshwater 30 - 60 cm deep on heavy clay, low nutrients. Flowering occurs during warmer months. Diaspore is the seed and root tubers, which are probably dispersed by water.	0	Moderate
<i>Melaleuca biconvexa</i>	Biconvex Paperbark	V	V	Grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects. Scattered and dispersed populations found in the Jervis Bay area in the south and the Gosford-Wyong area in the north.	0	Moderate
<i>Melaleuca groveana</i>	Grove's Paperbark	V	-	Grove's Paperbark is found in heath and shrubland, typically in exposed areas on low coastal hills, escarpment ranges, and tablelands, growing on outcrops of granite, rhyolite, and sandstone. It also thrives on rocky outcrops and cliffs, as well as in dry, shrubby open forests and woodlands.	0	Low
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	V	-	Eucalypt woodlands within an approximate annual rainfall range of 400-700mm	0	Moderate

Scientific name	Common Name	BC Act	EPBC Act	Habitat & Ecology	Number of Records (DPIE 2023)	Likelihood of Occurrence
<i>Micronomus norfolkensis</i>	Eastern Coastal Free tailed Bat	V	-	"The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW. Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures. Usually solitary but also recorded roosting communally, probably insectivorous."	9	Known
<i>Miniopterus australis</i>	Little Bentwing-bat	V	-	Coastal north-eastern NSW and eastern Queensland. Little Bent-wing Bat is an insectivorous bat that roost in caves, in old mines, in tunnels, under bridges, or in similar structures. They breed in large aggregations in a small number of known caves and may travel 100s km from feeding home ranges to breeding sites. Little Bent-wing Bat has a preference for moist eucalypt forest, rainforest or dense coastal banksia scrub where it forages below the canopy for insects.	46	Known
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V	-	"Eastern Bentwing-bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Maternity caves have very specific temperature and humidity regimes. At other times of the year, populations disperse within about 300 km range of maternity caves. Cold caves are used for hibernation in southern Australia. Breeding or roosting colonies can number from 100 to 150,000 individuals. Hunt in forested areas, catching moths and other flying insects above the treetops"	9	Known
<i>Mixophyes balbus</i>	Stuttering Frog	E	V	Associated with streams in dry sclerophyll and wet sclerophyll forests and rainforests of more upland areas of the Great Dividing Range of NSW and down into Victoria. Breeding occurs along forest streams with permanent water where eggs are deposited within nests excavated in riffle zones by the females and the tadpoles swim free into the stream when large enough to do so. Outside of breeding, individuals range widely across the forest floor and can be found hundreds of metres from water	0	Low
<i>Mixophyes iteratus</i>	Giant Barred Frog	E	E	This species is found along larger streams of the coast and adjacent ranges of NSW and SE QLD. It inhabits rainforest and wet sclerophyll forest but is also found within cleared farmland where fringing vegetation is retained, including lantana beds. Many sites where the Giant Barred Frog is known to occur are the lower reaches of streams which have been affected by major disturbances such as clearing, timber harvesting and urban development in their headwaters.	0	Low
<i>Myotis macropus</i>	Southern Myotis	V	-	The Large-footed Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. Generally, roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage.	10	Known
<i>Neophema pulchella</i>	Turquoise Parrot	V	-	The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Nests in tree hollows, logs or posts, from August to December. It lays four or five white, rounded eggs on a nest of decayed wood dust.	0	Moderate
<i>Ninox connivens</i>	Barking Owl	V	-	Generally found in open forests, woodlands, swamp woodlands and dense scrub. Can also be found in the foothills and timber along watercourses in otherwise open country.	0	Moderate
<i>Ninox strenua</i>	Powerful Owl	V	-	Occupies wet and dry eucalypt forests and rainforests. Can occupy both un-logged and lightly logged forests as well as undisturbed forests where it usually roosts on the limbs of dense trees in gully areas. It is most commonly recorded within red turpentine in tall open forests and black she-oak within open forests. Large mature trees with hollows at least 0.5 m deep are required for nesting. Tree hollows are particularly important for the Powerful Owl because a large proportion of the diet is made up of hollow-dependent arboreal marsupials. Nest trees for this species are usually emergent with a diameter at breast height of at least 100 cm.	9	High

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<i>Notamacropus parma</i>	Parma wallaby	V	V	Preferred habitat includes moist eucalypt forests with dense, shrubby understorey, often located near grassy areas, rainforest edges, and occasionally in drier eucalypt forests. They typically feed at night on grasses and herbs found in more open eucalypt forests and the edges of nearby grassy areas. During the day, they seek shelter in dense cover.	0	Moderate
<i>Numenius madagascariensis</i>	Eastern Curlew	-	CE	The Eastern curlew spends its breeding season in northeastern Asia, including Siberia to Kamchatka, and Mongolia. Its breeding habitat is composed of marshy and swampy wetlands and lakeshores. Most individuals winter in coastal Australia, with a few heading to South Korea, Thailand, Philippines and New Zealand, where they stay at estuaries, beaches, and salt marshes. It uses its long, decurved bill to probe for invertebrates in the mud. It may feed in solitary, but it generally congregates in large flocks to migrate or roost. Its call is a sharp, clear whistle, cuuue-reee, often repeated.	0	Low
<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat	V	V	Inhabits various vegetation types, including mallee, bulloke (<i>Allocasuarina leuhmanni</i>), and box eucalypt-dominated communities. However, it is particularly common in box, ironbark, and cypress-pine vegetation found in a north-south belt along the western slopes and plains of NSW and southern Queensland. It roosts in tree hollows, crevices, and beneath loose bark.	0	Moderate
<i>Oxyura australis</i>	Blue-billed Duck	V	-	Widespread in NSW, but most common in the southern Murray-Darling Basin area. Birds disperse during the breeding season to deep swamps up to 300 km away. It is generally only during summer or in drier years that they are seen in coastal areas. The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation.	0	Low
<i>Ozothamnus tessellatus</i>	Tesselate Everlasting	V	V	Grows in eucalypt woodland. Upper Hunter from Ravensworth to Bylong and west of Divide at Bunnan.	0	Low
<i>Pandion cristatus</i>	Eastern Osprey	V	MIG, MAR	"The Osprey has a global distribution with four subspecies previously recognised throughout its range. However, recent studies have identified that there are two species of Osprey - the Western Osprey (<i>P. halletus</i>) with three subspecies occurring in Europe, Asia and the Americas and the Eastern Osprey (<i>P. cristatus</i>) occurring between Sulawesi (in Indonesia), Australia and New Caledonia. Eastern Ospreys are found right around the Australian coastline, except for Victoria and Tasmania. They are common around the northern coast, especially on rocky shorelines, islands and reefs. The species is uncommon to rare or absent from closely settled parts of south-eastern Australia. There are a handful of records from inland areas. Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water. Breed from July to September in NS Incubation of 2-3 eggs, usually by the female, is about 40 days. Female remains with young almost until they fly, usually after about nine weeks in the nest. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	0	Moderate
<i>Persicaria elatior</i>	Tall Knotweed	V	V	This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	0	Moderate
<i>Persoonia hirsuta</i>	Hairy Geebung	E	E	Distributed from Singleton in the north, along the east coast to Bargo in the south and the Blue Mountains to the west. A large area of occurrence, but occurs in small populations, increasing the species' fragmentation in the landscape. Found in sandy soils in dry sclerophyll open forest, woodland and heath on sandstone. Usually present as isolated individuals or very small populations. Probably killed by fire (as other <i>Persoonia</i> spp. are) but will regenerate from seed.	0	Moderate
<i>Persoonia pauciflora</i>	North Rothbury Persoonia	CE	CE	Extremely restricted distribution: all but one of the plants which make up the only known population occur within a 2.5 km radius of the original specimen at North Rothbury in the Cessnock local government area. Within this range, there are three main sub-populations which comprise approximately 90% of the total population. The other 10% of the population occurs as scattered individuals in what is a relatively disturbed landscape. It is found in dry open forest or woodland dominated by spotted gum, broad-leaved ironbark and-or narrow-leaved ironbark and supporting a moderate to sparse shrub layer and grassy groundcover. Most of the population is known to occur on silty sandstone soils derived from the Farley Formation.	0	Moderate



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<i>Petauroides volans</i>	Greater Glider	-	E	The Greater Glider occurs in eucalypt forests and woodlands. Utilise tree hollows	0	Moderate
<i>Petaurus australis australis</i>	Yellow-bellied Glider	-	V	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. Found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria.	0	Moderate
<i>Petaurus norfolcensis</i>	Squirrel Glider	V	-	Generally, occurs in dry sclerophyll forests and woodlands but is absent from dense coastal ranges in the southern part of its range. Requires abundant hollow bearing trees and a mix of eucalypts, banksias and acacias. There is only limited information available on den tree use by Squirrel gliders, but it has been observed using both living and dead trees as well as hollow stumps. Within a suitable vegetation community at least one species should flower heavily in winter and one species of eucalypt should be smooth barked. Endangered population in the Wagga Wagga LGA.	3	High
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	E	V	Found in rocky areas in a wide variety of habitats including rainforest gullies, wet and dry sclerophyll forest, open woodland and rocky outcrops in semi-arid country. Commonly sites have a northerly aspect with numerous ledges, caves and crevices.	0	Moderate
<i>Petroica boodang</i>	Scarlet Robin	V	-	The Scarlet Robin is found from SE Queensland to SE South Australia and also in Tasmania and SW Western Australia. In NSW, it occurs from the coast to the inland slopes. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs.	0	Moderate
<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	V	-	The Brush-tailed Phascogale has a patchy distribution around the coast of Australia. In NSW it is mainly found east of the Great Dividing Range although there are occasional records west of the divide. Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest.	1	High
<i>Phascolarctos cinereus</i>	Koala	E	E	Inhabits eucalypt forests and woodlands. The suitability of these forests for habitation depends on the size and species of trees present, soil nutrients, climate and rainfall.	2	High
<i>Planigale maculata</i>	Common planigale	V	-	Common Planigales inhabit rainforests, eucalypt forests, heathlands, marshlands, grasslands, and rocky areas with surface cover, typically near water. They are nocturnal, sheltering during the day in saucer-shaped nests located in crevices, hollow logs, under bark, or beneath rocks. As fierce carnivorous hunters and agile climbers, they prey on insects and small vertebrates, some nearly as large as themselves. Breeding occurs from October to January, with the female constructing a nest lined with grass, eucalypt leaves, or shredded bark.	0	Moderate
<i>Pomaderris brunnea</i>	Brown Pomaderris	V	V	The species is expected to live for 10 - 20 years, while the minimum time to produce seed is estimated to be 4 - 6 years. Found in a very limited area around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area. It also occurs at Walcha on the New England Tableland and in far eastern Gippsland in Victoria.	0	Moderate

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<i>Pomaderris queenslandica</i>	<i>Pomaderris queenslandica</i>	E	-	Rare in N.S.W. Specimens have been recorded from Mount Danger and Gloucester district. Species more widespread in Queensland. Recorded in moist eucalypt forest or sheltered woodlands with a shrubby understorey.	0	Low
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V	-	In NSW, the eastern sub-species occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. It also occurs in woodlands in the Hunter Valley and in several locations on the north coast of NSW. It may be extinct in the southern, central and New England tablelands. Inhabits open box-gum woodlands on the slopes, and box-cypress-pine and open box woodlands on alluvial plains.	2	High
<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo	V	V	Inhabits coastal heath and wet and dry sclerophyll forests. Generally found in areas with rainfall greater than 760 mm. Requires relatively thick ground cover where the soil is light and sandy.	0	Low
<i>Prasophyllum sp. Wybong</i>	A leek orchid	-	CE	Endemic to NSW. It is known from seven populations in eastern NSW near Ilford, Premer, Muswellbrook, Wybong, Yeoval, Inverell and Tenterfield.	0	Moderate
<i>Prostanthera cineolifera</i>	<i>Prostanthera cineolifera</i>	V	V	Grows in open woodlands on exposed sandstone ridges. Usually found in association with shallow or skeletal sands.	0	Moderate
<i>Pseudomys novaehollandiae</i>	New Holland Mouse	-	V	The New Holland Mouse currently has a disjunct, fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Across the species' range the New Holland Mouse is known to inhabit open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes.	0	Moderate
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands, melaleuca swamps and banksia woodlands. Bats commute daily to foraging areas, usually within 15 km of the day roost although some individuals may travel up to 70 km.	21	High
<i>Pterostylis chaetophora</i>	Taree Rustyhood	V	-	The preferred habitat is seasonally moist, dry sclerophyll forest with a grass and shrub understorey. The most observed habitat is vegetation characterised by grassy open forests or derived native grasslands of Eucalyptus amplifolia and Eucalyptus moluccana on gentle flats, or that are dominated by Corymbia maculata with any of Eucalyptus fibrosa, Eucalyptus sideroploia or Eucalyptus crebra. Flowers from September to November. Vegetative reproduction is not common in this group of Greenhoods, but some species may form more than one dropper annually. Fails to flower in dry seasons. Plants are deciduous and die back to the large, underground tubers after seed release. New rosettes are produced following soaking autumn and winter rains."	1	High
<i>Pterostylis gibbosa</i>	Illawarra Greenhood	E	E	Grows in open forest or woodland, on flat or gently sloping land with poor drainage. Known from a small number of populations in the Hunter region (Milbrodale), the Illawarra region (Albion Park and Yallah) and the Shoalhaven region (near Nowra).	0	Moderate

Scientific name	Common Name	BC Act	EPBC Act	Habitat & Ecology	Number of Records (DPIE 2023)	Likelihood of Occurrence
<i>Ptilinopus magnificus</i>	Wompoo Fruit-dove	V	-	Distributed north of the Hunter River in NSW on the coast and coastal ranges. Inhabits rainforest, monsoon forest, adjacent eucalypt forest and brush box forest.	1	High
<i>Pycnoptilus floccosus</i>	Pilot Bird	-	V	The pilotbird is found from the Wollemi National Park and Blue Mountains National Park in New South Wales through to the Dandenong Ranges, near Melbourne in Victoria.[9] Its natural habitat is temperate wet sclerophyll forests and occasionally temperate rainforest, where there is dense undergrowth with abundant debris.[1][7] It is sedentary and common	0	Low
<i>Rhizanthella slateri</i>	Eastern Underground Orchid	V, EP (Great Lakes)	E	Habitat requirements are poorly understood, and no particular vegetation type has been associated with the species, although it is known to occur in sclerophyll forest.	0	Moderate
<i>Rhodamnia rubescens</i>	Scrub Turpentine	CE	CE	Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. This species is characterised as highly to extremely susceptible to infection by Myrtle Rust. Myrtle Rust affects all plant parts.	0	Low
<i>Rhodomyrtus psidioides</i>	Native Guava	CE	CE	Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines. This species is characterised being extremely susceptible to infection by Myrtle Rust. Myrtle Rust affects all plant parts.	0	Moderate
<i>Rostratula australis</i>	Australian Painted Snipe	E	E, MAR	In NSW, this species has been recorded at the Paroo wetlands, Lake Cowell, Macquarie Marshes and Hexham Swamp. Most common in the Murray-Darling Basin. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds.	0	Moderate
<i>Rutidosia heterogama</i>	Heath Wrinklewort	V	V	Grows in heath on sandy soils and moist areas in open forest and has been recorded along disturbed roadsides.	0	Moderate
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat	V	-	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.	4	Known
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V	-	Prefer moist gullies in mature coastal forests and rainforests, between the Great Dividing Range and the coast. They are only found at low altitudes below 500 m. In dense environments they utilise natural and human-made opening in the forest for flight paths. Creeks and small rivers are favoured foraging habitat. This species roosts in hollow tree trunks and branches.	9	Known

Scientific name	Common Name	BC Act	EPBC Act	Habitat & Ecology	Number of Records (DPIE 2023)	Likelihood of Occurrence
<i>Spyridium burragorang</i>	Spyridium burragorang – endangered population	E	-	Species population is restricted to the Cessnock local government area	0	Low
<i>Stagonopleura guttata</i>	Diamond Firetail	V	V	Found in grassy eucalypt woodlands, including Box-Gum and Snow Gum (<i>Eucalyptus pauciflora</i>) woodlands. It is also present in open forests, mallee, Natural Temperate Grassland, and secondary grasslands originating from other communities. This species is frequently found in riparian zones (along rivers and creeks) and occasionally in lightly wooded farmland. It feeds exclusively on the ground, consuming ripe and partly ripe grass and herb seeds, green leaves, and insects, especially during the breeding season. Typically seen in flocks ranging from 5 to 40 birds, sometimes more. During the breeding season, from August to January, groups disperse into small colonies. They build globular nests either in the shrubby understory or higher up, often under hawk or raven nests. These birds roost in dense shrubs or in smaller nests constructed specifically for roosting	0	Low
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E	V	Found only in NSW, in a narrow, linear coastal strip from Bulahdelah to Conjola State Forest. On the south coast the species occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral rainforest. On the central coast it occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities	0	Moderate
<i>Tetradlea juncea</i>	Black-eyed Susan	V	V	Confined to the northern portion of the Sydney Basin bioregion and the southern portion of the North Coast bioregion in the local government areas of Wyong, Lake Macquarie, Newcastle, Port Stephens, Great Lakes and Cessnock. It is usually found in low open forest-woodland with a mixed shrub understorey and grassy groundcover. The majority of populations occur on low nutrient soils associated with the Awaba Soil Landscape. Cryptic species that requires survey in September-October.	0	Moderate
<i>Thesium australe</i>	Austral Toadflax	V	V	Grows in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. It is also found in Tasmania and Queensland and in eastern Asia. Occurs in grassland or grassy woodland. Grows on kangaroo grass tussocks but has also been recorded within the exotic Coolatai grass.	0	Moderate
<i>Tyto novaehollandiae</i>	Masked Owl	V	-	Inhabits a diverse range of wooded habitat that provide tall or dense mature trees with hollows suitable for nesting and roosting. Mostly recorded in open forest and woodlands adjacent to cleared lands. Nest in hollows, in trunks and in near vertical spouts or large trees, usually living but sometimes dead. Nest hollows are usually located within dense forests or woodlands. Masked owls prey upon hollow-dependent arboreal marsupials, but terrestrial mammals make up the largest proportion of the diet.	4	Known
<i>Tyto tenebricosa</i>	Sooty Owl	V	-	Often found in tall old-growth forests, including temperate and subtropical rainforests. In NSW mostly found on escarpments with a mean altitude less than 500 metres. Nests and roosts in hollows of tall emergent trees, mainly eucalypts often located in gullies. Nests have been located in trees 125 to 161 centimetres in diameter.	0	Moderate
<i>Vespadelus troughtoni</i>	Eastern Cave Bat	V	-	The Eastern Cave Bat is found in a broad band on both sides of the Great Dividing Range from Cape York to Kempsey, with records from the New England Tablelands and the upper north coast of NSW. The western limit appears to be the Warrumbungle Range, and there is a single record from southern NSW, east of the ACT. A cave-roosting species that is usually found in dry open forest and woodland, near cliffs or rocky overhangs; has been recorded roosting in disused mine workings, occasionally in colonies of up to 500 individuals.	7	Known

Appendix C – Vegetation survey data

TABLE 21 - BAM PLOT FLORISTIC DATA

Plot location			Coordinates				Composition (species richness)										Structure (cover %)										Function					Tree Stem Size Class DBH (cm)					HBTs	
Plot	PCT	Condition class	Zone	Easting	Northing	Bearing	Tree	Shrub	Grass	Forbs	Ferns	Other	Exotic	HTW	HTW Manageable	HTW Total	Tree	Shrub	Grass	Forbs	Ferns	Other	Exotic	HTW	HTW Manageable	HTW Total	Large Trees (>80cm DBH)	Large Trees (50-79cm DBH)	Hollow trees	Litter Cover (mean %)	Fallen Logs	>5	5 to 9	10 to 19	20 to 29	30 to 49	Tree Regen	
BHKH1	3443	Moderate	56	151.5734662	-32.79284914	208	3	5	8	3	0	4	2	2	1	3	22	31.05	86.31	1.2	0	0.17	1.01	0.1	2	2.1	8	4	0	42	13	1	1	1	1	1	No	2.1
BHKH2	3443	High	56	151.5582356	-32.7965125	140	6	7	6	1	0	2	0	0	0	0	60	7.6	101	0.1	0	2	0	0	0	0	24	26	11	90	46	1	1	1	1	1	No	0
BHKH3	3433	High	56	151.5591445	-32.79840261	212	5	6	7	1	0	4	0	0	0	0	47	10.01	111.56	0.01	0	2.52	0	0	0	0	7	27	9	64	33	1	1	1	1	1	Yes	0
BHKH4	3433	High	56	151.5572962	-32.7967432	176	4	6	6	1	0	3	0	0	0	0	46	0.72	36.52	0.01	0	1.1	0	0	0	0	9	24	6	63	37	1	1	1	1	1	No	0
BHKH5	3433	High	56	151.562259	-32.7981292	285	6	11	7	2	1	3	0	0	0	0	76.1	5.95	80.71	0.1	0.01	0.11	0	0	0	0	16	22	5	52	25	1	1	1	1	1	No	0
BHKH6	0	Non-native	56	151.5643629	-32.7964956	286	1	2	3	3	0	0	6	2	0	2	1	55	1.11	6.2	0	0	18.1	3	0	3	0	0	0	0	18	1	1	1	0	0	No	3
BHKH7	3433	Moderate	56	151.5554735	-32.80402124	201	6	9	6	2	2	9	0	0	1	1	68.05	16.05	33.65	0.07	1.01	51.25	0	0	5	5	8	22	6	68	16	1	1	1	1	1	No	5
PMKH1	3433	Low	56	151.565	-32.797	346	3	8	2	2	1	1	6	2	1	3	12.1	12.8	15.1	0.11	0.1	0.1	10.6	10	5	15	0	0	0	25	0	Y	Y	N	N	N	Yes	15
BHLD_1	3433	Low	56	151.57473742976	-32.7929155715115	311	1	2	5	7	1	2	8	4	0	4	10	6	81	4.5	0.5	1.01	15.02	4.55	0	4.55	0	0	0	0	7	1	1	1	0	0	No	4.55
BHLD_2	3433	Moderate	56	151.560502611242	-32.7957851160623	24	6	9	7	3	1	4	0	0	1	1	105	15	67.5	3	0.5	2.01	0	0	40	40	1	2	2	85	50	0	1	1	1	1	No	40

TABLE 22 - FLORISTICS COVER AND ABUNDANCE DATA.

Family	Scientific Name	Common Name	BHKH1		BHKH2		BHKH3		BHKH4		BHKH5		BHKH6		BHKH7		PMKH1		BHL1_1		BHL2_2	
			C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A
Fabaceae (Mimosoideae)	<i>Acacia decurrens</i>	Sydney green wattle															2	100				
Fabaceae (Mimosoideae)	<i>Acacia elongata</i>	Swamp wattle			2	5	3	7			2	11					0.1	25			1	2
Fabaceae (Mimosoideae)	<i>Acacia falcata</i>	Hickory wattle											50	1000								
Fabaceae (Mimosoideae)	<i>Acacia implexa</i>	Lightwood	5	3											2	5						
Fabaceae (Mimosoideae)	<i>Acacia longifolia</i>	Long-leaved wattle/Sydney wattle									0.05	1	5	2	1	20	2	50	5	5		
Fabaceae (Mimosoideae)	<i>Acacia parramatensis</i>	Parramatta wattle											1	3					10	4	5	1
Fabaceae (Mimosoideae)	<i>Acacia parvipinnula</i>	Silver-stemmed wattle	20	5																		
Zamiaceae	<i>Adiantum aethiopicum</i>	Maiden hair fern													1	15						
Asteraceae	<i>Ageratina adenophora</i>	Crofton weed	0.05	5																		
Casuarinaceae	<i>Allocasuarina torulosa</i>	Forest Oak			10	1	2	1			0.05	10			0.05	5	0.1	5			5	2
Poaceae	<i>Andropogon virginicus</i>	Whiskey grass											2	80			5		0.05	1		
Myrtaceae	<i>Angophora costata</i>	Smooth-barked apple	15	11																		
Poaceae	<i>Anthoxanthum odoratum</i>	Sweet vernal grass	0.1	1							0.01	5			0.05	10						
Poaceae	<i>Aristida vagans</i>	Threeawn Speargrass			10	500	5	200	0.5	50	0.5	100	0.1	1	1	100					5	200
Asteraceae	<i>Bidens pilosa</i>	Cobblers Pegs	0.05	5															2	20		
Pittosporaceae	<i>Billardiera scandens</i>	Hairy apple berry							0.05	10					0.02	3					0.5	3
Phyllanthaceae	<i>Breynia oblongifolia</i>	Coffee bush	1	3											5	7			1	5	1	3
Pittosporaceae	<i>Bursaria spinosa</i>	Blackthorn			0.05	1									2	2					5	5
Lauraceae	<i>Cassytha spp.</i>	Devil's twine			1	3	0.01	2														
Poaceae	<i>Cenchrus clandestinus</i>	Kikuyu grass															10					
Pteridaceae	<i>Cheilanthes sieberi</i>	Mulga fern									0.01	1			0.01	1	0.1	100	0.5	50	0.5	20
Poaceae	<i>Chloris gayana</i>	Windmill grass											1	20			5					
Asteraceae	<i>Cirsium vulgare</i>	Spear thistle											0.05	20								
Ranunculaceae	<i>Clematis aristata</i>	Old Man's Beard																	0.01	1		
Asteraceae	<i>Conyza bonariensis</i>	Flaxleaf Fleabane															0.1	10	0.01	1		
Asteraceae	<i>Conyza canadensis</i>	Horseweed											10	100								
Myrtaceae	<i>Corymbia gummifera</i>	Red bloodwood			5	2																
Myrtaceae	<i>Corymbia maculata</i>	Spotted gum			10	8	20	21	20	25	30	5			10	4	10				65	4
Poaceae	<i>Cynodon dactylon</i>	Couch/Bermuda grass	5	1000													15		20	1000		
Fabaceae	<i>Daviesia ulicifolia</i>	Gorse bitter pea			2	1	0.01	1	0.01	1	2	5					0.2	10				
Fabaceae	<i>Desmodium varians</i>	Slender tick-trefoil	0.01	3							0.01	1			0.1	1						
Asphodelaceae	<i>Dianella caerulea</i>	Blue Flax Lily			0.1	1			0.01	1					0.05	5					1	5
Convolvulaceae	<i>Dichondra repens</i>	Kidneyweed																	0.5	15		
Fabaceae	<i>Dillwynia retorta</i>	Healthy parrot pea			2	10	1	2	0.5	5	0.05	3					0.1	2				
Fabaceae	<i>Dillwynia sieberi</i>	Prickly parrot pea									0.05	1										
Poaceae	<i>Echinopogon ovatus</i>	Forest hedgehog grass	0.5	10																		
Poaceae	<i>Entolasia marginata</i>	Bordered panic	70	5000			0.5	10							30	500						
Poaceae	<i>Entolasia stricta</i>	Wiry panic			20	1000	40	500	5	500	10	500									30	1000
Poaceae	<i>Eragrostis spp.</i>	Lovegrass													0.1	10						

Family	Scientific Name	Common Name	BHKH1		BHKH2		BHKH3		BHKH4		BHKH5		BHKH6		BHKH7		PMKH1		BHLD_1		BHLD_2	
			C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A
Myrtaceae	<i>Eucalyptus fibrosa</i>	Broad-leaved Red Ironbark																			10	2
Myrtaceae	<i>Eucalyptus punctata</i>	Grey gum	2	0	5	2	15	5	1	2	1	1									15	2
Myrtaceae	<i>Eucalyptus siderophloia</i>	Grey ironbark			25	2	5	1	20	8	5	3			40	3						
Myrtaceae	<i>Eucalyptus umbra</i>	Broad-leaved white mahogany			5	1	5	2	5	5	40	5			10	1						
Asparagaceae	<i>Eustrephus latifolius</i>	Wombat berry													0.05	10						
Santalaceae	<i>Exocarpos cupressiformis</i>	Native cherry													2	1						
Santalaceae	<i>Exocarpos spp.</i>	Ballart			0.5	1	3	2														
Phyllanthaceae	<i>Glochidion ferdinandi</i>	Cheese tree	5	3											3	2					5	3
Fabaceae (Faboideae)	<i>Glycine clandestina</i>	Love creeper	0.01	1											0.01	2						
Fabaceae (Faboideae)	<i>Glycine spp.</i>	Twining herb					2	100														
Fabaceae (Faboideae)	<i>Glycine tabacina</i>	Variable glycine													0.01	1						
Goodeniaceae	<i>Goodenia hederacea subsp. hederacea</i>	Forest goodenia									0.05	5										
Goodeniaceae	<i>Goodenia rotundifolia</i>																0.01	100				
Proteaceae	<i>Grevillea spp.</i>	Grevillea							0.05	5	0.5	2										
Fabaceae (Faboideae)	<i>Hardenbergia violacea</i>	Purple coral pea	0.05	2											0.01	1	0.1	1				
Dilleniaceae	<i>Hibbertia aspera</i>	Rough Guinea Flower															0.1	25				
Dilleniaceae	<i>Hibbertia obtusifolia</i>	Hoary guinea flower									0.05	3			1	20					0.5	1
Poaceae	<i>Hyparrhenia hirta</i>	Common Thatching Grass																	0.5	1		
Asteraceae	<i>Hypochaeris radicata</i>	catsear																	0.01	1		
Poaceae	<i>Imperata cylindrica</i>	Blady grass	10	1000											0.5	20						
Juncaceae	<i>Juncus usitatus</i>	Common rush	0.01	5					0.01	1												
Verbenaceae	<i>Lantana camara</i>	Common lantana	2	2											5	5	5				40	15
Cyperaceae	<i>Lepidosperma laterale</i>	Variable swordsedg			0.5	2	1	5			0.05	3									1	5
Myrtaceae	<i>Leptospermum polygalifolium</i>	Yellow Tea Tree																			1	1
Ericaceae (Epacridoideae)	<i>Lissanthe strigosa</i>	Peach Heath							0.05	1					1	2	0.1	5			1	2
Asparagaceae	<i>Lomandra gracilis</i>												0.01	1								
Asparagaceae	<i>Lomandra longifolia</i>	Spiny-headed mat rush	0.2	1	0.5	5											0.1	1	10	25	1	5
Asparagaceae	<i>Lomandra multiflora</i>	Many-flowered mat rush					0.05	2	1	50	0.05	2	1	1								
Asparagaceae	<i>Lomandra obliqua</i>	Twisted mat rush									0.1	3										
Asparagaceae	<i>Lomandra quaraseta</i>																				0.5	5
Zamiaceae	<i>Macrozamia flexuosa</i>	Cycads			1	7	0.5	5	1	7	0.05	1			50	5					0.01	1
Fabaceae	<i>Medicago sp.</i>																		0.5	10		
Poaceae	<i>Microlaena stipoides</i>	Weeping grass	0.5	100											2	50			50	3000		
Oleaceae	<i>Notelaea venosa</i>	Veined Mock-olive																			1	1
Oleaceae	<i>Notelaea longifolia</i>	Large leaf olive									0.05	2			5	5						
Asteraceae	<i>Ozothamnus diosmifolius</i>	Rice flower/pill flower	0.05	1													0.2	10				
Bignoniaceae	<i>Pandorea pandorana</i>	Wonga wonga vine					0.01	2	0.05	3	0.05	7			0.05	10					1	50
pocynaceae	<i>Parsonsia straminea</i>	Common Silkpod																			0.5	1
Poaceae	<i>Paspalum dilatatum</i>	Dallisgrass																	2	20		
Iridaceae	<i>Patersonia sericea</i>	Purple Flag																			1	5
Proteaceae	<i>Persoonia linearis</i>	Narrow-leaved geebung			0.05	10	2	5	0.1	3	0.5	4			0.05	2					5	10



Family	Scientific Name	Common Name	BHKH1		BHKH2		BHKH3		BHKH4		BHKH5		BHKH6		BHKH7		PMKH1		BHLD_1		BHLD_2	
			C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A
Phyllanthaceae	Phyllanthus hirtellus	Thyme spurge									0.05	5										
Phytolaccaceae	Phytolacca octandra	Inkweed															0.1	1	1	1		
Thymelaeaceae	Pimelea linifolia	Slender rice flower									0.2	1										
Pittosporaceae	Pittosporum undulatum	Native daphne													2	1						
Plantaginaceae	Plantago lanceolata	Ribwort Plantain																	5	150		
Plantaginaceae	Plantago lanceolata	Lamb's tongue	0.1	1									5	500			0.1	100				
Fabaceae (Faboideae)	Podolobium ilicifolium	Prickly shaggy pea							0.01	1												
Poaceae	Poa labillardierei var. labillardierei	Tussock			60	2000	65	500	30	800	70	800								20	100	
Rubiaceae	Pomax umbellata	Pomax					0.01	1														
Campanulaceae	Pratia purpurascens	Whiteroot	1	50							0.05	5							0.5	10	1	100
Fabaceae (Faboideae)	Pultenaea euchila	Large-flower Bush-pea															10					
Fabaceae (Faboideae)	Pultenaea villosa	Hairy bush pea	5	15	1	3	1	20			0.5	20								0.5	1	
Polygonaceae	Rumex sagittatus	Turkey Rhubarb																	1	5		
Lamiaceae	Scutellaria mollis	Soft skullcap	0.1	1																		
Asteraceae	Senecio linearifolius	Fireweed Groundsel																	1	10		
Asteraceae	Senecio madagascariensis	Fireweed	0.01	2									1	20			0.1	25	5	50		
Poaceae	Setaria sp.																		0.5	5		
Malvaceae	Sida rhombifolia	Paddy's lucerne	1	25									5	100			0.2	100	1	5		
Smilacaceae	Smilax australis	Lawyer vine/wait-a-while	0.1	1																		
Asteraceae	Sonchus spp.	Sowthistle											1	20								
Lamiaceae	Stachys arvensis	Staggerweed											0.05	2								
Caryophyllaceae	Stellaria media	Chickweed																	2	80		
Menispermaceae	Stephania japonica	Snake Vine																	1	5		
Poaceae	Themeda triandra	Kangaroo grass			10	500	0.01	2	0.01	1									0.5	2	10	100
Unidentified tree/shrub	Unidentified tree/shrub	Unidentified tree/shrub													1	1						
Verbenaceae	Verbena bonariensis	Purpletop vervain											2	50			0.1	5	1	10		
Plantaginaceae	Veronica plebeia	Trailing Speedwell																	0.5	5		
Violaceae	Viola hederacea	Native violet													0.02	20			0.5	10		
Campanulaceae	Wahlenbergia gracilis	Australian bluebell											0.2	5								

Note: C = Percentage Cover, A = Abundance

TABLE 23 – RDP FLORISTIC DATA

RDP	PCT	Dominant canopy	Sub canopy	Another canopy	Dominant midstorey	Sub midstorey	Other midstorey	Dominant ground	Sub ground	Other ground	Comments
Brea2	3433				Verbena bonariensis	Lantana camara	Acacia sp	Chloris ganar	Conyza sp	Juncus sp	
Brea3	3433	Corymbia maculata	Eucalyptus umbra	Eucalyptus fibrosa	Acacia sp	Exocarpus sp	Pultenea villosa	Poa sp	Entalasias stricta	Lomandra multiflora	
Brea4	3433	Corymbia maculata	Eucalyptus recruitment		Acacia sp	Acacia saligna	Pultenea villosa	Blady grass	Chloris ganar	Andropogon virginicus	Patches of lantana
Brea4	3433	Eucalyptus umbra	Corymbia maculata	Eucalyptus punctata	Persoonia linearis	Exocarpus sp	Acacia sp	Poa sp	Pratia purperesens	Aristida vagrans	



RDP	PCT	Dominant canopy	Sub canopy	Another canopy	Dominant midstorey	Sub midstorey	Other midstorey	Dominant ground	Sub ground	Other ground	Comments
Brea5	3433	<i>Corymbia maculata</i>	<i>Eucalyptus umbra</i>	<i>Eucalyptus fibrosa</i>	<i>Allocasuarina sp</i>	<i>Acacia sp (long thing leaf)</i>	<i>Persoonia linearis</i>	<i>Poa sp</i>	<i>Entolasia stricta</i>	<i>Pandaria pandarana</i>	Angophora costata also present
Brea6	3433	<i>Eucalyptus umbra</i>	<i>Corymbia maculata</i>	<i>Eucalyptus fibrosa</i>	<i>Allocasuarina torulosa</i>	<i>Persoonia linearis</i>	<i>Leptospermum sp</i>	<i>Poa sp</i>	<i>Lomandra multiflora</i>	<i>Entolasia stricta</i>	Eucalyptus canaliculata also present
Brea7	3433	<i>Corymbia maculata</i>	<i>Eucalyptus can</i>	<i>Eucalyptus umbra</i>	<i>Persoonia linearis</i>	<i>Pultenea villosa</i>	<i>Microzamia sp</i>	<i>Entolasia stricta</i>	<i>Themeda triandra</i>	<i>Poa sp</i>	Eucalyptus fibrosa also present
Brea8	3433	<i>Eucalyptus umbra</i>	<i>Corymbia maculata</i>	<i>Eucalyptus fibrosa</i>	<i>Persoonia ministry's</i>	<i>Acacia sp (long thin leaf)</i>	<i>Busaria spinosa</i>	<i>Themeda triandra</i>	<i>Entolasia stricta</i>	<i>Entolasia stricta</i>	
Brea9	3433	<i>Eucalyptus umbra</i>	<i>Corymbia maculata</i>	<i>Eucalyptus fibrosa</i>	<i>Bursaria spinosa</i>	<i>Acacia deanei</i>	<i>Acacia cultiformis</i>	<i>Entolasia strait a</i>	<i>Carex appressa</i>	<i>Poa sp</i>	
Brea10	3433??	<i>Allocasuarina sp</i>	<i>Eucalyptus umbra</i>	<i>Corymbia maculata</i>	Unsure. Took a photo. Cheese tree?	<i>Lantana camara</i>	<i>Persoonia linarius</i>	<i>Blady grass</i>	<i>Entolasia stricta</i>	<i>Maiden hair fern</i>	PCT on slope facing SE, canopy species same as other sections of the subject land. However, many more of unidentified midstorey tree. But moister as well, with ferns in the understorey
Brea11	3423	<i>Corymbia maculata</i>	<i>Eucalyptus fibrosa</i>	<i>Eucalyptus umbra</i>	<i>Lissanthe strigosa</i>	<i>Acacia sp (long thin leaf)</i>	<i>Exocarpus sp</i>	<i>Microlena stipodies</i>	<i>Themeda triandra</i>	<i>Aristida vagans</i>	
Brea12	3433	<i>Eucalyptus canaliculata</i>	<i>Corymbia maculata</i>	<i>Eucalyptus fibrosa</i>	<i>Exocarpus sp</i>	<i>Acacia sp (thin leaf)</i>	<i>Pultenea villosa</i>	<i>Themeda triandra</i>	<i>Poa sp</i>	<i>Entolasia stricta</i>	
MTLD1	3233	<i>Corymbia maculata</i>	<i>Eucalyptus fibrosa</i>	<i>Allocasuarina torulosa</i>	<i>Melaleuca styphelioides</i>	<i>Leucopogon juniperinus</i>	-	<i>Entolasia stricta</i>	<i>Lomandra filiformis</i>	<i>Lepidosperma laterale</i>	
<Null>	<Null>	<Null>	<Null>	<Null>	<i>leptorspermum sp, acacia long</i>	<i>whiskey grass, lomandra long</i>	<Null>	<i>blady grass, couch, m.stipoodes</i>	<Null>	<i>inkweed, v bonaroensis, sida rhomb</i>	<Null>
<Null>	<Null>	<i>e punctata, a costata</i>	<Null>	<Null>	<i>a longifolia, a parvipinnula</i>	<i>breynia oblong, glochidion ferd</i>	<Null>	<i>m stipoides, blady grass</i>	<i>leucopogon juniperinus, p purpurascens, lom long, Hakea sericea</i>	<i>Dianella cerulea</i>	<Null>
<Null>	<Null>	<i>euc acmenoides</i>	<Null>	<Null>	<i>a parvipinnula, a longifolia</i>	<i>breynia oblong</i>	<Null>	<i>e stricta</i>	<i>Dianella cerulea, lom filoformis</i>	<Null>	<Null>
<Null>	<Null>	<i>e punctata, a costata</i>	<Null>	<Null>	<i>a parvipinnulA</i>	<i>platysace linearifolia, pultenaea villosa</i>	<i>glochidion ferd</i>	<i>entolasia marginata, m stipoides</i>	<i>pratia purpurascens</i>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	grey gums upslope, acmenoides downslope
RDP1	3443	<i>E paniculata</i>	<i>E caniculata</i>	<i>Corymbia maculata</i>	<i>Acacia parramattensis</i>	<i>Breynia oblongifolia</i>	<i>Lantana camara</i>	<i>Entolasia stricta</i>	<i>Cynodon dactylon</i>	<i>Imperata cylindrica</i>	<Null>



Appendix D – Biodiversity credit report





BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00055236/BAAS17065/25/00055237	Bloomfield MP07_0087 - Mod-5	28/10/2024
Assessor Name	Assessor Number	BAM Data version *
Arne Henry Bishop	BAAS17065	Current classification (live - default) (80)
Proponent Names	Report Created	BAM Case Status
	17/03/2025	Finalised
Assessment Revision		Assessment Type
1		Major Projects
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.	
17/03/2025		

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		
Species		
Chalinolobus dwyeri / Large-eared Pied Bat		
Lathamus discolor / Swift Parrot		

Assessment Id	Proposal Name
00055236/BAAS17065/25/00055237	Bloomfield MP07_0087 - Mod-5





BAM Biodiversity Credit Report (Like for like)

Vespadelus troughtoni / Eastern Cave Bat

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
3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	51.7	1717	79	1796

Assessment Id

00055236/BAAS17065/25/00055237

Proposal Name

Bloomfield MP07_0087 - Mod-5

Page 2 of 6





BAM Biodiversity Credit Report (Like for like)

3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions This includes PCT's: 3433, 3442, 3443, 3444, 4158	-	3433_High	Yes	1423	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.
	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions This includes PCT's: 3433, 3442, 3443, 3444, 4158	-	3433_Moderate	Yes	294	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)

	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions This includes PCT's: 3433, 3442, 3443, 3444, 4158	-	3433_Low	No	79	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.

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Chalinolobus dwyeri / Large-eared Pied Bat	3433_High, 3433_Moderate, 3433_Low	51.7	2694.00
Lathamus discolor / Swift Parrot	3433_High, 3433_Moderate, 3433_Low	51.7	2694.00
Myotis macropus / Southern Myotis	3433_High, 3433_Moderate, 3433_Low	15.6	524.00
Petaurus norfolcensis / Squirrel Glider	3433_High, 3433_Moderate, 3433_Low	51.7	1796.00
Phascolarctos cinereus / Koala	3433_High, 3433_Moderate, 3433_Low	51.7	1796.00

Assessment Id

00055236/BAAS17065/25/00055237

Proposal Name

Bloomfield MP07_0087 - Mod-5

Page 4 of 6





BAM Biodiversity Credit Report (Like for like)

Tyto novaehollandiae / Masked Owl	3433_High, 3433_Moderate, 3433_Low	45.4	1583.00
Vespadelus troughtoni / Eastern Cave Bat	3433_High, 3433_Moderate, 3433_Low	51.7	2694.00

Credit Retirement Options

Like-for-like credit retirement options

Chalinolobus dwyeri / Large-eared Pied Bat	Spp	IBRA subregion
	Chalinolobus dwyeri / Large-eared Pied Bat	Any in NSW
Lathamus discolor / Swift Parrot	Spp	IBRA subregion
	Lathamus discolor / Swift Parrot	Any in NSW
Myotis macropus / Southern Myotis	Spp	IBRA subregion
	Myotis macropus / Southern Myotis	Any in NSW
Petaurus norfolcensis / Squirrel Glider	Spp	IBRA subregion
	Petaurus norfolcensis / Squirrel Glider	Any in NSW
Phascolarctos cinereus / Koala	Spp	IBRA subregion
	Phascolarctos cinereus / Koala	Any in NSW

Assessment Id

00055236/BAAS17065/25/00055237

Proposal Name

Bloomfield MP07_0087 - Mod-5

Page 5 of 6





BAM Biodiversity Credit Report (Like for like)

Tyto novaehollandiae / Masked Owl	Spp	IBRA subregion
	Tyto novaehollandiae / Masked Owl	Any in NSW
Vespadelus troughtoni / Eastern Cave Bat	Spp	IBRA subregion
	Vespadelus troughtoni / Eastern Cave Bat	Any in NSW

Assessment Id

00055236/BAAS17065/25/00055237

Proposal Name

Bloomfield MP07_0087 - Mod-5

Page 6 of 6



Appendix E – Anabat Report

Site								
Date/s	Hunter Valley							
Job ID	10 - 14 October 2023							
Anabats	ER112							
	EcoA, EcoC, EcoResolveA							
Scientific Name	Common Name	BC Act	EPBC Act	Presence	*No. of calls	Confidence	^Device	Notes
<i>Austronomus australis</i>	White-striped Freetail-bat			+		C		
<i>Chalinolobis dwyeri</i>	Large-eared Pied Bat	V	V	+	21	C	EcoA, EcoC	Most are flatter shaped calls but are at the species' characteristic frequency between <i>S. flaviventris</i> and <i>C. gouldii</i> and show alternating shape
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat			+		C		
<i>Chalinolobus morio</i>	Chocolate Wattled Bat			+		Pr		
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V		+	2	Pr	EcoResolveA	One good quality call showing characteristic call shape and higher frequency above <i>S. orion</i>
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V		+	3	C		Consistent with known call shape and frequency
<i>Miniopterus australis</i>	Little Bent-winged Bat	V		+	80	C	All	No other species with this call shape call at this frequency in this area
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V		+	40	C	All	Call shape and frequency characteristic of this species, differentiating it from <i>Vespadelus regulus</i>
<i>Mormopterus ridei</i>	Ride's Free-tailed Bat			+		C		
<i>Myotis macropus</i>	Southern Myotis	V		+	2	Pr	EcoA	Only one decent quality call that fits within the species' call parameters, could be others within the <i>Nyctophilus</i> calls but can't be sure
<i>Nyctophilus</i> sp.	Long-eared Bat sp.			+		C		
<i>Rhinolophus megaphyllus</i>	Eastern Horseshoe Bat			+		C		
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V		+	1	Pr	EcoA	One confident call showing the characteristic frequency for this species and the upper harmonics at around 28-29 kHz
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V		+	6	Pr	EcoA	Calls on this device look different from other <i>C. gouldii</i> calls recorded, i.e. lack the alternation of the <i>C. gouldii</i> calls and has the flatter, curved heel shape
<i>Scotorepens orion</i>	Eastern Broad-nosed Bat			+		Pr		
<i>Vespadelus pumilus</i>	Eastern Forest Bat			+		Pr		
<i>Vespadelus vulturnus</i>	Little Forest Bat			+		C		
<i>Vespadelus troughtoni</i>	Eastern Cave Bat	V		+	4	Pr	EcoResolveA	Four calls on this device look good for <i>V. troughtoni</i> , the <i>V. vulturnus</i> calls are above the 50kHz mark at around 52-52 kHz with the characteristic curved tail and longer pre-characteristic section
	No. of species			18				
C = Confident								
Pr = Probable								
Po = Possible								
V = Vulnerable								
*Only number of threatened species call passes provided								
^Detector/s threatened species recorded on specified								



Appendix F – Assessment of the Significance of Impacts on Matters of National Environmental Significance

Bloomfield Colliery Modification 5 Continuation Project (MP07_0087-Mod-5).

Executive Summary

This report is in response to the EPBC Act Matters of National Environmental Significance (**MNES**) impacts of concern raised in the letter titled; *'Project assessment notes for Bloomfield Colliery Continuation project, (EPBC 2024/09978), SSD MP07_0087-Mod-5'*. This document is intended to complement the assessment requirements and assist NSW Department of Planning, Housing and Infrastructure (NSW DPHI).

This report assesses the potential significance of the impacts of the Modification 5 Bloomfield Colliery Continuation Project (MP_0087-Mod-5) (**Proposed action**), on Matters of National Environmental Significance (MNES) listed under the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**). A self-assessment process determined if any MNES likely or known to occur within the proposed impact area was likely to be significantly impacted by the proposed action. The assessment process considered both desktop and field survey results. Assessments of Significance (**AoS**) for MNES likely to be impacted were undertaken with specific reference to the Significant Impact Guidelines 1.1 for MNES (DEWHA, 2013). The proposed action is considered likely to have a significant impact on three (3) MNES species.

This report forms part of biodiversity impact assessments prepared for Bloomfield Collieries Pty Limited (**Bloomfield Colliery**), for the proposed continuation projects in Four Mile Creek, NSW. This report and associated works (desktop assessment and field surveys) were conducted by EcoResolve Pty Ltd (EcoResolve) during 2023 and 2024. The final size and extent of the Environmental Impacts of the proposed action by Bloomfield Colliery is approximately 58.86 ha of which ~51.69 ha is native vegetation.

Contents

EXECUTIVE SUMMARY	122
CONTENTS	123
1.....	INTRODUCTION124
2.....	METHODOLOGY125
2.1.	Desktop Assessment125
2.2.	Field Survey126
Flora Survey	126
Fauna Surveys	126
3.....	RESULTS SUMMARY127
4.....	REFERENCES130
ATTACHMENT 1 – LIKELIHOOD OF OCCURRENCE ASSESSMENT	132
ATTACHMENT 2 – ASSESSMENTS OF SIGNIFICANCE (EPBC ACT)	141
4.1.	Vulnerable Species Assessment142
Pteropus poliocephalus (Grey-headed Flying-fox)	143
Calyptorhynchus lathami lathami (South-eastern Glossy Black-Cockatoo)	145
Petaurus australis (Yellow-bellied Glider)	146
Pseudomys novaehollandiae (New Holland Mouse)	147
4.2.	Critically Endangered and Endangered Species Assessment149
Anthochaera phrygia (Regent Honeyeater)	150
Phascolarctos cinereus (Koala)	151
Chalinolobus dwyeri (Large-eared Pied Bat)	152
Lathamus discolor (Swift Parrot)	154
Callocephalon fimbriatum (Gang-gang Cockatoo)	155
Petauroides volans (Greater Glider)	156
Dasyurus maculatus maculatus (Spotted-tailed Quoll SE Population)	157
ATTACHMENT 3 – SURVEY TIMETABLE.....	158

Introduction

This report determines whether a referral may be required under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This report details a self-assessment process that reviews and highlights potential impacts associated with the proposed continuation project at Bloomfield Colliery (Proposed action). This assessment ensures that impacts upon all Matters of National Environmental Significance (MNES) listed under the EPBC Act, including flora and fauna species and associated habitats, threatened ecological communities (TECs) and other MNES, are considered. The proposed project impact area (~58.86 ha of which ~51.69 ha of native vegetation) has been surveyed and assessed by EcoResolve in 2023–2024.

All MNES protected under the triggered controlling provisions are potentially relevant, however the Department of Climate Change, Energy, the Environment and Water considers as part of the assessment of the EPBC referral (EPBC 2024/09978) that there is likely to be a significant impact on the following:

- Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (*Phascolarctos cinereus*) (Endangered). The proposed Action involves the removal of up to 51.69 ha of foraging, shelter, breeding and dispersal habitat for the Koala, in moderate to high condition.
- Large-eared Pied Bat (*Chalinolobus dwyeri*) (Endangered) The proposed Action involves the removal of up to 51.69 ha of foraging habitat for the Large-eared Pied Bat, in moderate to high condition.

In addition, several other species of concern are required to be assessed further to first determine whether they are likely to be significantly impacted, and if so, appropriate avoidance, mitigation and offset measures are considered:

- Regent Honeyeater (*Anthochaera phrygia*) (Critically Endangered)
- Gang-gang Cockatoo (*Callocephalon fimbriatum*) (Endangered)
- Swift Parrot (*Lathamus discolor*) (Critically Endangered)
- Greater Glider (southern and central) (*Petauroides volans*) (Endangered)
- Yellow-bellied Glider (south-eastern) (*Petaurus australis australis*) (Vulnerable)
- New Holland Mouse (*Pseudomys novaehollandiae*) (Vulnerable)
- Spot-tailed Quoll (*Dasyurus maculatus maculatus* (SE mainland population)) (Endangered).

Methodology

The methodology was comprised of three stages of desktop assessments which were refined with field observations and survey results.

Desktop Assessment

Stage 1 of the desktop assessment determined the Likelihood of Occurrence (LoO) of MNES within the area to be affected (**Attachment 1**). It included a review of the existing desktop research previously conducted by EcoResolve, consisting of:

- A review of existing vegetation mapping, habitat mapping, and reports of relevance to the site and surrounding locality.
- Database searches to identify records of the threatened entities and MNES that may occur within 10 km of the site, including:
- NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) BioNET database.
- Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool.
- Use of the NSW Biodiversity Assessment Method (BAM) Credit Calculator to generate a list of threatened species requiring a specific survey.
- Identification of all threatened species, populations, and ecological communities to be targeted during future field surveys using knowledge of habitat requirements and the characteristics of the study area.

Additional sources of information used in the assessment included:

- Proposal layers and concept designs provided by the Client.
- Australian Government's Species Profiles and Threats (SPRAT) database (<http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>).
- NSW Threatened Species Profiles (<http://www.environment.nsw.gov.au/threatenedspeciesapp/>).
- Australia's IBRA Bioregions and sub-regions (<http://www.environment.gov.au/land/nrs/science/ibra>).
- DPI profiles of threatened species, populations, and ecological communities.
- EES VIS Mapping (<http://www.environment.nsw.gov.au/research/VISmap.htm>).
- NSW Biodiversity Values and Important Habitat Maps.
- Department of Planning Industry and Environment BAM (DPIE2020).

Stage 2 refined the LoO by analysing the potential impact of the proposed action, field observations (**Section 2.2**), species specific information contained in the Species Profile and Threats Database (SPRAT), including conservation advice and recovery plans, species sightings data contained in the NSW BioNet Atlas, NSW Threatened Biodiversity Profiles and vegetation data contained in the NSW

BioNet Vegetation Information System (VIS). The distribution and habitat requirements of each MNES were then considered to determine if a significant impact was possible (**Attachment 1**).

Stage 3 was applied where an impact on an MNES had the potential to be significant. An Assessment of Significance (AoS) was conducted according to the Significant Impact Guidelines 1.1 for MNES (**Attachment 2**; DEWHA, 2013).

Field Survey

Field surveys were completed by EcoResolve during 2023–2024. **Attachment 3** contains a complete survey timetable and details of the survey methods applied for each species.

Flora Survey

Vegetation integrity surveys were undertaken in accordance with the BAM, and included:

- Review of the identification and assessment of the condition of vegetation communities, including any Endangered Ecological Communities (EECs).
- Use of BAM plots to gather specific vegetation floristics, conditions, and habitat feature data as per the BAM.
- All survey locations and threatened flora sites were recorded with a handheld GPS.

BAM plots were undertaken to measure the composition, structure, and functional components of the site's native vegetation cover. Where possible, BAM plots were placed in a manner that best reflected the biological character of the vegetation zone being assessed (e.g., avoided placement of plots near ecotones and disturbed boundaries).

Each BAM plot included:

- One standard 20 x 20 m plot, to assess the composition and structure attributes, including trees, shrubs, grasses, forbs, ferns, and other growth forms.
- One standard 20 x 50 m plot (1,000 m²) to assess the function attributes: number of large trees (e.g., > 50cm DBH), stem size class, tree regeneration, length of fallen logs, high threat exotic vegetation cover and hollow-bearing trees; and
- Five 1 m² sub-plots to assess average litter cover for the plots.

Surveys for threatened flora were undertaken using a transect-based method with reference to 'Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method' (DPIE 2020). Targeted flora survey timing corresponded with the prescribed survey period, as indicated by the BAM Calculator candidate species list (**Attachment 3**).

Fauna Surveys

Targeted surveys were conducted for species identified through the Biodiversity Opportunities and Constraints Assessment (**Attachment 3**). Fauna surveys performed included but were not necessarily limited to the following methods:

- Remote infrared cameras baited with tinned cat food bait and/or a rolled oat, honey and peanut butter mixture. This methodology is used in place of the now obsolete wire cage methodology.

- Spotlighting for relevant targeted nocturnal fauna species during their survey period
- Spot Assessment Technique (SAT) to assess Koala activity within the site, if suitable habitat occurs in the site.
- Placement of stationary ultrasonic bat call detection equipment in potential flyways.
- Frog and reptile census will be conducted if and where suitable habitats are recorded within the site.
- Identification of fauna habitat features, and an assessment of their condition and value to threatened species.
- Incidental observations of fauna species and indirect evidence of fauna (such as scats, nests, burrows, hollows, tracks, scratches, and diggings).
- Funnel trapping
- Taking photographs of any significant ecological values occurring within the site
- Placement and checking of artificial cover for *Delma impar/Delma vescolineata*.

All survey locations, locations of any threatened species, populations and/or ecological communities and notable habitat features were recorded with a handheld GPS.

Results Summary

Stage 1 of the desktop assessment identified 61 MNES, including one marine/migratory species and one marine species with some potential of occurring in the locality of the proposed action (**Attachment 1**). The preliminary assessment assigned a moderate or high LoO to 55 MNES. These species were further assessed following field surveys and further desktop assessment of habitat constraints (**Attachment 2**). The refined results identified 11 MNES species that required further consideration using the Significant Impact Guidelines (DEWHA, 2013).

The Assessments of Significance concluded that the proposed action is likely to have a significant impact upon three MNES species; *Chalinolobus dwyeri* (Large-eared Pied Bat), *Phascogale cinereus* (Koala) and *Lathamus discolor* (Swift Parrot).

Further refinement to the project design and footprint may change the likelihood of a significant impact upon these species.

TABLE 24 – SUMMARY OF SIGNIFICANT IMPACT ASSESSMENT FOR MNES SPECIES

Scientific Name	Common Name	EPBC Act	Potential for Significant Impact	Assessment of Significance required
<i>Acacia bynoeana</i>	Bynoe's Wattle	V	Presence unlikely	No
<i>Angophora inopina</i>	-	V	Presence unlikely	No
<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	Yes	Yes
<i>Aprasia parapulchella</i>	Pink-tailed Legless Lizard	V	Presence unlikely	No
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	E	Presence unlikely	No
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	E	Yes	Yes
<i>Cryptostylis hunteriana</i>	Leafless Tongue-orchid	V	Presence unlikely	No
<i>Cynanchum elegans</i>	White-flowered Wax Plant	E	Presence unlikely	No
<i>Dasyurus maculatus maculatus</i>	Spotted-tailed Quoll	E	Presence unlikely	No
<i>Delma impar/Delma vescolineata</i>	Striped Legless Lizard	V	Presence unlikely	No
<i>Diuris praecox</i>	Rough Doubletail	V	Presence unlikely	No
<i>Erythroriarchis radiatus</i>	Red Goshawk	E	Presence unlikely	No
<i>Eucalyptus glaucina</i>	Slaty Red Gum	V	Presence unlikely	No
<i>Eucalyptus parramattensis subsp. decadens</i>	-	V	Presence unlikely	No
<i>Euphrasia arguta</i>	-	CE	Presence unlikely	No
<i>Falco hypoleucos</i>	Grey Falcon	V	Presence unlikely	No
<i>Grantiella picta</i>	Painted Honeyeater	V	Presence unlikely	No
<i>Grevillea parviflora subsp. parviflora</i>	Small-flowered Grevillea	V	Presence unlikely	No
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V	Presence unlikely	No
<i>Hirundapus caudacutus</i>	White-throated Needletail	M, MAR, V	Presence unlikely	No
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	V	Presence unlikely	No
<i>Lathamus discolor</i>	Swift Parrot	CE	Yes	Yes
<i>Limosa lapponica baueri</i>	Bar-tailed Godwit	E, MIG	Presence unlikely	No
<i>Litoria aurea</i>	Green and Golden Bell Frog	V	Presence unlikely	No
<i>Litoria brevipalmata</i>	Green-thighed Frog	V	Presence unlikely	No
<i>Macropus parma</i>		V	Presence unlikely	No
<i>Melaleuca biconvexa</i>	Biconvex Paperbark	V	Presence unlikely	No
<i>Mixophyes balbus</i>	Stuttering Frog	V	Presence unlikely	No
<i>Mixophyes iteratus</i>	Giant Barred Frog	E	Presence unlikely	No



Scientific Name	Common Name	EPBC Act	Potential for Significant Impact	Assessment of Significance required
<i>Numenius madagascariensis</i>	Eastern Curlew	CE	Presence unlikely	No
<i>Ozothamnus tessellatus</i>	-	V	Presence unlikely	No
<i>Persicaria elatior</i>	-	V	Presence unlikely	No
<i>Persoonia hirsuta</i>	Hairy Geebung	E	Presence unlikely	No
<i>Persoonia pauciflora</i>	North Rothbury Persoonia	CE	Presence unlikely	No
<i>Petauroides volans</i>	Greater Glider	E	Presence unlikely	No
<i>Petaurus australis australis</i>	Yellow-bellied Glider	V	Presence unlikely	No
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	V	Presence unlikely	No
<i>Phascolarctos cinereus</i>	Koala	E	Yes	Yes
<i>Pomaderris brunnea</i>	Brown Pomaderris	V	Presence unlikely	No
<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo	V	Presence unlikely	No
<i>Prasophyllum sp. Wybong</i>	A leek orchid	CE	Presence unlikely	No
<i>Prostanthera cineolifera</i>	-	V	Presence unlikely	No
<i>Pseudomys novaehollandiae</i>	New Holland Mouse	V	Presence unlikely	No
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	Yes	Yes
<i>Pterostylis gibbosa</i>	Illawarra Greenhood	E	Presence unlikely	No
<i>Pycnoptilus floccosus</i>	Pilot Bird	V	Presence unlikely	No
<i>Rhizanthella slateri</i>	-	E	Presence unlikely	No
<i>Rhodamnia rubescens</i>	Scrub Turpentine	CE	Presence unlikely	No
<i>Rhodomyrtus psidioides</i>	Native Guava	CE	Presence unlikely	No
<i>Rostratula australis</i>	Australian Painted Snipe	E, MAR	Presence unlikely	No
<i>Rutidosis heterogama</i>	-	V	Presence unlikely	No
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	V	Presence unlikely	No
<i>Tetradlea juncea</i>	Black-eyed Susan	V	Presence unlikely	No
<i>Thesium australe</i>	Austral Toadflax	V	Presence unlikely	No
<i>Calyptrorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo)	V	Yes	Yes

Note: V = Vulnerable, E = Endangered, CE = Critically Endangered, MAR = Marine, MIG = Migratory.

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Attachment 1 – Likelihood of Occurrence Assessment

Stage 1 involved a preliminary desktop 'likelihood of occurrence' (LoO) assessment, which identified 97 threatened species as having a moderate – high likelihood of occurring within the proposed project area (Error! Reference source not found.). NSW BioNet records, habitat requirements and breeding and foraging behaviour were considered in relation to the habitat and location of the proposed action. The classifications were assigned to each threatened species based on the criteria set out in Error! Reference source not found..

Stage 2 involved assessing the potential for impact on moderate or high LoO species that are listed under the *Environment Protection and Biodiversity Act 1999* (EPBC Act) (Error! Reference source not found.). The threatened species list was refined following field observations and further assessment of habitat constraints and the potential impact of the proposed action. The classifications were assigned to each threatened species based on the criteria set out in Error! Reference source not found..

TABLE 25 LIKELIHOOD OF OCCURRENCE CRITERIA

Likelihood of Occurrence	Definition (species specific)
None	Habitat features within the area of interest are unsuitable for the species (e.g., aquatic species within a terrestrial environment).
Low	The area of interest seldom contains suitable habitat for the species and there are no recent records (i.e., NSW BioNet records) within the area of interest.
Moderate	Important habitat features for the species occur within the area of interest. The area of interest may or may not be within the species indicative 'known or predicted mapped distribution'. Species may or may not have been detected recently within the locality (i.e., within NSW BioNet records).
High	High quality habitat features specifically associated with the species generally occur within the area of interest and is within the species known distribution. Recent NSW BioNET records have recently observed the species within the location.
Known	The species, population or ecological community has been recorded onsite during field investigations.

TABLE 26 POTENTIAL FOR IMPACT ANALYSIS CRITERIA

Survey Outcomes	Definition
None	Habitat analysis only following site inspection. No targeted surveys required.
Potential	Targeted surveys performed outside guideline specifications and/or cryptic nature of the threatened species require further targeted surveys to determine the species presence or absence.
Absent	Targeted surveys performed adhering to guideline specification. No populations or individuals were identified on site.
Present	Targeted surveys performed adhering to guideline specification. Threatened species has been identified on site during field observations.

TABLE 27 – LIKELIHOOD OF OCCURRENCE

Scientific name	Common Name	BC Act	EPBC Act	Habitat	Number of Records (DPIE 2024)	Likelihood of Occurrence
<i>Acacia bynoeana</i>	Bynoe's Wattle	E	V	Grows mainly in heath and dry sclerophyll forest in sandy soils. Mainly south of Dora Creek-Morisset area to Berrima and the Illawarra region, west to the Blue Mountains, also recorded from near Kurri Kurri in the Hunter Valley and from Morton National Park.	0	Moderate
<i>Angophora inopina</i>		V	V	Endemic to the Central Coast region of NSW. The known northern limit is near Karuah where a disjunct population occurs; to the south populations extend from Toronto to Charmhaven with the main population occurring between Charmhaven and Morisset. Occurs most frequently in red bloodwood – scribbly gum woodland, wet heath, red mahogany – paperbark sedge woodland and stringybark – red bloodwood forest.	0	Moderate
<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	CE	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. The distribution of the species has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests.	0	Moderate
<i>Aprasia parapulchella</i>	Pink-tailed Legless Lizard	V	V	Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by kangaroo grass. Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks.	0	Moderate
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E	E	The Australasian Bitterns is widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes and spikerushes.	0	Low
<i>Caladenia tessellata</i>	Thick-lip Spider Orchid	E	V	The Tessellated Spider Orchid is found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. Known from the Sydney area (old records), Wyong, Ulladulla and Braidwood in NSW. Populations in Kiama and Queanbeyan are presumed extinct.	0	Low
<i>Calidris ferruginea</i>	Curlew Sandpiper	E	CE, MAR, MIG	The Curlew Sandpiper is distributed around most of the coastline of Australia. It occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes the inland	0	Low
<i>Calidris tenuirostris</i>	Great Knot	V	V	In NSW, the species has been recorded at scattered sites along the coast to about Narooma. It has also been observed inland at Tullakool, Armidale, Gilgandra and Griffith. Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons. Often recorded on sandy beaches with mudflats nearby, sandy spits and islets and sometimes on exposed reefs or rock platforms.	0	Low
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V	E	In summer, occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Also occur in subalpine snow gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed.	0	Moderate
<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V	-V	Inhabits forest with low nutrients, characteristically with key Allocasuarina spp. Tends to prefer drier forest types with a middle stratum of Allocasuarina below Eucalyptus or Angophora. Often confined to remnant patches in hills and gullies. Breed in hollows stumps or limbs, either living or dead. Endangered population in the Riverina.	3	High
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	E	Located in a variety of drier habitats, including the dry sclerophyll forests and woodlands to the east and west of the Great Dividing Range. Can also be found on the edges of rainforests and in wet sclerophyll forests. This species roosts in caves and mines in groups of between 3 and 37 individuals.	1	Known
<i>Cryptostylis hunteriana</i>	Leafless Tongue-orchid	V	V	Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by Scribbly Gum (Eucalyptus sclerophylla), Silvertop Ash (E. sieberi), Red Bloodwood (Corymbia gummifera) and Black Sheoak (Allocasuarina littoralis); appears to prefer open areas in the understorey of this community and is often found in association with the Large Tongue Orchid (C. subulata) and the Tartan Tongue Orchid (C. erecta).	0	Moderate
<i>Cynanchum elegans</i>	White-flowered Wax Plant	E	E	Recorded from rainforest gullies scrub and scree slopes from the Gloucester district to the Wollongong area and inland to Mt Dangar. The White-flowered Wax Plant occurs primarily at the transition zone (ecotone) between dry subtropical rainforest and sclerophyll forest/woodland communities in eastern NSW, from Brunswick Heads on the north coast to the Illawarra region. This species can be mistaken for the common exotic climber <i>Araujia sericifera</i> (Moth Plant).	1	Moderate
<i>Dasyurus maculatus maculatus</i>	Spotted-tailed Quoll	V	E	Spotted-tailed Quoll are found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Queensland. Only in Tasmania is it still considered common. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.	0	Moderate

Scientific name	Common Name	BC Act	EPBC Act	Habitat	Number of Records (DPIE 2024)	Likelihood of Occurrence
<i>Delma impar</i>	Striped Legless Lizard	V	V	Found mainly in natural temperate grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near natural temperate grassland and occasionally in open box-gum woodland. Sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter.	0	Moderate
<i>Dichanthium setosum</i>		V	V	Occurs on the New England Tablelands, Northwest Slopes and Plains and the Central Western Slopes of NSW, as well as in Queensland and Western Australia. It occurs widely on private property, including in the Inverell, Guyra, Armidale and Glen Innes areas. Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture.	0	Low
<i>Diuris praecox</i>	Rough Doubletail	V	V	Occurs between Ourimbah and Nelson Bay. Grows on hills and slopes of near-coastal districts in open forests which have a grassy to dense understorey. Exists as subterranean tubers most of the year. It produces leaves and flowering stems in winter.	0	Moderate
<i>Erythroriorchis radiatus</i>	Red Goshawk	CE	E	The Red Goshawk occurs in coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia.	0	Moderate
<i>Eucalyptus glaucina</i>	Slaty Red Gum	V	V	Found only on the north coast of NSW and in separate districts: near Casino where it can be locally common, and farther south, from Taree to Broke, west of Maitland. Grows in grassy woodland and dry eucalypt forest. Grows on deep, moderately fertile and well-watered soils.	0	Moderate
<i>Eucalyptus parramattensis subsp. decadens</i>		V	V	Generally, occupies deep, low-nutrient sands, often those subject to periodic inundation or where water tables are relatively high. It occurs in dry sclerophyll woodland with dry heath understorey. It also occurs as an emergent in dry or wet heathland. Often where this species occurs, it is a community dominant.	0	Moderate
<i>Euphrasia arguta</i>		CE	CE	Occur in eucalypt forest with a mixed grass and shrub understorey within Nundle State Forest. Sites have either been logged in the last few decades or appear to have regrown from past clearing.	0	Moderate
<i>Falco hypoleucos</i>	Grey Falcon	E	V	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey.	0	Moderate
<i>Grantiella picta</i>	Painted Honeyeater	V	V	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits boree, brigalow and box-gum woodlands and box-ironbark forests.	0	Moderate
<i>Grevillea parviflora subsp. parviflora</i>	Small-flowered Grevillea	V	V	Grows in sandy or light clay soils usually over thin shales. Occurs in a range of vegetation types from heath and shrubby woodland to open forest. Found over a range of altitudes from flat, low-lying areas to upper slopes and ridge crests. Often occurs in open, slightly disturbed sites such as along tracks.	0	Moderate
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V	MAR	Inhabits coastal and near coastal areas, building large stick nests, and feeding mostly on marine and estuarine fish and aquatic fauna.	2	High
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V	V	The Giant Burrowing Frog has been recorded breeding in a range of water bodies associated with more sandy environments of the coast and adjacent ranges from the Sydney Basin south the eastern Victoria. It breeds in hanging swamps, perennial non-flooding creeks and occasionally permanent pools, but permanent water must be present to allow its large tadpoles time to reach metamorphosis.	0	Moderate
<i>Hirundapus caudacutus</i>	White-throated Needletail	-	M, MAR, V	An aerial species found in feeding concentrations over cities, hilltops and timbered ranges.	1	High
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	E	E	Occurs almost exclusively in association with communities occurring on Triassic sandstone within the Sydney Basin. Typically found among exposed sandstone outcrops with vegetation types ranging from woodland to heath. Within these habitats they spend most of the year sheltering in and under rock crevices and exfoliating rock. However, some individuals will migrate to tree hollows to find shelter during hotter parts of summer.	0	Moderate
<i>Lathamus discolor</i>	Swift Parrot	E	CE	The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. This species is migratory, breeding in Tasmania and nomadic, moving about in response to changing food availability.	0	Moderate
<i>Limosa lapponica baueri</i>	Bar-tailed Godwit	-	E, MIG	"The Bar-tailed Godwit is a migratory wader which undertakes the largest non-stop flight of any bird. The trans-Pacific route from its breeding grounds in the Arctic to its non-breeding grounds in the southern hemisphere covers over 11,000 km. Birds arrive in New South Wales between August and October and then leave between February and April, with a small number of individuals overwintering. The subspecies is most frequently recorded along major coastal river estuaries and sheltered embayments, particularly the Tweed, Richmond, Clarence, Macleay, Hastings, Hunter and Shoalhaven River estuaries, Port Stephens and Botany Bay. It is a rare visitor to wetlands away from the coast with scattered records as far west as along the Darling River and the Riverina. It is found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. Less frequently it occurs in salt lakes and brackish wetlands, sandy ocean beaches and rock platforms.	0	Moderate

Scientific name	Common Name	BC Act	EPBC Act	Habitat	Number of Records (DPIE 2024)	Likelihood of Occurrence
<i>Litoria aurea</i>	Green and Golden Bell Frog	E	V	Inhabits a very wide range of water bodies including marshes, dams and streams, particularly those containing emergent vegetation such as bullrushes or spikerushes. It also inhabits numerous types of man-made water bodies including quarries and sand extraction sites. Optimum habitat includes waterbodies that are un-shaded, free of predatory fish such as Plague Minnow, have a grassy area nearby and diurnal sheltering sites available.	0	Moderate
<i>Litoria brevipalmata</i>	Green-thighed Frog	E	V	This species is distributed from south-east Queensland to the NSW Central Coast. It occurs in a range of habitat types including rainforest, moist eucalypt forest, dry eucalypt forest and heath, but is most closely associated with wetter forest types in the southern part of its range. Calling and breeding is highly correlated with heavy rainfalls that lead to the formation of large ephemeral pools in a range of sites, but always in association with some native vegetation. Calling occurring only for one or two nights at a time anywhere between September and May.	0	Moderate
<i>Macropus parma</i>	Parma Wallaby	V	V	Once occurred from north-eastern NSW to the Bega area in the southeast. Their range is now confined to the coast and ranges of central and northern NSW from the Gosford district to the Queensland border. Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest.	0	Moderate
<i>Melaleuca biconvexa</i>	Biconvex Paperbark	V	V	Grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects. Scattered and dispersed populations found in the Jervis Bay area in the south and the Gosford-Wyong area in the north.	0	Moderate
<i>Mixophyes balbus</i>	Stuttering Frog	E	V	Associated with streams in dry sclerophyll and wet sclerophyll forests and rainforests of more upland areas of the Great Dividing Range of NSW and down into Victoria. Breeding occurs along forest streams with permanent water where eggs are deposited within nests excavated in riffle zones by the females and the tadpoles swim free into the stream when large enough to do so. Outside of breeding, individuals range widely across the forest floor and can be found hundres of metres from water	0	Moderate
<i>Mixophyes iteratus</i>	Giant Barred Frog	E	E	This species is found along larger streams of the coast and adjacent ranges of NSW and SE QLD. It inhabits rainforest and wet sclerophyll forest but is also found within cleared farmland where fringing vegetation is retained, including lantana beds. Many sites where the Giant Barred Frog is known to occur are the lower reaches of streams which have been affected by major disturbances such as clearing, timber harvesting and urban development in their headwaters.	0	Moderate
<i>Numenius madagascariensis</i>	Eastern Curlew	-	CE	The Eastern curlew spends its breeding season in northeastern Asia, including Siberia to Kamchatka, and Mongolia. Its breeding habitat is composed of marshy and swampy wetlands and lakeshores. Most individuals winter in coastal Australia, with a few headings to South Korea, Thailand, Philippines and New Zealand, where they stay at estuaries, beaches, and salt marshes. It uses its long, decurved bill to probe for invertebrates in the mud. It may feed in solitary, but it generally congregates in large flocks to migrate or roost. Its call is a sharp, clear whistle, cuuue-reee, often repeated.	0	Moderate
<i>Ozothamnus tesselatus</i>		V	V	Grows in eucalypt woodland. Upper Hunter from Ravensworth to Bylong and west of Divide at Bunnan.	0	Moderate
<i>Pandion cristatus</i>	Eastern Osprey	V	MIG, MAR	"The Osprey has a global distribution with four subspecies previously recognised throughout its range. However, recent studies have identified that there are two species of Osprey - the Western Osprey (P. halietus) with three susbpecies occurring in Europe, Asia and the Americas and the Eastern Osprey (P. cristatus) occurring between Sulawesi (in Indonesia), Australia and New Caledonia. Eastern Ospreys are found right around the Australian coast line, except for Victoria and Tasmania. They are common around the northern coast, especially on rocky shorelines, islands and reefs. The species is uncommon to rare or absent from closely settled parts of south-eastern Australia. There are a handful of records from inland areas. Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water. Breed from July to September in NS Incubation of 2-3 eggs, usually by the female, is about 40 days. Female remains with young almost until they fly, usually after about nine weeks in the nest."W. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	0	Moderate
<i>Persicaria elatior</i>		V	V	This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	0	Moderate
<i>Persoonia hirsuta</i>	Hairy Geebung	E	E	Distributed from Singleton in the north, along the east coast to Bargo in the south and the Blue Mountains to the west. A large area of occurrence, but occurs in small populations, increasing the species's fragmentation in the landscape. Found in sandy soils in dry sclerophyll open forest, woodland and heath on sandstone. Usually present as isolated individuals or very small populations. Probably killed by fire (as other Persoonia spp. are) but will regenerate from seed.	0	Moderate
<i>Persoonia pauciflora</i>	North Rothbury Persoonia	CE	CE	Extremely restricted distribution: all but one of the plants which make up the only known population occur within a 2.5 km radius of the original specimen at North Rothbury in the Cessnock local government area. Within this range, there are three main sub-populations which comprise approximately 90% of the total population. The other 10% of the population occurs as scattered individuals in what is a relatively disturbed landscape. It is found in dry open forest or woodland dominated by spotted gum, broad-leaved ironbark and-or narrow-leaved ironbark and supporting a moderate to sparse shrub layer and grassy groundcover. The majority of the population is known to occur on silty sandstone soils derived from the Farley Formation.	0	Moderate
<i>Petauroides volans</i>	Greater Glider	-	E	The Greater Glider occurs in eucalypt forests and woodlands. Utilise tree hollows	0	Moderate

Scientific name	Common Name	BC Act	EPBC Act	Habitat	Number of Records (DPIE 2024)	Likelihood of Occurrence
<i>Petaurus australis australis</i>	Yellow-bellied Glider	-	V	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. Found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria.	0	Moderate
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	E	V	Found in rocky areas in a wide variety of habitats including rainforest gullies, wet and dry sclerophyll forest, open woodland and rocky outcrops in semi-arid country. Commonly sites have a northerly aspect with numerous ledges, caves and crevices.	0	Moderate
<i>Petroica boodang</i>	Scarlet Robin	V	-	The Scarlet Robin is found from SE Queensland to SE South Australia and in Tasmania and SW Western Australia. In NSW, it occurs from the coast to the inland slopes. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs.	0	Moderate
<i>Phascolarctos cinereus</i>	Koala	E	E	Inhabits eucalypt forests and woodlands. The suitability of these forests for habitation depends on the size and species of trees present, soil nutrients, climate and rainfall.	1	High
<i>Pomaderris brunnea</i>	Brown Pomaderris	V	V	The species is expected to live for 10 - 20 years, while the minimum time to produce seed is estimated to be 4 - 6 years. Found in a very limited area around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area. It also occurs at Walcha on the New England Tableland and in far eastern Gippsland in Victoria.	0	Moderate
<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo	V	V	Inhabits coastal heath and wet and dry sclerophyll forests. Generally found in areas with rainfall greater than 760 mm. Requires relatively thick ground cover where the soil is light and sandy.	0	Moderate
<i>Prasophyllum sp. Wybong</i>	A leek orchid	-	CE	Endemic to NSW. It is known from seven populations in eastern NSW near Ilford, Premer, Muswellbrook, Wybong, Yeoval, Inverell and Tenterfield.	0	Moderate
<i>Prostanthera cineolifera</i>		V	V	Grows in open woodlands on exposed sandstone ridges. Usually found in association with shallow or skeletal sands.	0	Moderate
<i>Pseudomys novaehollandiae</i>	New Holland Mouse	-	V	The New Holland Mouse currently has a disjunct, fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Across the species' range the New Holland Mouse is known to inhabit open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes.	0	Moderate
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands, melaleuca swamps and banksia woodlands. Bats commute daily to foraging areas, usually within 15 km of the day roost although some individuals may travel up to 70 km.	5,122	High
<i>Pterostylis gibbosa</i>	Illawarra Greenhood	E	E	Grows in open forest or woodland, on flat or gently sloping land with poor drainage. Known from a small number of populations in the Hunter region (Milbrodale), the Illawarra region (Albion Park and Yallah) and the Shoalhaven region (near Nowra).	0	Moderate
<i>Pycnoptilus floccosus</i>	Pilot Bird	-	V	The pilotbird is found from the Wollemi National Park and Blue Mountains National Park in New South Wales through to the Dandenong Ranges, near Melbourne in Victoria.[9] Its natural habitat is temperate wet sclerophyll forests and occasionally temperate rainforest, where there is dense undergrowth with abundant debris.[1][7] It is sedentary and common	0	Moderate
<i>Rhizanthella slateri</i>		V, EP (Great Lakes)	E	Habitat requirements are poorly understood, and no particular vegetation type has been associated with the species, although it is known to occur in sclerophyll forest.	0	Moderate
<i>Rhodamnia rubescens</i>	Scrub Turpentine	CE	CE	Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. This species is characterised as highly to extremely susceptible to infection by Myrtle Rust. Myrtle Rust affects all plant parts.	0	Moderate
<i>Rhodomyrtus psidioides</i>	Native Guava	CE	CE	Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines. This species is characterised being extremely susceptible to infection by Myrtle Rust. Myrtle Rust affects all plant parts.	0	Moderate
<i>Rostratula australis</i>	Australian Painted Snipe	E	E, MAR	In NSW, this species has been recorded at the Paroo wetlands, Lake Cowell, Macquarie Marshes and Hexham Swamp. Most common in the Murray-Darling Basin. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds.	0	Moderate
<i>Rutidosia heterogama</i>		V	V	Grows in heath on sandy soils and moist areas in open forest and has been recorded along disturbed roadsides.	0	Moderate
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E	V	Found only in NSW, in a narrow, linear coastal strip from Bulahdelah to Conjola State Forest. On the south coast the species occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral rainforest. On the central coast it occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities	0	Moderate
<i>Tetratheca juncea</i>	Black-eyed Susan	V	V	Confined to the northern portion of the Sydney Basin bioregion and the southern portion of the North Coast bioregion in the local government areas of Wyong, Lake Macquarie, Newcastle, Port Stephens, Great Lakes and Cessnock. It is usually found in low open forest-woodland with a mixed shrub understorey and grassy groundcover. The majority of populations occur on low nutrient soils associated with the Awaba Soil Landscape. Cryptic species that requires survey in September-October.	0	Moderate

Scientific name	Common Name	BC Act	EPBC Act	Habitat	Number of Records (DPIE 2024)	Likelihood of Occurrence
<i>Thesium australe</i>	Austral Toadflax	V	V	Grows in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. It is also found in Tasmania and Queensland and in eastern Asia. Occurs in grassland or grassy woodland. Grows on kangaroo grass tussocks but has also been recorded within the exotic coolatai grass.	0	Moderate

Note: **V** = Vulnerable, **E** = Endangered, **CE** = Critically Endangered, **MAR** = Marine, **MIG** = Migratory.

TABLE 28 POTENTIAL FOR IMPACT ANALYSIS FOR MODERATE OR HIGH EPBC LISTED LOO SPECIES

Scientific Name (Common Name)	EPBC Act	Survey Outcome	Potential for Significant Impact	Assessment of Significance required
<i>Acacia bynoeana</i> (Bynoe's Wattle)	V	Absent	Unlikely – The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat (dry sclerophyll forest in sandy soils). However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No , this species is considered unlikely to be significantly impacted.
<i>Angophora inopina</i>	V	Absent	Unlikely – The proposed action is unlikely to impact upon suitable habitat as associated habitat types for are endemic to the Central Coast Region of NSW.	No - this species is considered unlikely to be significantly impacted.
<i>Anthochaera phrygia</i> (Regent Honeyeater)	CE	Absent	Possible - The proposed action may remove a moderately sized area (~51.69 ha ha) of potential habitat. No recent species sightings or important populations have been recorded within a 10 km radius of the subject land in the past 5 years.	Yes - AoS is considered necessary under the EPBC Act (i.e., Significant impact Guidelines 1.1). Refer to Attachment 2 .
<i>Aprasia parapulchella</i> (Pink-tailed Legless Lizard)	V	Absent	Unlikely - The proposed action may remove a relatively small area of suitable habitat (native grassy ground layers, particularly those dominated by kangaroo grass, and which are typically well-drained, with rocky outcrops or scattered, partially-buried rocks). However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Callocephalon fimbriatum</i> (Gang-gang Cockatoo)	E	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha ha) of potential habitat. No recent species sightings or important populations have been recorded within a 10 km radius of the subject land in the past 5 years.	No - this species is considered unlikely to be significantly impacted.
<i>Chalinolobus dwyeri</i> (Large-eared Pied Bat)	E	Present	Likely - The proposed action may remove a moderately sized area (~51.69 ha ha) of suitable foraging habitat and survey results indicate confidently that there were 21 individuals calling within the proposed development area, which may constitute a population of this Endangered species.	Yes - AoS is considered necessary under the EPBC Act (i.e., Significant impact Guidelines 1.1). Refer to Attachment 2 .
<i>Cryptostylis hunteriana</i> (Leafless Tongue-orchid)	V	Absent	Unlikely – The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat (woodlands dominated by <i>Corymbia gummifera</i>). However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No , this species is considered unlikely to be significantly impacted.
<i>Cynanchum elegans</i> (White-flowered Wax Plant)	E	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Endangered species.	No , this species is considered unlikely to be significantly impacted.
<i>Dasyurus maculatus maculatus</i> (Spotted-tailed Quoll)	E	Absent	Likely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. There records within a 10 km radius that may constitute an important population of the Endangered species.	Yes - AoS is considered necessary under the EPBC Act (i.e., Significant impact Guidelines 1.1). Refer to Attachment 2 .
<i>Delma impar</i> (Striped Legless Lizard)	V	Absent	Unlikely - The proposed action may remove a relatively small area of suitable habitat (grasslands including areas with high exotic component and significant amount of surface rocks). However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Diuris praecox</i> (Rough Doubletail)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Erythrotriorchis radiatus</i> (Red Goshawk)	E	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.

Scientific Name (Common Name)	EPBC Act	Survey Outcome	Potential for Significant Impact	Assessment of Significance required
<i>Eucalyptus glaucina</i> (Slaty Red Gum)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Eucalyptus parramattensis</i> <i>subsp. decadens</i>	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Euphrasia arguta</i>	CE	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Falco hypoleucos</i> (Grey Falcon)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Grantiella picta</i> (Painted Honeyeater)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Grevillea parviflora</i> <i>subsp. parviflora</i> (Small-flowered Grevillea)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Heleioporus australiacus</i> (Giant Burrowing Frog)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Hirundapus caudacutus</i> (White-throated Needletail)	M, MAR, V	Absent	Unlikely - The proposed action is unlikely to remove suitable habitat as the species is an aerial species. There is record (1) in the locality, but it is unlikely to constitute a population of this Vulnerable species	No , this species is considered unlikely to be significantly impacted.
<i>Hoplocephalus bungaroides</i> (Broad-headed Snake)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Lathamus discolor</i> (Swift Parrot)	CE	Absent.	Possible - The proposed action may remove a moderately sized area (~51.69 ha ha) of potential habitat. No recent species sightings or populations have been recorded within a 10 km radius of the subject land in the past 5 years.	Yes - AoS is considered necessary under the EPBC Act (i.e., Significant impact Guidelines 1.1). Refer to Attachment 2 .
<i>Limosa lapponica baueri</i> (Bar-tailed Godwit)	E, MIG	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Litoria aurea</i> (Green and Golden Bell Frog)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Litoria brevipalmata</i> (Green-thighed Frog)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Macropus parma</i> (Parma Wallaby)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Melaleuca biconvexa</i> (Biconvex Paperbark)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Mixophyes balbus</i> (Stuttering Frog)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Mixophyes iteratus</i> (Giant Barred Frog)	E	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Numenius madagascariensis</i> (Eastern Curlew)	CE	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Ozothamnus tessellatus</i>	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Persicaria elatior</i>	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.

Scientific Name (Common Name)	EPBC Act	Survey Outcome	Potential for Significant Impact	Assessment of Significance required
<i>Persoonia hirsuta</i> (Hairy Geebung)	E	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Persoonia pauciflora</i> (North Rothbury Persoonia)	CE	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Petauroides volans</i> (Greater Glider)	E	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Petaurus australis australis</i> (Yellow-bellied Glider)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Petrogale penicillata</i> (Brush-tailed Rock-wallaby)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Phascolarctos cinereus</i> (Koala)	E	Absent, Assumed Present	Likely - The proposed action may remove a moderately sized area (~51.69 ha ha) of suitable habitat (Eucalypt forests), and there are records (8) within a 10 km that may constitute an important population of the Endangered species.	Yes - AoS is considered necessary under the EPBC Act (i.e., Significant impact Guidelines 1.1). Refer to Attachment 2 .
<i>Pomaderris brunnea</i> (Brown Pomaderris)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Potorous tridactylus tridactylus</i> (Long-nosed Potoroo)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Prasophyllum sp. Wybong</i> (A leek orchid)	CE	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Prostanthera cineolifera</i>	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Pseudomys novaehollandiae</i> (New Holland Mouse)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Pteropus poliocephalus</i> (Grey-headed Flying-fox)	V	Absent	Possible - The proposed action may remove a moderately sized area (~51.69 ha) of suitable foraging habitat (canopy-feeding frugivore and nectarivore), and there are records (5,122) in the locality that may constitute an important population of the Vulnerable species. However, no breeding camps were identified, and foraging habitat is broad ranging but breeding camps are localised important habitats.	Yes - AoS is considered necessary under the EPBC Act (i.e., Significant impact Guidelines 1.1). Refer to Attachment 2 .
<i>Pterostylis gibbosa</i> (Illawarra Greenhood)	E	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Pycnoptilus floccosus</i> (Pilot Bird)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Rhizanthella slateri</i>	E	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Rhodamnia rubescens</i> (Scrub Turpentine)	CE	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Rhodomyrtus psidioides</i> (Native Guava)	CE	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Rostratula australis</i> (Australian Painted Snipe)	E, MAR	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Rutidosia heterogama</i>	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.

Scientific Name (Common Name)	EPBC Act	Survey Outcome	Potential for Significant Impact	Assessment of Significance required
<i>Syzygium paniculatum</i> (Magenta Lilly Pilly)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Tetradthea juncea</i> (Black-eyed Susan)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Thesium australe</i> (Austral Toadflax)	V	Absent	Unlikely - The proposed action may remove a moderately sized area (~51.69 ha) of suitable habitat. However, there are no records in the locality that may constitute an important population of this Vulnerable species.	No - this species is considered unlikely to be significantly impacted.
<i>Calyptorhynchus lathami lathami</i> (South-eastern Glossy Black-Cockatoo)	V	Absent	Possible - The proposed action may remove a moderately sized area (~51.69 ha ha) of suitable habitat (canopy-feeding frugivore and nectarivore), and there are records (4) in the locality that may constitute an important population of the Vulnerable species.	Yes - AoS is considered necessary under the EPBC Act (i.e., Significant impact Guidelines 1.1). Refer to Attachment 2 .
<i>Pseudomys novaehollandiae</i> (New Holland Mouse)	V	Absent	Possible - The proposed action may remove a moderately sized area (~51.69 ha ha) of suitable habitat (open woodlands and forests), and there are no known records in the locality that may constitute an important population of the Vulnerable species.	Yes - AoS is considered necessary under the EPBC Act (i.e., Significant impact Guidelines 1.1). Refer to Attachment 2 .
<i>Petaurus australis australis</i> (Yellow-bellied Glider (south-eastern))	V	Absent	Possible - The proposed action may remove a moderately sized area (~51.69 ha ha) of suitable habitat (eucalypt dominated woodlands and forests), and there are no known records in the locality that may constitute an important population of the Vulnerable species.	Yes - AoS is considered necessary under the EPBC Act (i.e., Significant impact Guidelines 1.1). Refer to Attachment 2 .
<i>Callocephalon fimbriatum</i> (Gang-gang Cockatoo)	E	Absent	Possible - The proposed action may remove a moderately sized area (~51.69 ha ha) of suitable habitat (temperate eucalypt forests and woodlands of mainland south-east Australia), and there are known records in the locality that may constitute an important population of the Endangered species.	Yes - AoS is considered necessary under the EPBC Act (i.e., Significant impact Guidelines 1.1). Refer to Attachment 2 .
<i>Petauroides volans</i> (Greater Glider (southern and central))	E	Absent	Possible - The proposed action may remove a moderately sized area (~51.69 ha ha) of suitable habitat (temperate eucalypt forests and woodlands of mainland south-east Australia), and there are known records in the locality that may constitute an important population of the Endangered species.	Yes - AoS is considered necessary under the EPBC Act (i.e., Significant impact Guidelines 1.1). Refer to Attachment 2 .

Note: V = Vulnerable, E = Endangered, CE = Critically Endangered, MAR = Marine, MIG = Migratory.

Attachment 2 – Assessments of Significance (EPBC Act)

The species which have potential for significant impact by the proposed action, and therefore require consideration under the Significant Impact Guidelines 1.1 for MNES include the following:

- Vulnerable species:
 - *Pteropus poliocephalus* (Grey-headed Flying-fox)
 - *Calyptorhynchus lathami lathami* (South-eastern Glossy Black-Cockatoo)
 - *Pseudomys novaehollandiae* (New Holland Mouse)
 - *Petaurus australis australis* (Yellow-bellied Glider (south-eastern))
- Critically Endangered and Endangered species:
 - *Phascolarctos cinereus* (Koala)
 - *Anthochaera phrygia* (Regent Honeyeater)
 - *Lathamus discolor* (Swift Parrot)
 - *Chalinolobus dwyeri* (Large-eared Pied Bat)
 - *Callocephalon fimbriatum* (Gang-gang Cockatoo)
 - *Petauroides volans* (Greater Glider (southern and central))
 - *Dasyurus maculatus maculatus* (Spotted-tailed Quoll (SE mainland population))

The assessments conducted in the following sections determine if the proposed action will have any significant impact on any MNES. If it is determined that there is a significant impact to any MNES then a referral of the matter to DoE would be recommended.

Unless otherwise noted, the assessments have been conducted with reference to records of sightings in the BioNet Atlas (DEH 2024) and information presented in NSW DPIE's threatened species profiles (OEH 2024) and the published conservation advice and other documents referenced on the Commonwealth Species Profile and Threats (SPRAT) database for each listed entity (DCCEEW 2024).

Vulnerable Species Assessment

Vulnerable species are assessed on the basis of an 'important population', which is defined as a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- key source populations either for breeding or dispersal;
- populations that are necessary for maintaining genetic diversity; and/or
- populations that are near the limit of the species range.

Species have been assessed based on the Significant Guidelines defining an action likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- Lead to a long-term decrease in the size of an important population of a species.
- Reduce the area of occupancy of an important population.
- Fragment an existing important population into two or more populations.
- Adversely affect habitat critical to the survival of a species.
- Disrupt the breeding cycle of an important population.
- Modify, destroy, remove or 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 vulnerable species becoming established in the vulnerable species' habitat.
- Introduce disease that may cause the species to decline.
- Interfere substantially with the recovery of the species.

Pteropus poliocephalus (Grey-headed Flying-fox)

Lead to a long-term decrease in the size of an important population of the species:

The Grey-headed Flying-fox is considered to be a single, mobile population with individuals distributed across Queensland, New South Wales, Victoria, South Australia, Tasmania and the ACT. The national population of the species is found in many camps across multiple states; however, it is considered a single population because there is a constant interchange of individuals and genetic material between them. The national population is considered to be an important population for the purposes of this assessment.

A total of 5,122 individuals of the species have been detected within a 10 km radius of the proposed area (DECCEW, 2024). The impacts of the proposed action would involve the loss of ~51.69 ha of vegetation containing feed tree species and potential roosting habitat.

Reduce the area of occupancy of an important population of the species:

The habitat to be removed is likely to be only occasionally utilised for foraging by the species. Therefore, the proposed action is unlikely to significantly reduce the area of occupancy of an important population.

Fragment an existing important population into two or more populations:

The population of the species moves aerially across large home ranges and would not be restricted by the impacts of the proposed action.

Adversely affect habitat critical to the survival of a species:

The area likely to be affected by the proposed action does not contain any known camps. However, the key threatening process for the species is loss of foraging habitat. The foraging habitat within the area of the proposed action has been mapped as Level 1, with this value being assigned to the highest-ranking habitat (high conservation value) (DCCEW 2010). The species roosts in camps of various sizes on exposed branches, typically located near water. The habitat affected by the proposal is foraging habitat only with no breeding camps recorded during surveys within the site. Therefore, the loss of foraging habitat is not considered to be habitat critical to the survival of the species.

Disrupt the breeding cycle of an important population:

Mating occurs in larger camps with females raising young in smaller maternity camps. None of either camp occurs in the area likely to be affected by the proposed action. The foraging and roosting resources affected by the proposed action are likely to be important for the reproductive cycle of the species, but the loss of ~51.69 ha is unlikely to cause disruption to its breeding cycle.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:

The proposed action would remove ~51.69 ha of foraging and roosting habitat that is likely to be used occasionally by the species. These impacts have the potential to cause the species to decline.

Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat:

The proposed action is unlikely to introduce invasive species that are harmful to the species and enable them to become established if appropriate mitigation measures are adhered to.

Introduce disease that may cause the species to decline:

The proposed action is unlikely to introduce diseases that may cause this species to decline.

Interfere substantially with the recovery of the species:

The proposed action is unlikely to interfere substantially with the recovery of this species given the reduction in foraging habitat only.

Conclusion: The proposed action is unlikely to have significant impacts upon this species.



Calyptorhynchus lathami lathami (South-eastern Glossy Black-Cockatoo)

Lead to a long-term decrease in the size of an important population:

The species inhabits open forests and woodlands along the coast and the Great Dividing Range, where sheoak stands are present. Key food sources include Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) (DPIE, 2024). The impacts of the proposed action would involve the loss of 51.69 ha of vegetation containing feed tree species and hollow-bearing trees. This quantity of occasionally used resources has the potential to cause the size of the population to decrease. However, as no observations of the species or secondary observations (i.e., chewed orts) were made, it's unlikely that an important population is utilising the site. The potential for a long-term decrease in an important population is considered unlikely.

Reduce the area of occupancy of an important population of the species:

The habitat to be removed has the potential to be regularly utilised by the species. However, as no observations of the species or secondary observations (i.e., chewed orts) were made, it's unlikely that an important population is utilising the site. Therefore, the proposed action is unlikely to reduce the area of occupancy of an important population of the species.

Fragment an existing important population into two or more populations:

The population of the species moves aerially and would not be restricted by the impacts of the proposed action.

Adversely affect habitat critical to the survival of a species:

Habitat critical to the survival of the South-eastern Glossy Black-Cockatoo includes all foraging habitat during both the breeding and non-breeding season. South-eastern Glossy Black-Cockatoo rely on stands of suitable hollow-bearing trees, which are a key component of their breeding habitat. Habitat critical to the survival includes hollow bearing trees with living or dead tree with hollows greater than 15cm diameter and higher than 8m above ground (BioNet, 2024). The area likely to be affected by the proposed action contains a number of hollows of this size.

EcoResolve conducted additional surveys for the Glossy Black-Cockatoo to identify signs of breeding and mapped potential nest trees where hollows were at least 8 m above the ground; and hollow diameter is at least 15 cm. Trees that contained these parameters were marked and Camera traps were deployed to monitor these tree hollows during the breeding season to confirm presence of any actual nest trees on site. Because no actual nest trees were identified during the further comprehensive surveys, it can be deduced that there is no breeding currently taking place within the site. Given there were no individuals recorded and there were no secondary observations (i.e., chewed orts) this habitat is not considered to be critical to the survival of the species.

Disrupt the breeding cycle of an important population:

South-eastern Glossy Black-Cockatoos are dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May (DPIE, 2024). Although the foraging and nesting resources affected by the proposed action are likely to be important for the reproductive cycle of the species, no nest trees in use were recorded during the additional nest tree surveys and consequently disruption to its breeding cycle is unlikely.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:

The proposed action would remove 51.69 ha of potential foraging and nesting habitat that has the potential to be used regularly by the species. However, there are large contiguous areas of adjoining suitable habitat, and the species has not been recorded within the site, so it's unlikely to cause the species 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':



The proposed action is unlikely to result in invasive species that are harmful to the species becoming established in the species' habitat if the proposed mitigation measures (weed control programs, vehicle cleaning etc.) are adhered to.

Introduce disease that may cause the species to decline:

The proposed action is unlikely to introduce diseases that may cause this species to decline.

Interfere with the recovery of the species:

The proposed action is unlikely to interfere with the recovery of this species, given survey effort did not detect the species foraging or breeding within habitat on the subject land habitat.

Conclusion: The proposed action is unlikely to have significant impacts upon the species.

Petaurus australis (Yellow-bellied Glider)

Lead to a long-term decrease in the size of an important population of the species:

The yellow-bellied glider is found at altitudes ranging from sea level to 1400m above sea level and has a widespread but patchy distribution from south-east Queensland to far-southeastern SA (DAWE, 2022). In NSW, it is predominantly found in forests along the eastern coast, however, the distribution extends inland to the western slopes of the Great Dividing Range in parts of NSW and QLD.

Populations important to the survival of the species include stronghold populations, ecologically or genetically distinct populations (e.g. those at the limits of subspecies range, outlying populations), research populations, and other populations where recovery actions are being implemented (DAWE, 2022).

A total of one individual of this species has been detected within a 10km radius of the proposed area (DECCEEW, 2024). Furthermore, this species was not detected during targeted surveys in 2023-2024. The impacts of the proposed action would involve the loss of ~51.69 ha of vegetation containing feed tree species and potential nesting habitat. However, due to the absence of the species, and therefore an important population, it is considered unlikely that the proposed action would lead to the long-term decrease in the size of an important population.

Reduce the area of occupancy of an important population of the species:

Due to the absence of an important population, it is unlikely that the loss of ~51.69ha of potential habitat will reduce the area of occupancy of an important population.

Fragment an existing important population into two or more populations:

The removal of ~51.69ha of vegetation will not cause a barrier to the movement of a population of the species as a continuous connection with surrounding bushland will remain. Therefore, the impacts of the proposed activity will be restricted to the project area, and it is unlikely that a population will be divided into two or more.

Adversely affect habitat critical to the survival of a species:

Habitat critical to the survival of the Yellow-bellied Glider includes large contiguous areas of floristically diverse eucalyptus forest, dominated by winter-flowering and smooth-barked eucalypts with mature living hollow-bearing trees and sap trees (DAWE, 2022). The vegetation present within the project area contains Eucalyptus species and hollow bearing trees that could potentially be used as foraging and den habitat. Therefore, the vegetation is considered to be habitat critical to the survival of the Yellow-bellied Glider. However, its' removal is not likely to adversely affect the species survival, due to the availability of surround bushland.

Disrupt the breeding cycle of an important population:

Yellow-bellied Gliders reproduce seasonally, usually with a litter size of one. No individuals have been detected on the project site or surrounding area; therefore, it is unlikely that the proposed activity will disrupt the breeding cycle of an important population.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:

The proposed action would remove ~51.69 ha of foraging and den habitat that has potential to be used by the species. The removal of this vegetation will cause a decrease in the availability of habitat; however, it will not be significant enough to cause fragmentation to surrounding habitat and cause the species to decline.

Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat:

The proposed action is unlikely to introduce invasive species that are harmful to the species and enable them to become established if appropriate mitigation measures are adhered to.

Introduce disease that may cause the species to decline:

The proposed action is unlikely to introduce diseases that may cause this species to decline.

Interfere substantially with the recovery of the species:

The proposed action is unlikely to interfere substantially with the recovery of this species given the reduction in foraging habitat only.

Conclusion: The proposed action is unlikely to have significant impacts upon this species.

Pseudomys novaehollandiae (New Holland Mouse)

Lead to a long-term decrease in the size of an important population of the species:

The New-Holland Mouse has a disjunct, fragmented distribution stretching across eastern Australia down into Tasmania. The species primarily occurs in coastal areas; however, its range extends inland to around 100km in northern NSW and southern QLD and includes remnant subpopulation that is more than 300km from the coast. Majority of the species range appears to consist of a large cluster of sub populations that incorporate much of the mid and north NSW coast, extending into southern QLD. The remaining species' distribution has historically been contained in small and clearly isolated subpopulations (DAWE, 2024).

Any population is important to the survival of the species due to patchiness and isolated nature of the species' populations along with evidence of declines (DAWE, 2024). However, as no population has been recorded in the locality (10km) recently (past 5 years) the potential for a long-term decrease in an important population is considered unlikely.

Reduce the area of occupancy of an important population of the species:

Due to the absence of a population, it is unlikely that the loss of ~51.69ha of potential habitat will reduce the area of occupancy of an important population.

Fragment an existing important population into two or more populations:

The removal of ~51.69ha of vegetation will not cause a barrier to the movement of a population of the species as the vegetation will still be part of an existing contiguous tract of bushland. Therefore, the impacts of the proposed activity will be restricted to the project area. Additionally, as no population has been recorded it is considered unlikely that a population will be divided into two more.

Adversely affect habitat critical to the survival of a species:

Habitat critical to the survival of the New Holland Mouse is considered any habitats that the species has been recorded, and potential habitats, that align with the following habitat types, open heathlands, open woodlands with a heath understory, dry sclerophyll forests with a grassy or heath understory, tall open grassy forests, open grassy woodlands, and vegetated sand dunes (DAWE, 2024). As the species has been recorded in the past, the vegetation present in the project area is considered to be habitat critical to the survival of the species.

Disrupt the breeding cycle of an important population:

No individuals have been detected on the project site or surrounding area; therefore, it is unlikely that the proposed activity will disrupt the breeding cycle of an important population.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:

The proposed action would remove ~51.69 ha of foraging and nesting habitat that has potential to be used by the species. The removal of this vegetation will cause a decrease in the availability of habitat; however, it will not be significant enough to cause fragmentation to surrounding habitat and cause the species to decline.

Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat:

The proposed action is unlikely to introduce invasive species that are harmful to the species and enable them to become established if appropriate mitigation measures are adhered to.

Introduce disease that may cause the species to decline:

The proposed action is unlikely to introduce diseases that may cause this species to decline.

Interfere substantially with the recovery of the species:

The proposed action is unlikely to interfere substantially with the recovery of this species given the reduction in foraging habitat only.

Conclusion: The proposed action is unlikely to have significant impacts upon this species.

Critically Endangered and Endangered Species Assessment

Endangered species were assessed on the basis of a population' of species, which is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to:

- A geographically distinct regional population, or collection of local populations.
- A population, or collection of local populations, that occurs within a particular bioregion.

Species have been assessed based on the Significant Guidelines defining an action as 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.
- Interfere with the recovery of the species.

Anthochaera phrygia (Regent Honeyeater)

Lead to a long-term decrease in the size of a population:

The Regent honeyeater is endemic to mainland south-eastern Australia. It has a patchy distribution which extends from south-east Queensland, through New South Wales (NSW) and the Australian Capital Territory (ACT), to central Victoria. Records are widely distributed across its range, but it is only found regularly at a few localities in NSW and Victoria.

No pairs occur within the proposed project area or adjacent area (DCCEW 2024). Additionally, no important habitat has been mapped for the species within the proposed project area. The impacts of the proposed action would involve the loss of ~51.69 ha of vegetation containing feed tree species and hollow-bearing trees. This quantity of occasionally used resources is insignificant relative to the resources present in the wider locality and nationwide. This loss of resources is unlikely to cause the size of the population to decrease.

Reduce the area of occupancy of the species:

The habitat to be removed is unlikely to be regularly utilised by the species. Therefore, the proposed action is unlikely to reduce the area of occupancy of a population.

Fragment an existing population into two or more populations:

The population of the species moves aerially and would not be restricted by the impacts of the proposed action.

Adversely affect habitat critical to the survival of a species:

The species is commonly associated with the habitat within the proposed project area (dry sclerophyll forest), and nests in the canopy of mature trees with rough bark. It feeds on nectar, invertebrates (mostly insects) and their exudates (e.g. lerps and honeydew), and occasionally fruit. The decline of the Regent honeyeater is thought to be mainly due to the clearing, fragmentation and degradation of its habitat. However, the species is highly mobile and capable of travelling large distances. The feeding and nesting resources present could occasionally be used by the species, and therefore the habitat affected by the proposal is considered to be habitat critical to the survival of the species.

Disrupt the breeding cycle of a population:

Most pairs nest solitarily, or in some cases, loose congregations. The foraging resources affected by the proposed action are likely to be important for the reproductive cycle of the species, but the loss of ~51.69 ha is unlikely to cause disruption to its breeding cycle.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:

The proposed action would remove ~51.69 ha of potential foraging and nesting habitat that is unlikely to be used regularly by the species. These impacts are unlikely to cause the species 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':

The proposed action is unlikely to result in invasive species that are harmful to the species becoming established in the species' habitat if the proposed mitigation measures (weed control programs, vehicle cleaning etc.) are adhered to.

Introduce disease that may cause the species to decline:

The proposed action is unlikely to introduce diseases that may cause this species to decline.

Interfere with the recovery of the species:

The proposed action is unlikely to interfere with the recovery of this species given the relatively low significance of the habitat to be affected.

Conclusion: The proposed action is unlikely to have any significant impacts upon the species

Phascolarctos cinereus (Koala)

Lead to a long-term decrease in the size of a population:

The koala's distribution is not continuous across its range of predominantly eastern Australia. The listed population of the koala has a wide but patchy distribution that spans the coastal and inland areas of Queensland north, extending westwards into hotter and dryer semi-arid climates of central Queensland, New South Wales and the Australian Capital Territory. Vegetation clearance from activities including urbanisation, grazing, agriculture and mining have significantly reduced the koala's distribution.

One (1) individual was detected within a 10 km radius of the proposed area (DEH, 2024). The impacts of the proposed action would involve the loss of ~51.69 ha of vegetation containing feed tree species. However, given the abundance of similar contiguous habitat, it's not considered likely to result in a long-term decrease in the size of a local population.

Reduce the area of occupancy of the species:

Potential restrictions to the species movement because of the proposed action may temporarily reduce its area of occupancy.

Fragment an existing population into two or more populations:

The proposed action will present a temporary linear barrier to movement which may fragment the local population while it is in place.

Adversely affect habitat critical to the survival of a species:

For an individual koala, critical resources include access to sufficient quality food (Eucalyptus leaves), and shelter trees to meet their daily energetic requirements and reproductive needs, and a place to avoid predators. The project area contains feed tree species, shelter trees and corridors for the species to move freely between sites. Up to ~51.69 ha of critical habitat would be adversely affected as a result of the proposed action.

Disrupt the breeding cycle of a population:

There is no evidence of breeding in the locality, and the area contains existing fragmentation and incremental increase of an existing barrier to dispersal is not considered likely to disrupt the breeding cycle of the local population.

Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:

The proposed action would remove ~51.69 ha of feed tree species and shelter, that has the potential to be occasionally used by the species. These impacts have the potential to cause the species 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':

The proposed action is unlikely to introduce diseases that may cause this species to decline.

Introduce disease that may cause the species to decline:

The proposed action is unlikely to introduce diseases that may cause this species to decline.

Interfere with the recovery of the species:

The proposed action is likely to interfere with the recovery of this species, given the significance of the habitat (feed tree species and shelter), to be affected.

Conclusion: The proposed action is likely to have a significant impact upon the species.



Chalinolobus dwyeri (Large-eared Pied Bat)

Lead to a long-term decrease in the size of a population:

The species is patchily distributed in central-eastern New South Wales (NSW) and south-eastern and central Queensland (Qld). The species' distribution is fragmented, as most individuals occur in small and relatively isolated subpopulations due to specific requirements for foraging and roosting habitat. In line with the conservation advice, the term population is used to refer to subpopulation, as further research is required throughout the species' known range to determine the size and distribution of existing populations.

21 individuals were confidently identified within the proposed project area (WingBeat Ecology 2024). The impacts of the proposed action would include the loss of ~51.69 ha of foraging habitat. However, given the large area of contiguous habitat in the surrounding area and the paucity of roosting habitat in the site, this impact is not considered likely to result in a long-term decrease in the size of a population.

Reduce the area of occupancy of the species:

The habitat to be removed is likely to be regularly utilised by the species (foraging habitat). Therefore, the proposed action is likely to reduce the area of occupancy of a subpopulation.

Fragment an existing population into two or more populations:

The subpopulation of the species moves aerially and would not be restricted by the impacts of the proposed action.

Adversely affect habitat critical to the survival of a species:

The area likely to be affected by the proposed action contains 21 individuals (Wingbeat Ecology 2024). The foraging resources present (dry sclerophyll forest) are likely to be regularly used by the species. The species is dependent on the presence of diurnal roosts such as rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within old mines or tunnels. These areas are considered as breeding habitat when these features are within two kilometres. Roosting features for the species are not known to occur within the proposed area, however the survey effort to date cannot yet confirm whether they are within 2 kms of the site. The presence of foraging habitat and the potential for roosting habitat within proximity, should be considered habitat critical to the survival of the large-eared pied bat. The habitat affected by the proposal is therefore considered to be habitat critical to the survival of the species.

Disrupt the breeding cycle of an important population:

Mating occurs in larger camps with females raising young in smaller maternity camps. None of either camp occurs in the area likely to be affected by the proposed action. Although the foraging resources affected by the proposed action are likely to be important for the reproductive cycle of the species, disruption to its breeding cycle is unlikely.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:

The proposed action would remove ~51.69 ha of foraging habitat that is likely to be used regularly by the species. These impacts have the potential to cause the species to decline. Additionally, the proposed activity involves mining into historic mine shafts. Disused mine shafts are known to be utilised by the Large-eared Pied Bat for breeding and roosting activities (DCEEW, 2023), therefore, their modification has the potential to impact breeding and roosting habitat.

Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species':

The proposed action is unlikely to result in invasive species that are harmful to the species becoming established in the species' habitat if the proposed mitigation measures (weed control programs, vehicle cleaning etc.) are adhered to.

Introduce disease that may cause the species to decline:

The proposed action is unlikely to introduce diseases that may cause this species to decline.

Interfere with the recovery of the species:





Clearing of vegetation has the potential to affect foraging resources through habitat loss and fragmentation of the surrounding vegetation. This is likely to be particularly detrimental in the vicinity of maternity roosts (if present). The proposed action has the potential to interfere with the recovery of this species, given the significance of the foraging habitat to be affected.

Conclusion: The proposed action is likely to have significant impacts upon the species.





Lathamus discolor (Swift Parrot)

Lead to a long-term decrease in the size of a population:

The swift parrot breeds in Tasmania during the summer and the entire population migrates north to mainland Australia for the winter. In New South Wales, swift parrots forage in forests and woodlands throughout the coastal and western slopes regions each year. Swift Parrots are usually seen in small parties of up to 30 birds, or occasionally in larger flocks (of several hundred birds) around sources of abundant food.

There are no records of the species in the project area, however, there are 5 records in the locality (10 km radius) (DCCEEW 2024). Additionally, there are numerous recent records (last 5 years) within the region, however, the project site and adjacent vegetation does not appear to be utilised by the species.

No important habitat has been mapped for the species within the proposed project area. The impacts of the proposed action would be limited to the loss of ~51.69 ha of vegetation containing feed tree species and hollow-bearing trees. This loss of occasionally used resources is unlikely to cause the size of the population to decrease.

Reduce the area of occupancy of the species:

The project area contains foraging habitat that is considered to be critical habitat for the survival of the Swift Parrot. The removal of this habitat would interfere with the recovery of Swift Parrots and reduce the area of occupancy of the species (DCCEEW, 2024).

Fragment an existing population into two or more populations:

The population of the species moves aerially and would not be restricted by the impacts of the proposed action.

Adversely affect habitat critical to the survival of a species:

Habitat critical for the survival of Swift Parrots on the Australian mainland includes known foraging species. Foraging species present within the project area include *Corymbia maculata* (Spotted Gum), therefore, the proposed vegetation (~51.69) is considered to be critical habitat.

Disrupt the breeding cycle of an important population:

The Swift Parrot breeds exclusively in the east and south-east of Tasmania during the summer. Therefore, the proposed action will not cause disruption to its breeding cycle.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:

The proposed action would remove ~51.69 ha of foraging habitat that is currently not being utilised by the species, however surrounding records suggest that the species is regularly present during the winter migration months. Therefore, it is considered that the removal of already scarce foraging resources in the area, is likely to cause the species 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':

The proposed action is unlikely to result in invasive species that are harmful to the species becoming established in the species' habitat if the proposed mitigation measures (weed control programs, vehicle cleaning etc.) are adhered to.

Introduce disease that may cause the species to decline:

The proposed action is unlikely to introduce diseases that may cause this species to decline.

Interfere with the recovery of the species:

The removal of ~51.69ha of vegetation that is considered to be critical habitat for the survival of the species would interfere with the recovery of the Swift Parrot (DCCEEW, 2024).

Conclusion: The proposed action is likely to have significant impacts upon the species. The *National Recovery Plan for the Swift Parrot* (2024) states that if removal of habitat critical to the survival of the species cannot be avoided or mitigated then an offset should be provided.



Callocephalon fimbriatum (Gang-gang Cockatoo)

Lead to a long-term decrease in the size of a population:

Gang-gang cockatoos are endemic to south-eastern Australia. The species is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. Adapting to cooler conditions it has always been more common at higher elevations and more southern latitudes.

There have been no recent records (past five years) within the project area, however approximately five kilometres to the south-east is a record from 2022. Surveys conducted in 2023-2024 did not record the presence of the species. The impacts of the proposed action would involve the loss of ~51.69 ha of vegetation containing feed tree species and hollow-bearing trees. This quantity of occasionally used resources has the potential to cause the size of the population to decrease. However, as no important population has been recorded utilising the site. The potential for a long-term decrease in an important population is considered unlikely.

Reduce the area of occupancy of the species:

The habitat to be removed is unlikely to be regularly utilised by the species. Therefore, the proposed action is unlikely to reduce the area of occupancy of a population.

Fragment an existing population into two or more populations:

The population of the species moves aerially and would not be restricted by the impacts of the proposed action.

Adversely affect habitat critical to the survival of a species:

Gang-gang Cockatoos foraging occurs in the canopy of woodland assemblages, in particular utilising eucalypts. They regularly feed on flower buds and seed pods, but also choose the blossoms, leaf buds, fruits and seed from both native and introduced species. Foraging resources are present in the project area; however, it is unlikely that these resources are regularly used by the species, therefore the habitat affected by the proposal is not considered to be habitat critical to the survival of the species.

Disrupt the breeding cycle of an important population:

Gang-gang cockatoos favour old growth forest and woodland assemblages for nesting and roosting. They nest in the hollows of tree trunks and limbs, or within the dead spout of large, living eucalypts often around water (DCEEW, 2024). The preferred hollows commonly have an entrance height of 21.3cm (minimum entrance height 12cm) and an average entrance width of 13.1cm, containing a chamber of around 20cm in floor diameter, around 50.5cm deep.

The impacts of the proposed action would involve the loss of ~51.69 ha of vegetation containing feed tree species and hollow-bearing trees. However, as no important population has been recorded utilising the site, the potential to disrupt the breeding cycle of an important population is considered unlikely.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:

The proposed action would remove ~51.69 ha of vegetation containing foraging and breeding habitat that is unlikely to be used regularly by the species. These impacts are unlikely to cause the species 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':

The proposed action is unlikely to result in invasive species that are harmful to the species becoming established in the species' habitat if the proposed mitigation measures (weed control programs, vehicle cleaning etc.) are adhered to.

Introduce disease that may cause the species to decline:

The proposed action is unlikely to introduce diseases that may cause this species to decline.

Interfere with the recovery of the species:

The proposed action is unlikely to interfere with the recovery of this species given the relatively low significance of the habitat to be affected.

Conclusion: The proposed action is unlikely to have any significant impacts upon the species.



Petauroides volans (Greater Glider)

Lead to a long-term decrease in the size of a population:

The greater glider is an arboreal nocturnal marsupial, predominantly solitary and largely restricted to eucalypt forests and woodlands of eastern Australia. There have not been recent records (past 5 years) within the project boundary or locality, with the latest recording from 1998. Additionally, surveys conducted in 2023-2024 did not record the presence of the species. The impacts of the proposed action would involve the loss of ~51.69 ha of vegetation containing hollow-bearing trees that could potentially be used for shelter.

However, as no population has been recorded utilising the site. The potential for a long-term decrease in an important population is considered unlikely.

Reduce the area of occupancy of the species:

The vegetation present does not contain recent records of the Greater Glider. Additionally, the project area is part of a larger tract of vegetation that forms a corridor to Sugarloaf State Conservation Area in the south. The impacts to vegetation will be restricted to the project area. Therefore, it is considered unlikely that the proposed activity will reduce the area of occupancy of the Greater Glider.

Fragment an existing population into two or more populations:

As there has not been a recorded population, it is unlikely the proposed action will cause an existing population to fragment into two or more.

Adversely affect habitat critical to the survival of a species:

During the day the greater glider uses tree hollows for shelter, with a particular preference for large hollows (diameter >10cm) in large, old trees. The probability of occurrence of Greater gliders has been shown to be positively correlated with the availability of tree hollows, which is considered a key resource (DCCEEW, 2022). The species diet mostly comprises eucalypt leaves supplemented by buds and flowers, feeding from a restricted range of eucalypt species.

Habitat critical to the survival of the Greater Glider includes large contiguous areas of eucalypt forest, which contains mature hollow-bearing trees and a diverse range of the species' preferred food species in a particular region (DCCEEW, 2022).

The project area does contain hollow-bearing trees that are suitable for shelter use, due to the restricted range of eucalypt species used by the Greater Glider, the available food trees in the project area are limited to only a small number of species. Therefore, the vegetation is not considered to be habitat critical to the survival of the species.

Disrupt the breeding cycle of an important population:

The impacts of the proposed action would involve the loss of ~51.69 ha of vegetation containing hollow bearing trees potentially used for shelter. However, as no important population has been recorded utilising the site, the potential to disrupt the breeding cycle of an important population is considered unlikely.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:

The proposed action would remove ~51.69 ha of vegetation containing potential foraging and breeding habitat; however, the removal is not significant enough to cause the species 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':

The proposed action is unlikely to result in invasive species that are harmful to the species becoming established in the species' habitat if the proposed mitigation measures (weed control programs, vehicle cleaning etc.) are adhered to.

Introduce disease that may cause the species to decline:

The proposed action is unlikely to introduce diseases that may cause this species to decline.

Interfere with the recovery of the species:

The proposed action is unlikely to interfere with the recovery of this species given the relatively low significance of the habitat to be affected and lack of species records.





Conclusion: The proposed action is unlikely to have any significant impacts upon the species.

Dasyurus maculatus maculatus (Spotted-tailed Quoll SE Population)

Lead to a long-term decrease in the size of a population:

The Spotted-tailed Quoll (SE population) occurs in eastern Australia from south-eastern QLD to western Victoria. Populations are now fragmented and isolated and estimates of the decline range from 50-90 percent, with a 25-50 percent decrease of the NSW population since European settlement.

The Spotted-tail quoll has been detected three times within the locality (10km radius) of the project area, with the most recent record from 2015. The species has a large home range, capable of covering large distances in a short period of time, with some individuals recorded moving at least 8km in a day and 19km in a week (DELWP, 2016). The proposed activity will remove ~51.69ha of vegetation, however, on a landscape level the removal of this vegetation will be insignificant with impacts restricted only to the project area. Due to these factors and the large movement of the Spotted tail quoll, it is unlikely that the proposed activity will cause the long-term decrease in the size of a population.

Reduce the area of occupancy of the species:

The vegetation present does not contain recent records of the Spotted Quoll. Additionally, the project area is part of a larger tract of vegetation that forms a corridor to Sugarloaf State Conservation Area in the south. The impacts to vegetation will be restricted to the project area. Therefore, it is considered unlikely that the proposed activity will reduce the area of occupancy of the Spotted-tailed Quoll.

Fragment an existing population into two or more populations:

The removal of ~51.69ha of vegetation will not cause a barrier to the movement of a population of the species as the vegetation will still be part of an existing contiguous tract of bushland. Therefore, the proposed activity will not cause a population to fragment into two or more.

Adversely affect habitat critical to the survival of a species:

Habitat critical to the Spotted-tailed Quoll is currently not possible to define or map due to unknown critical component threshold densities (DELWP, 2016). It is known that Spotted-tailed Quolls require large patches of forest containing adequate denning resources and high densities of medium-sized mammalian prey. Maternal den sites that have been recorded include rock crevices, caves, boulder tumbles, hollow logs, hollow tree roots and burrows.

The project site contains hollow bearing trees that could potentially be used a for denning by the species, with linkages to larger tracts of bushland. However, the project area is not considered to be habitat critical to the survival of the Spotted-tailed Quoll.

Disrupt the breeding cycle of an important population:

The impacts of the proposed action would involve the loss of ~51.69 ha of vegetation containing hollow-bearing trees. However, as no important population has been recorded utilising the site, the potential to disrupt the breeding cycle of an important population is considered unlikely.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:

The proposed action would remove ~51.69 ha of vegetation containing habitat that is could potentially be used by the species. However, the impacts associated with the proposed activity are unlikely to cause the species to decline, due to the removal of the potential habitat being insignificant on a landscape scale.

Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species':

The proposed action is unlikely to result in invasive species that are harmful to the species becoming established in the species' habitat if the proposed mitigation measures (weed control programs, vehicle cleaning etc.) are adhered to.

Introduce disease that may cause the species to decline:

The proposed action is unlikely to introduce diseases that may cause this species to decline.

Interfere with the recovery of the species:

The proposed action is unlikely to interfere with the recovery of this species given the relatively low significance of the habitat to be affected and lack of species records.

Conclusion: The proposed action is unlikely to have any significant impacts upon the species.

Attachment 3 – Survey timetable

EcoResolve has completed the survey timetable following the guidelines for species survey times (BAM, 2020).

TABLE 29 REQUIRED SURVEY TYPES

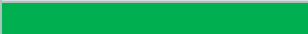
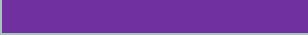
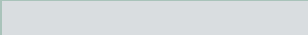
Survey Type	
	Flora surveys
	Spotlighting/call-playback
	Opportunistic
	Koala SAT
	Anabat
	Camera traps
	Trapping
	Habitat Survey
	Additional Survey Month
	Not Suitable Survey Month

TABLE 30 THREATENED BAM FLORA AND FAUNA SURVEY REQUIREMENTS

Scientific Name (Common Name)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Acacia bynoeana</i> (Bynoe's Wattle)												
<i>Angophora inopina</i>												
<i>Aprasia parapulchella</i> (Pink-tailed Legless Lizard)												
* <i>Anthochaera phrygia</i> (Regent Honeyeater). No survey required. The species is assessed for species credits via the Important Habitat Map in BOAMS.												
<i>Artamus cyanopterus cyanopterus</i> (Dusky Wood swallow)												
<i>Botaurus poiciloptilus</i> (Australasian Bittern)												
<i>Burhinus grallarius</i> (Bush Stone-curlew)												



Scientific Name (Common Name)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Caladenia tessellate</i> (Thick Lip Spider Orchid)												
<i>Calidris tenuirostris</i> (Great Knot)												
<i>Calidris ferruginea</i> (Curlew Sandpiper)												
<i>Callistemon linearifolius</i>												
<i>Callocephalon fimbriatum</i> (Gang-gang Cockatoo)												
<i>Calyptorhynchus lathami</i> (Glossy Black-Cockatoo)												
<i>Cercartetus nanus</i> (Eastern Pygmy-possum)												
<i>Chalinolobus dwyeri</i> (Large-eared Pied Bat) (Full Species Credit)												
<i>Circus assimilis</i> (Spotted Harrier)												
<i>Corybas dowlingii</i> (Red Helmet Orchid)												
<i>Cryptostylis hunteriana</i> (Leafless Tongue-orchid)												
<i>Cynanchum elegans</i> (White-flowered Wax Plant)												
<i>Daphoenositta chrysoptera</i> (Varied Sittella)												
<i>Dasyurus maculatus maculatus</i> (Spotted-tailed Quoll)												
<i>Delma impar</i> (Striped Legless Lizard)												
<i>Dichanthium setosum</i>												
<i>Dillwynia tenuifolia</i>												
<i>Diuris praecox</i> (Rough Doubletail)												



Scientific Name (Common Name)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Dromaius novaehollandiae</i> (Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area)												
<i>Ephippiorhynchus asiaticus</i> (Black-necked Stork)												
<i>Erythrotriorchis radiatus</i> (Red Goshawk)												
<i>Eucalyptus glaucina</i> (Slaty Red Gum)												
<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>												
<i>Euphrasia arguta</i>												
<i>Falco hypoleucos</i> (Grey Falcon)												
* <i>Falsistrellus tasmaniensis</i> (Eastern False Pipistrelle)												
<i>Glossopsitta pusilla</i> (Little Lorikeet)												
<i>Grantiella picta</i> (Painted Honeyeater)												
<i>Grevillea parviflora</i> subsp. <i>parviflora</i> (Small-flowered Grevillea)												
<i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)												
<i>Hieraaetus morphnoides</i> (Little Eagle)												
<i>Hirundapus caudacutus</i> (White-throated Needletail)												
<i>Hoplocephalus bitorquatus</i> (Pale-headed Snake)												
<i>Hoplocephalus bungaroides</i> (Broad Headed Snake)												
* <i>Lathamus discolor</i> (Swift Parrot) No survey required. The species is assessed for species credits via the Important Habitat Map in BOAMS.												



Scientific Name (Common Name)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Limosa lapponica baueri</i> (Bar Tailed Godwit)												
<i>Litoria aurea</i> (Green and Golden Bell Frog)												
<i>Litoria brevipalmata</i> (Green-thighed Frog)												
<i>Lophoictinia isura</i> (Square-tailed Kite)												
<i>Macropus parma</i> (Parma wallaby)												
<i>Maundia triglochoides</i>												
<i>Melaleuca biconvexa</i>												
<i>Melithreptus gularis gularis</i> (Black-chinned Honeyeater (eastern subspecies))												
<i>Miniopterus australis</i> (Little Bentwing-bat)												
<i>Miniopterus orianae oceanensis</i> (Large Bent-winged Bat)												
* <i>Micronomus norfolkensis</i> (Eastern Coastal Free-tail Bat) (Ecosystem credit)												
<i>Myotis macropus</i> (Southern Myotis) (Species Credit)												
<i>Mixophyes balbus</i> (Stuttering Frog)												
<i>Mixophyes iteratus</i>												
<i>Neophema pulchella</i> (Turquoise Parrot)												
<i>Ninox connivens</i> (Barking Owl)												
<i>Ninox strenua</i> (Powerful Owl)												



Scientific Name (Common Name)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Numenius madagascariensis</i> (Eastern Curlew)												
<i>Oxyura australis</i> (Blue Billed Duck)												
<i>Ozothamnus tessellatus</i>												
<i>Pandion cristatus</i> (Eastern Osprey)												
<i>Persicaria elatior</i> (Tall Knotweed)												
<i>Persoonia hirsute</i> (Hairy Geebung)												
<i>Persoonia pauciflora</i> (North Rothbury Persoonia)												
<i>Petauroides volans</i> (Greater Glider)												
<i>Petrogale penicillata</i> (Brush-tailed Rock-wallaby)												
<i>Petaurus australis australis</i> (Yellow-bellied Glider)												
<i>Petaurus norfolcensis</i> (Squirrel Glider)												
<i>Petroica boodang</i> (Scarlet Robin)												
<i>Phascogale tapoatafa</i> (Brush-tailed Phascogale)												
<i>Phascolarctos cinereus</i> (Koala)												
<i>Planigale maculata</i> (Common Planigale)												
<i>Pomaderris brunnea</i> (Brown Pomaderris)												
<i>Pomaderris queenslandica</i> (Scant Pomaderris)												



Scientific Name (Common Name)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Pomatostomus temporalis temporalis</i> (Grey-crowned Babbler (eastern subspecies))												
<i>Prasophyllum</i> sp. <i>Wybong</i> (A leek orchid)												
<i>Prostanthera cineolifera</i> (Singleton Mint Bush)												
<i>Pseudomys novaehollandiae</i> (New Holland Mouse)												
<i>Pteropus poliocephalus</i> (Grey-headed Flying-fox)												
<i>Pterostylis chaetophora</i>												
<i>Pterostylis gibbose</i> (Illawarra Greenhood)												
<i>Ptilinopus magnificus</i> (Wompoo Fruit-Dove)												
<i>Rhizanthella slateri</i>												
<i>Rhodamnia rubescens</i>												
<i>Rhodomyrtus psidioides</i>												
<i>Rostratula australis</i>												
<i>Rutidosia heterogama</i>												
<i>Saccolaimus flaviventris</i> (Yellow-bellied Sheathtail-bat) *												
* <i>Scoteanax rueppellii</i> (Greater Broad-nosed Bat)												
<i>Syzygium paniculatum</i>												



Scientific Name (Common Name)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Tetradlea juncea</i> (Black-eyed Susan)												
<i>Thesium australe</i> (Austral Toadflax)												
<i>Tyto novaehollandiae</i> (Masked Owl)												
<i>Tyto tenebricosa</i> (Sooty Owl)												
<i>Vespadelus troughtoni</i> (Eastern Cave Bat)												

Note: *Assumed presence as species is classed as an ecosystem credit species – no survey required.