

Streamlined Biodiversity Development Assessment Report, Rothbury Battery Energy Storage System

Prepared by Thea Kane, BAAS24010

20 February 2026





Document control

Version	Author	Review	Status	Comments	Date
R0	Thea Kane, Laura Phandita	Stephen Bloomfield	Draft 1		21/01/2026
R1	Thea Kane, Laura Phandita	Stephen Bloomfield	Draft 2		05/02/2026
R3	Thea Kane	Stephen Bloomfield	Draft 3		20/02/2026
Final	Thea Kane	Stephen Bloomfield	Final		07/05/2026

Copyright statement

© Niche Environment and Heritage Pty Ltd (ACN 137 111 721) 2026

Copyright protects this publication. All rights reserved. Except for purposes permitted by the Australian Copyright Act 1968, reproduction, adaptation, electronic storage, transmission and communication to the public by any means is prohibited without prior written permission. Any third-party material, including images, contained in this publication remains the property of the specified copyright owner unless otherwise indicated, and is used subject to their licensing conditions.

Important information about your report

© Niche Environment and Heritage Pty Ltd (ACN 137 111 721) 2026

Your Report has been written for a specific purpose: The Report has been prepared for a specific purpose as agreed by us with you and unless otherwise stated in the Report, it must not be applied or used for any other purpose.

Report for the sole benefit of Niche's client: This Report has been prepared by Niche for you, as Niche's client, in accordance with our agreed purpose, scope, schedule and budget in accordance with our terms of engagement. Unless otherwise agreed in writing between us, the Report has been prepared for your benefit and no other party. Other parties should not and cannot rely upon the Report or the accuracy or completeness of any recommendation in it.

Limitations of the Report: The work was conducted, and the Report has been prepared, in response to the agreed purpose and scope, within respective time and budget constraints, and where applicable in reliance on certain data and information made available to Niche. Artificial intelligence (AI) software may have been used during the preparation of the Report. Any AI-generated content will have been reviewed for accuracy and appropriateness by the author(s) and or reviewer(s). The analyses, assessments, opinions, recommendations and conclusions presented in this Report are based on that purpose and scope, requirements, data or information, and may change if such requirements or data are inaccurate or incomplete. Niche is not required to update or vary the report to the extent it subsequently becomes aware of any inaccurate or incomplete information.

No responsibility to others: To the maximum extent permitted by law, Niche assumes no responsibility and will not be liable to any other person or organisation (whether in contract, tort (including negligence), statute or otherwise) for, or in relation to, any matter dealt with, or conclusions expressed in the Report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with, or conclusions expressed in the Report, or their reliance on it.



Summary

Project description

Niche Environment and Heritage Pty Ltd (Niche) were commissioned by AECOM to undertake a Streamlined Biodiversity Development Assessment Report (BDAR) for a proposed Battery Energy Storage System (BESS). The proposed BESS, hereafter referred to as the Project, would be located in Lots 1 and 2 DP1318566, 1309 Wine Country Drive, Rothbury, New South Wales (NSW) (Figure 1). This land is owned by Ausgrid.

The Project is to be assessed as a State Significant Development (SSD) under Part 4, Section 4.36 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). As such, the biodiversity components are to be assessed under the NSW *Biodiversity Conservation Act 2016* (BC Act) and a BDAR, using the Biodiversity Assessment Methodology (BAM). This is required to be submitted with the Project's Environmental Impact Statement (EIS). The BAM (enacted under the BC Act) stipulates the survey and reporting requirements for the biodiversity assessment.

Impacts to vegetation

The Subject land is defined as the development footprint of the Project that will be physically disturbed during construction and operation. The Subject land supports a combination of native and non-native vegetation (Table 1).

Native vegetation within the Subject land aligns with Plant Community Type (PCT) 3315 - Central Hunter Ironbark Spotted Gum Forest in a Moderate condition. This vegetation zone conforms to the BC Act Threatened Ecological Community (TEC) Central Hunter Ironbark-Spotted Gum-Grey Box Forest. PCT 3315 in a Moderate condition does not meet condition thresholds for listing as the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) TEC Central Hunter Valley eucalypt forest and woodland.

Table 1: Vegetation zones present within the Subject land

PCT ID and Name	Vegetation zone	Vegetation formation (Keith, 2004)	BC Act TEC	EPBC Act TEC	Area within Subject Land (ha)	Patch size class (ha)	Percent native vegetation cover class
PCT 3315 - Central Hunter Ironbark Spotted Gum Forest	3315_Moderate	Grassy woodlands	Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions (Endangered)	N/A - Does not meet criteria	0.48	>100	>70% (76%)



PCT ID and Name	Vegetation zone	Vegetation formation (Keith, 2004)	BC Act TEC	EPBC Act TEC	Area within Subject Land (ha)	Patch size class (ha)	Percent native vegetation cover class
PCT 0 – Non-native vegetation (exotic pasture)	Degraded/ Non-native	N/A	N/A	N/A	4.07	N/A	N/A

Impacts to threatened species

Candidate threatened species were identified through the Biodiversity Assessment Method Calculator (BAM-C) (Case Number ID: 00057025). A total of 29 ecosystem credit species were retained for assessment. A total of 11 species credit species (four flora species and seven fauna species) were retained for assessment.

Three flora species required targeted survey, and one flora species (*Prasophyllum* sp. *Wybong*) was excluded based on the absence of required microhabitat features within the Subject land.

All but one fauna species were excluded based on the absence of habitat constraints. Swift Parrot (*Lathamus discolor*) was assumed present as the Subject land contains Important Habitat Mapping for the species.

Targeted surveys were undertaken for *Acacia pendula* population in the Hunter catchment (*Acacia pendula* - endangered population), *Persoonia pauciflora* (North Rothbury Persoonia) and *Eucalyptus pumila* (Pokolbin Mallee). Surveys were conducted during the approved survey months and did not detect any of the species.

Following the habitat constraints assessment and targeted surveys, one species (Swift Parrot) remained as having potential to be impacted by the Project.

Impacts to Serious and Irreversible Impact (SAII) entities and Matters of National Environmental Significance (MNES)

Swift Parrot is listed as Endangered under the BC Act and Critically Endangered under the EPBC Act. It is also listed as a Serious and Irreversible Impact (SAII) species under Principle 1, clause 6.7(2)(a) of the BC Regulation.

An SAII assessment was undertaken in accordance with Section 9.1.2 of the BAM 2020 for species at risk of SAII, and a Significant Impact Assessment in accordance with the EPBC Act Significant Impact Guidelines was undertaken in Appendix E and summarised in Section 9. Impacts to MNES are summarised in Section 8.4.

Both assessments determined that the Project is unlikely to result in a significant impact on MNES or the species such that it would lead to an irreversible impact.

Measures adopted to avoid and minimise impacts to threatened entities

The Project's siting leverages an already modified envelope and shared access to avoid higher-value patches of native vegetation, creeks and waterbodies, and limit clearing to poorer-condition edges. Further avoidance/minimisation measures include micro-siting to retain Swift Parrot foraging habitat where feasible, staging of works, ecological pre-clearance and supervised felling, salvage of felled trees, Blue Book-compliant erosion and sediment controls, weed/biosecurity hygiene, fencing/access control and surface-water quality management through development and adoption of a Construction Environmental Management Plan (CEMP).



The details of proposed mitigation measures, including technique, timing, responsibility and monitoring and reporting requirements are set out in Section 8.5.

Offset requirements

The required biodiversity offsets per BAM Subsection 9.2.2(2) are summarised in Table 2 and Table 3 below.

Table 2: Impacts that require an offset – ecosystem credits

PCT name	PCT vegetation class	PCT vegetation formation	Associated TEC	IBRA region	Vegetation zone	Hollow bearing trees present?	Credits
3315 Central Hunter Ironbark-Spotted Gum Forest	Coastal Valley Grassy Woodlands	Grassy Woodlands	Central Hunter Ironbark Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions	Sydney Basin	3315_Moderate	No	9

Table 3: Impacts that require an offset – species credits

Scientific name	Common name	Kingdom	BC Act status	EPBC Act status	IBRA region	Vegetation zone	Area (ha)	Credits
Swift Parrot	<i>Lathamus discolor</i>	Fauna	E	CE	Sydney Basin	3315_Mode rate	0.42	12



Table of contents

Summary	iii
Project description	iii
Impacts to vegetation	iii
Impacts to threatened species	iv
Impacts to Serious and Irreversible Impact (SAIL) entities and Matters of National Environmental Significance (MNES)	iv
Measures adopted to avoid and minimise impacts to threatened entities	iv
Offset requirements	v
Shortened forms and terms	x
Declarations	xii
i. Certification under clause 6.15 Biodiversity Conservation Act 2016	xii
ii. Details and experience of author/s and contributors	xiii
Authors and contributors	xiii
iii. Conflict of interest	xiv
1. Introduction	1
1.1 Project description	1
1.2 Description of the site and Subject land	1
1.3 Biodiversity Offsets Scheme entry	1
1.4 Matters of National Environmental Significance	2
1.5 Information sources	2
2. Methods	3
2.1 Site context methods	3
2.1.1 Landscape features	3
2.1.2 Native vegetation cover	3
2.2 Native vegetation, threatened ecological communities and vegetation integrity methods	4
2.2.1 Review of existing information	4
2.2.2 Plant community delineation and mapping	4
2.2.3 Plot-based vegetation survey and vegetation integrity survey	4
2.3 Threatened species survey methods	5
2.3.1 Review of existing information	5
2.3.2 Habitat constraints assessment	5
2.3.3 Threatened species targeted survey	7
2.4 Weather conditions	7
3. Subject area context	8
3.1 Assessment area	8
3.2 Landscape features	8
3.3 Native vegetation cover	9
4. Native vegetation, threatened ecological communities and vegetation integrity	10
4.1 Native vegetation extent	10



4.1.1	Vegetation within the Subject land	10
4.1.2	Changes to the mapped native vegetation extent	10
4.1.3	Areas that are not native vegetation	10
4.2	Plant community types	10
4.3	Planted and non-native vegetation	13
4.4	Threatened ecological communities	13
4.4.1	NSW BC Act TEC	13
4.4.2	Commonwealth EPBC Act TEC	16
4.5	Vegetation zones	17
4.6	Vegetation integrity	17
4.6.1	Vegetation integrity survey plots	17
4.6.2	Vegetation integrity scores	18
5.	Habitat suitability for threatened species	19
5.1	Ecosystem credit species	19
5.2	Species credit species	19
5.3	Habitat constraints assessment	27
5.3.1	Candidate fauna species habitat assessment	27
5.3.2	Candidate flora species habitat assessment	27
5.4	Field surveys	30
6.	Identifying prescribed impacts	31
7.	Avoid and minimise impacts	33
7.1	Avoid and minimise direct and indirect impacts	33
7.1.1	Project location and design	33
7.2	Avoid and minimise prescribed impacts	34
7.2.1	Project location and design	34
7.3	Other measures considered	36
7.3.1	'Do Nothing' option	36
8.	Impact assessment	37
8.1	Direct impacts	37
8.1.1	Impacts to native vegetation and threatened ecological communities	37
8.1.2	Impacts to threatened species and their habitat	37
8.2	Indirect impacts	37
8.3	Prescribed impacts	42
8.4	Impacts to Matters of National Environmental Significance	45
8.5	Mitigation and management of impacts	45
9.	Serious and irreversible impacts	49
9.1	Additional impact assessment provisions for TECs at risk of an SAIL	49
9.2	Additional impact assessment provisions for threatened species at risk of an SAIL	50
10.	Impact summary	55
10.1	Determine an offset requirement for impacts	55
10.1.1	Impacts on native vegetation and TECs (ecosystem credits)	55
10.1.2	Impacts on threatened species and their habitat (species credits)	55
10.2	Impacts that do not need further assessment	55



11. Biodiversity credit obligations	56
12. References	57
13. Figures.....	59

Appendices

Appendix A BDAR requirements compliance	
Appendix B Biodiversity Values Map and Threshold tool report	
Appendix C BAM Plot Data	
Appendix D MNES PMS Report	
Appendix E EPBC Act Significant Impact Assessment	
Appendix F Credit reports	



Tables

Table 1: Vegetation zones present within the Subject land.....	iii
Table 2: Impacts that require an offset – ecosystem credits	v
Table 3: Impacts that require an offset – species credits.....	v
Table 4: Landscape features assessed and data sources.....	3
Table 5: PCTs present across the Subject land.....	6
Table 6: Weather conditions during surveys.....	7
Table 7: Landscape features present within the Subject land.....	8
Table 8: Native vegetation cover in the Assessment area (1,500m buffer).....	9
Table 9: Vegetation within the Subject Land.....	10
Table 10: PCT 3315 present within the Subject land	11
Table 11: BC Act TEC alignment justification.....	15
Table 12: EPBC Act TEC alignment justification	16
Table 13: Vegetation zones present within the Subject land	17
Table 14: Vegetation integrity plots for vegetation zones representative of the Subject land.....	18
Table 15: Vegetation integrity scores for vegetation zones within the Subject land.....	18
Table 16: Predicted species within the Subject land	20
Table 17: Species credit species within the Subject land.....	24
Table 18: Microhabitat requirements for Prasophyllum sp. Wybong	28
Table 19: Candidate species survey summary and species requiring further assessment.....	30
Table 20: Prescribed impacts identified.....	31
Table 21: Project location measures implemented to avoid and minimise direct impacts.....	33
Table 22: Measures implemented to avoid and minimise prescribed impacts	35
Table 23: Impacts to vegetation integrity	38
Table 24: Summary of indirect impacts.....	39
Table 25: Summary of prescribed impacts.....	43
Table 26: Mitigation measures	46
Table 27: Implementation details of proposed mitigation measures.....	48
Table 28: Entities subject to additional impact assessment provisions for SAIL	49
Table 29: SAIL Assessment – Evidence of rapid decline – Swift Parrot.....	51
Table 30: SAIL Assessment – Impact assessment – Swift Parrot	52
Table 31: Impacts that require an offset – ecosystem credits	55
Table 32: Impacts that require an offset – species credits.....	55
Table 33: Ecosystem credit class and matching credit profile	56
Table 34: Species credit class and matching credit profile.....	56
Table 35: Assessment of compliance with BDAR minimum information requirements	66
Table 36: Significant impact assessment – Swift Parrot.....	84

Figures

Figure 1: Site map.....	59
Figure 2: Location map	60
Figure 3: Native vegetation and TECs.....	61
Figure 4: Important Habitat Mapping – Swift Parrot.....	62
Figure 5: Impact footprint.....	63
Figure 6: Swift Parrot records in proximity to the Subject area	64



Shortened forms and terms

Term or abbreviation	Definition
Assessment Area	The Subject land and the area of land within the 1,500 metre (m) buffer zone surrounding the Subject land
AOBV	Areas of outstanding biodiversity value
AOO	Area of occupancy
BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BC Act	<i>Biodiversity Conservation Act 2016</i> (NSW)
BC Regulation	Biodiversity Conservation Regulation 2017 (NSW)
BDAR	Biodiversity Development Assessment Report
BESS	Battery energy storage system
BOS	Biodiversity Offsets Scheme
BV	Biodiversity values
CBD	Central business district
CEMP	Construction environmental management plan
EIS	Environmental impact statement
EOO	Extent of occurrence
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth)
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
Ha	Hectare
IBRA	Interim Biogeographic Regionalisation for Australia
Km	Kilometre
kV	Kilovolt
LGA	Local Government Area
M	Metre
MNES	Matters of national environmental significance
MW	Megawatt
MWh	Megawatt-hour
NSW	New South Wales



Term or abbreviation	Definition
PBFD	Psittacine beak and feather disease
PCT	Plant community type
SAII	Serious and irreversible impact
SEPP	State environmental planning policy
SPRAT	Species profile and threats
SSD	State significant development
Subject area	Lots 1 and 2 DP1318566
Subject land (also Project Area)	The development footprint of the Project that will be physically disturbed during construction and operation.
TBDC	Threatened Biodiversity Data Collection
TEC	Threatened ecological community
TSR	Travelling stock reserve
VI	Vegetation integrity



Declarations

i. Certification under clause 6.15 *Biodiversity Conservation Act 2016*

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

Name: Thea Kane

Signature: *Thea Kane*

Date: 7 May 2026

**BAM Assessor
Accreditation no.:** BAAS 24010

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 L Table 27.



ii. Details and experience of author/s and contributors

Authors and contributors

Name	BAM Assessor Accreditation no. (if relevant)	Position/Role	Tasks performed	Relevant qualifications
Stephen Bloomfield	BAAS 18054	Senior Ecology Principal	Project management, report review	BAppSc (Coastal Mgmt)
Mandy Melvaine	-	Experienced Ecology Consultant	Report preparation	BVetBioSc (Hons) MEnvScMgt
Thea Kane	BAAS 24010	Senior Ecology Consultant	Report preparation/ Accredited Assessor	BEnvMgmt (Geography)
Laura Phandita	-	Ecology Consultant	Report preparation	BSc (Env Mgmt, Spatial Science)
Marcus Lulham	-	Ecology Consultant	BAM plot surveys, targeted threatened flora surveys	MEnvScMgt
Mike Fairly	-	Spatial Consultant	Figure preparation, spatial analysis and calculations	MScGIS, BEnvSci, BPlanning



iii. Conflict of interest

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

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

Name: Thea Kane

Signature: *Thea Kane*

Date: 5 February 2026

**BAM Assessor
Accreditation no.:** BAAS 24010

Provide a detailed description in an appendix. Guidance on conflict of interest is available on the Department of Planning and Environment (the department) website.



1. Introduction

1.1 Project description

Niche Environment and Heritage Pty Ltd (Niche) were commissioned by AECOM to undertake a Streamlined Biodiversity Development Assessment Report (BDAR) for a proposed Battery Energy Storage System (BESS) (hereafter referred to as the Project) at Lots 1 and 2 DP1318566, 1309 Wine Country Drive, Rothbury NSW. This land is owned by Ausgrid. Clearing of native vegetation is proposed for the Project. The key components of the Project are as follows:

- Lithium Iron Phosphate chemistry (LiFePO₄) containerised battery units and associated infrastructure, including inverters and medium voltage transformers
- Ring Main Units
- Auxiliary transformer
- A 33 kV underground cable connection to the existing Rothbury Zone Substation
- A combined switch room and control room building
- An operation and maintenance (O&M) building
- A warehouse to store equipment and materials related to maintaining the battery units
- A backup diesel generator
- Onsite car parking spaces
- Other ancillary infrastructure including fire suppression, stormwater management, boundary security fencing, a noise barrier, lighting and CCTV.

The Project is to be assessed as a State Significant Development (SSD) (SSD-85939708) under Part 4, Section 4.36 of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act). As such, the biodiversity components are to be assessed under the *NSW Biodiversity Conservation Act 2016* (BC Act) and a BDAR, using the Biodiversity Assessment Methodology (BAM), is required to be submitted with the Project's Environmental Impact Statement (EIS), as stipulated in the Planning Secretary's Environmental Assessment Requirements (SEARs) issued for the Project on 3 July 2025. The BAM (enacted under the BC Act) stipulates the survey and reporting requirements for the biodiversity assessment.

1.2 Description of the site and Subject land

The Subject area comprises Lots 1 and 2 DP1318566. The Project Area (hereafter referred to as the Subject land) includes the Construction Footprint and Operational Footprint of the Project and is located within the Subject area. The Subject land is approximately 46 kilometres (km) north-west of Newcastle central business district (CBD) and is wholly within the Cessnock Local Government Area (LGA) (Figure 2). The Subject land was assessed as a site-based assessment.

The Subject land is located within a highly modified site as it has been subject to clearing and disturbance from historic agricultural activities, and more recently the construction of the Rothbury Zone Substation and its associated infrastructure.



1.3 Biodiversity Offsets Scheme entry

As the Project is being assessed as SSD under Part 4, Section 4.36 of the EP&A Act, a BDAR must be prepared. The 'streamlined assessment module - small area' (Appendix C of the BAM) can be used to assess the Project, given:

- The total amount of native vegetation clearing is 0.48 ha, which does not exceed the maximum area clearing limit (≤ 3 ha for a minimum lot size of 40 ha) for application of the small area development module
- Biodiversity values (BV) mapped land occurring within the Subject land is not associated with 'core Koala habitat' identified in a plan of management *under State Environmental Planning Policy (Biodiversity and Conservation) 2021* (SEPP Biodiversity and Conservation).

The Biodiversity Map and Threshold Report is included in Appendix B to supply evidence that the Project exceeds the BOS Threshold.

1.4 Matters of National Environmental Significance

Matters of National Environmental Significance (MNES) are protected under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The BAM (DPIE, 2020a) requires proponents to identify and assess the impacts on all nationally listed threatened species and threatened ecological communities (TECs) that may be present on or near a development footprint. Where threatened biodiversity listed under the EPBC Act may be potentially impacted by the Project, an assessment of impacts will be undertaken via the Significance Impact Criteria provided under the Significant Impact Guidelines.

Under the EPBC Act, activities that have potential to result in significant impacts on MNES must be referred to the Commonwealth Minister for the Environment and Water for assessment.

A Protected Matters Search has been completed on 8 January 2026 with a 5 km buffer around the Subject land. The Protected Matters Search Report is included in Appendix D. The Protected Matters Search report has identified that the Subject land is not within or adjacent to a world heritage property, national heritage place, Great Barrier Reef Marine Park, or Commonwealth marine areas.

The Protected Matters Search Report has identified:

- The Hunter Estuary (RAMSAR site 24) situated approximately 30-40 km upstream of the Subject land
- Seven TECs within 5 km of the Subject land
- 50 threatened species classified as may, likely, or known to occur within 5 km of the Subject land
- 11 migratory species classified as may, likely, or known to occur within 5 km of the Subject land

This BDAR considers MNES relevant to the Project and assesses any potential impacts as a result of the Project.

1.5 Information sources

Information sources used in the BDAR include the following:

- BAM 2020 (DPIE, 2020a)
- BioNet Atlas (NSW DCCEEW, 2025a)
- BioNet Threatened Biodiversity Data Collection (TBDC) (NSW DCCEEW, 2025b)
- BioNet Vegetation Classification (NSW DCCEEW, 2025c)
- EPBC Protected Matters Search Tool (PMST) (Cth DCCEEW, 2025)
- BioNet NSW (Mitchell) Landscapes - Version 3.1 (NSW DCCEEW, 2025d)
- NSW Interim Biogeographic Regions of Australia (IBRA region and subregion) - V7 (Cth DCCEEW, 2025b)



2. Methods

2.1 Site context methods

2.1.1 Landscape features

Landscape features within the Assessment area (Subject land plus a 1,500 m buffer) were identified through a combination of field surveys, database searches and literature review.

The database searches and literature review involved analysis of the sources listed in Table 4.

Table 4: Landscape features assessed and data sources

Landscape and site context features	Data sources
IBRA Bioregions and Subregions	Interim Biogeographic Regionalisation for Australia (IBRA) version 7.0
NSW (Mitchell) Landscape	NSW (Mitchell) Landscapes version 3.1
Native vegetation extent	NSW State Vegetation Type Map (SVTM)
Rivers and streams	NSW Hydrography
Estuaries and wetlands	NSW Hydrography
Connectivity features	Aerial imagery
Karst, caves, cliffs, rocks, and other geological features of significance	Aerial imagery, topographic maps
Soil hazards	eSpade
Areas of Outstanding Biodiversity Value (AOBV)	Areas of Outstanding Biodiversity Value Register

Furthermore, detailed field surveys were conducted on October 28, 2025, and November 28, 2025, across the Subject area which involved the identification of landscape features including rivers, streams and wetlands as well as geological features of significance.

2.1.2 Native vegetation cover

Native vegetation (both woody and non-woody) within the Assessment area (Figure 1) was identified using site surveys of the Subject area, aerial photo interpretation, the SVTM, and NSW Land Use 2017 mapping (NSW DCCEEW, 2025f).

The extent of native vegetation was mapped within the Assessment area, following Section 3.2 of BAM 2020. The SVTM was used to locate areas of native vegetation, while NSW Land Use 2017 mapping was applied wherever SVTM classified areas as PCT 0. This refinement ensures accurate identification of non-native vegetation and accounts for areas mapped as native grasslands under NSW Land Use 2017.



Following this analysis, vegetation cover within the Subject land is assigned to one of the following classes:

- a. 0 - 10%
- b. >10 - 30%
- c. >30 - 70%
- d. >70%

2.2 Native vegetation, threatened ecological communities and vegetation integrity methods

2.2.1 Review of existing information

The following existing information was reviewed to inform the identification of Plant Community Types (PCTs) (refer to Section 4.2) and Threatened Ecological Communities (TECs):

- BioNet Vegetation Classification (NSW DCCEEW, 2025c)
- DCEEW PMST (Cth DCCEEW, 2025)
- NSW SVTM Version C2.0M2.1 (NSW DCCEEW, 2025f)
- eSpade 2.1 spatialviewer system (DPIE, 2025c)
- Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the NSW North Coast and Sydney Basin Bioregions - endangered ecological community listing (TSSC, 2010).
- Central Hunter Valley eucalypt forest and woodland: a nationally protected ecological community (DCCEEW, 2016).

2.2.2 Plant community delineation and mapping

Native vegetation extent (Section 2.1.2) within the Subject land was determined through site surveys (Section 2.2.3) and interpretation of aerial imagery. Native vegetation and PCT mapping was undertaken using best-practice techniques, as defined in the BAM 2020 and associated BAM Operational Manual – Stage 1 (DPIE, 2020b). This process involved review of quantitative and qualitative PCT data, available through the BioNet Web Service (NSW DCCEEW, 2025c).

To assign PCTs, floristic data collected from systematic plot-based surveys (Section 2.2.3) was compared against BioNet benchmarks for candidate PCTs, and plot data was run through the Plot-to-PCT Tool. Field observations, including dominant species, structural attributes, and condition, were used to validate the PCT assignment. Final PCT boundaries were delineated in GIS, ensuring alignment with BAM mapping standards and documented in this BDAR.

2.2.3 Plot-based vegetation survey and vegetation integrity survey

Plot-based vegetation surveys were conducted throughout the Subject area during a field survey undertaken on October 28, 2025. The survey consisted of six vegetation integrity plots, however only three are applicable to the Subject land. Each vegetation integrity plot was 20 x 50 m with a 20 x 20 m floristic plot nested within it. The location of each plot was recorded with a hand-held GPS device (Figure 3). Data collected at each plot was compliant with the requirements provided in Table 1 of the BAM 2020, and the plot survey effort was completed to meet requirements of Table 3 of the BAM 2020.

The BAM plot requirement was determined using the BAM 2020 and was based on the area of each PCT and its condition type (i.e. vegetation zone) to be impacted. The number of plots conducted for each PCT and



vegetation zone is provided in Table 5. Details regarding PCT delineation and mapping are provided in Section 2.2.2.

2.3 Threatened species survey methods

The Streamlined assessment module – Small Area requires the assessment of threatened species in accordance with Steps 1 and 2 from Section 5.2 of the BAM. These two steps include the identification of threatened species for assessment and field assessment for suitable habitat. Under this module, no further survey is required unless suitable habitat is present for a threatened species and the species is considered to be at risk of a Serious and Irreversible Impact (SAIL).

2.3.1 Review of existing information

The following information sources were reviewed to inform threatened flora survey requirements and assessment of potential habitat constraints and microhabitats:

- Biodiversity Assessment Method Calculator (BAM-C):
 - Case Number ID: 00057025
- Review of threatened flora records within the NSW BioNet Atlas (NSW DCCEEW, 2025a) present within the site and surrounds
- Vegetation associations for the Hunter IBRA Sub-regions for the PCTs present to determine threatened species associations
- Habitat constraints and specific survey requirements listed within the TBDC.

2.3.2 Habitat constraints assessment

To determine the presence and suitability of habitat constraints for threatened flora and fauna species, the following field-based habitat assessment was undertaken:

- A systematic walk-over survey of the Subject area to identify potential habitat features
- Visual inspection of vegetation zones and associated microhabitats for characteristics suitable for threatened flora and fauna species
- Recorded observations with georeferenced photographs, focusing on areas with potential habitat features (e.g., intact native vegetation, soil conditions, moisture regimes, hollow-bearing trees, waterbodies, rocky habitats, koala use trees, stick nests)
- Identify microhabitat areas (such as rocky outcrops, drainage lines, shaded gullies) that could support target species
- Check for presence of key habitat indicators, including host plants, soil type, and disturbance level
- Mapped habitat constraints in GIS, marking boundaries of identified microhabitats for inclusion in the BDAR.

The results of the site-based habitat constraints assessment were utilised to inform the assessment of the confirmed candidate threatened species assessment in the BAM-C. Where species presence could not be ruled out in accordance with Section 5.2 of the BAM, targeted surveys were conducted.

No further formal fauna surveys were carried out due to the lack of suitable habitat for fauna species. The results of the habitat constraints assessment are provided in Section 5.3.



Table 5: PCTs present across the Subject land

PCT ID and name	Vegetation zone (condition)	Vegetation formation (Keith, 2004)	BC Act TEC	EPC Act TEC	Total area within the Subject area (ha)	Total area within the Subject land (ha)	BAM plots required	BAM plots completed
3315 - Central Hunter Ironbark-Spotted Gum Forest	Moderate	Grassy woodlands	Central Hunter Ironbark–Spotted Gum–Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions (Endangered)	Central Hunter Valley eucalypt forest and woodland (Critically endangered)	1.51	0.48	2	2
4023 - Coastal Valleys Riparian Forest	Low	Forested wetlands	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (Endangered)	Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community (Endangered)	0.68	0	0	0
Non-native vegetation (excl. waterbodies)	-	-	-	-	9.52	4.07	0	1



2.3.3 Threatened species targeted survey

Threatened flora field traverses were conducted across the Subject area in accordance with the NSW Survey Guide, 'Surveying threatened plants and their habitats' (DPIE, 2020b), and any relevant species requirements listed in the TBDC (NSW DCCEEW, 2025b).

No threatened fauna species were subject to targeted survey.

Species subject to survey, specific survey requirements and results are provided in Section 5.4.

2.4 Weather conditions

Field surveys were undertaken over two campaigns on October 28, 2025, for BAM plots and November 28, 2025, for targeted flora. Table 6 details weather observations (BoM, 2025) for the dates of the field surveys. Weather data is derived from Cessnock Airport AWS (station 061260) (BoM, 2025) approximately 8 km south of the Subject land. This data is intended to provide a general overview of weather conditions at the time of field survey.

Table 6: Weather conditions during surveys

Date	Daily data					Monthly data				
	Temp (°C)		Rainfall (mm)	Relative humidity (%)		Temp (mean) (°C)		Rainfall total (mm)	Relative humidity (mean) (%)	
	Min	Max		9am	3pm	Min	Max		9am	3pm
28/10/2025	12.1	16.4	0	57	93	11.2	28.0	35.2	61	39
28/11/2025	12.6	34.2	0	63	18	13.3	30.1	44.4	59	38

Source: (BoM, 2025)



3. Subject area context

3.1 Assessment area

The Assessment area for the Project includes the Subject land and the area of land within the 1,500 metre (m) buffer zone surrounding the Subject land for a site-based development.

Preliminary clearing calculations indicate that approximately 4.56 ha would be impacted by the Project, comprising 0.48 ha of native vegetation and 4.07 ha of degraded/non-native vegetation.

3.2 Landscape features

As detailed in Section 3 of the BAM (DPIE, 2020a), a landscape assessment for the Project is required.

Landscape value is derived from the assessment of a number of factors including:

- Native vegetation cover
- Rivers, streams and estuaries
- Areas of geological significance
- Habitat connectivity.

For each factor, the current state of the landscape is assessed, then compared with the state of the landscape if the Project were to proceed.

Table 7 below provides details of the landscape settings and landscape features for the Project. These features are shown in Figure 1 and Figure 2.

Table 7: Landscape features present within the Subject land

Landscape features	Description
Assessment type	Site-based
Subject land	4.56 ha
Assessment area	985.23 ha
IBRA bioregion	Sydney Basin
IBRA subregion	Hunter
NSW (Mitchell) Landscapes	Central Hunter Foothills - Undulating lowlands, rounded to steep hills with rock outcrop on ridges on Permian lithic sandstone, conglomerate, shale and coal, general elevation 40 to 300m with a few higher peaks, local relief 30 to 120m. Red-brown to yellow brown harsh texture-contrast soils on slopes, dark coloured clays in valleys and limited accumulations of sand and gravel in streams.
Rivers, streams and estuaries and Strahler stream order	Black Creek, a fifth order stream within the Hunter River Catchment, is located approximately 220 m west of the Subject land. Black Creek is mapped as Key Fish Habitat under the NSW <i>Fisheries Management Act 1994</i> .



Landscape features	Description
Wetlands within and adjacent to development	No listed wetlands are mapped within or adjacent to the Subject land. A small dam is located in the northern portion of the Subject land.
Assessment area percent native vegetation cover	The native vegetation extent and cover was determined via aerial photography interpretation of the Assessment area. 76% of the Assessment area was determined to support native vegetation.
Connectivity features	Native vegetation connectivity within the Subject land is poor given historic agricultural activities, the construction of the Rothbury Zone Substation and its associated infrastructure. The most connected vegetation is associated with Black Creek west of the Subject land. Black Creek provides a riparian corridor to vegetated areas in the northwest and southwest portions of the Assessment area.
Karst, caves, crevices, cliffs, rocks and other geological features of significance	There are no karst, caves, crevices, cliffs, rocks, or other geological features of significance within the Assessment area.
Soil hazard features	No soil hazard features are known within the Subject land.
Areas of Outstanding Biodiversity Value (AOBVs)	No AOBV occur within the Subject land.

3.3 Native vegetation cover

The native vegetation (woody and non-woody) cover within the Assessment area was determined via aerial photograph interpretation, SVTM and Land Use 2017 mapping analysis (Figure 2).

Table 8 summarises the extent of native vegetation cover within the Assessment area.

Table 8: Native vegetation cover in the Assessment area (1,500m buffer)

	Native vegetation		Non-native vegetation	Total
	Woody	Non-woody		
Total Assessment area (ha)	461.10	291.15	232.97	985.23
Native cover %				76%
Native cover class %				>70%



4. Native vegetation, threatened ecological communities and vegetation integrity

This section describes the survey effort, identification and determination of the extent of PCTs occurring across the Subject land.

4.1 Native vegetation extent

4.1.1 Vegetation within the Subject land

The Subject land includes approximately 4.56 ha of land, comprising native vegetation, non-native vegetation, and a waterbody, as shown in Figure 3. Native vegetation in moderate condition covers 0.48 ha of the Subject land. Areas considered as non-native vegetation are described in Section 4.1.3. Table 9 outlines the extent of native and non-native vegetation within the Subject land.

Table 9: Vegetation within the Subject Land

Vegetation type	Area (ha)
PCT 3315 – Central Hunter Ironbark Spotted Gum Forest	0.48
Non-native vegetation – exotic pasture	4.07
Water	0.01
Total	4.56

4.1.2 Changes to the mapped native vegetation extent

The SVTM identified the majority of the Subject land as 'not classified' due to its highly modified state. Small pockets of isolated trees were mapped as native vegetation of PCT 3431 and 3315. Following vegetation surveys as described in Section 4.6, these areas were remapped as Central Hunter Ironbark-Spotted Gum Forest (PCT 3315) as shown in Figure 3. Justification for this update is given below in Table 10.

4.1.3 Areas that are not native vegetation

Areas mapped as non-native vegetation cover 4.07 ha of the Subject land. These areas are limited to highly modified exotic pasture areas, roads and existing infrastructure. A small dam covers 0.01 ha of the Subject land.

4.2 Plant community types

All vegetation within the Subject area was validated through the field survey (Section 2.2), with mapping updated to reflect the vegetation recorded during this field assessment. Vegetation within the Subject land included a single PCT (*PCT 3315 Central Hunter Ironbark-Spotted Gum Forest*) in a Moderate condition.



A large proportion of the Subject land contained non-native vegetation which comprised exotic pasture areas, and a waterbody (a small dam).

A detailed vegetation community description, including species used to determine the PCT, and justification for alignment is provided in Table 10.

Table 10: PCT 3315 present within the Subject land

PCT 3315 Central Hunter Ironbark-Spotted Gum Forest			
PCT number	3315	Plot no.	9187_ML_05, 9187_ML_06
Vegetation zone	Moderate	Formation	Grassy woodlands
Area within the Subject land	0.48 ha	Class	Coastal Valley Grassy Woodlands
Percent cleared (%)	77.7%		



Plate 1: PCT 3315 in Moderate condition sampled within the Subject land

General description of vegetation sampled	The vegetation zone is characterised by a mix of native eucalypt and casuarina species, with a diverse understorey containing both native and exotic species. Weedy and invasive species are well-represented, including <i>Lantana camara</i> (Lantana), <i>Olea europaea</i> subsp. <i>cuspidata</i> (African Olive), <i>Ligustrum lucidum</i> (Large-leaf Privet), <i>Schinus molle</i> (Peppercorn Tree), and <i>Solanum mauritianum</i> (Wild Tobacco), indicating a degree of disturbance. Several vines and herbaceous weeds <i>Dolichandra unguis-cati</i> (Cat's Claw Creeper), <i>Cardiospermum grandiflorum</i> (Balloon Vine), and <i>Galium aparine</i> (Cleavers) are present at lower cover levels. Overall, the zone supports a moderately diverse flora with a mix of native woodland elements and a substantial component of exotic and weedy species, reflecting past disturbance and ongoing edge effects.
Dominant species in each stratum (canopy, mid-story and ground)	Dominant canopy species include <i>Corymbia maculata</i> (Spotted Gum), <i>Eucalyptus microcorys</i> (Tallowwood), <i>Eucalyptus crebra</i> (Narrow-leaved Ironbark), and <i>Casuarina glauca</i> (Swamp Oak), each present in both plots with moderate cover values (ranging from 2-15%). <i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i> (River Oak) and <i>Angophora floribunda</i> (Rough-barked Apple) are also present, though less abundant. Notable native components of the mid-stratum include <i>Acacia falcata</i> (Sickle-leaved Wattle), <i>Cupaniopsis</i> spp., <i>Callistemon salignus</i> (Willow Bottlebrush), and <i>Callistemon</i>



PCT 3315 Central Hunter Ironbark-Spotted Gum Forest	
	<i>linearis</i> (Narrow-leaved Bottlebrush), which contribute to the structural diversity and provide habitat resources for fauna. Exotic and invasive species are present throughout the mid-story, with <i>Lantana camara</i> (Lantana) forming dense thickets in some areas, and <i>Olea europaea</i> subsp. <i>cuspidata</i> (African Olive), <i>Ligustrum lucidum</i> (Large-leaf Privet), and <i>Schinus molle</i> (Peppercorn Tree) occurring as scattered individuals or small clusters. These species can suppress native regeneration and alter the composition of the mid-story. The understorey is structurally complex, with a high cover and abundance of grasses and forbs. <i>Ehrharta erecta</i> (Panic Veldt Grass) is particularly prolific, with cover values of 30% and estimated abundances up to 2,000 stems per plot. Other common ground layer species include <i>Sida rhombifolia</i> (Paddy's Lucerne), <i>Solanum americanum</i> (Glossy Nightshade), <i>Nothoscordum gracile</i>, and <i>Tradescantia fluminensis</i> (Wandering Trad), the latter also reaching high abundance (up to 1,000 stems).
PCT determination	Mapped on SVTM as a combination of 3431, 3315 and 4023. Vegetation integrity surveys and general site reconnaissance within this vegetation zone collected the relevant floristic and landscape information to inform the PCT identification. An analysis was completed on this data, which involved using the Plot-to-PCT Tool, and the three likely PCTs were determined to be either 3346, 3435 or 3315. These PCTs were analysed and PCT 3315 was determined to be the best fit. The key steps and criteria used in this determination are outlined below: — The surveyed plots are dominated by <i>Casuarina glauca</i>, <i>Callistemon salignus</i>, and a suite of <i>Eucalyptus</i> species (<i>E. microcorys</i>, <i>E. crebra</i>, <i>E. fibrosa</i>, <i>Corymbia maculata</i>). — PCT 3446 and PCT 3435 are both defined by the dominance of <i>Eucalyptus tereticornis</i> and/or <i>Eucalyptus amplifolia</i> in the canopy, both of which are absent from both plots, which is a critical exclusion criterion. — The strong presence of <i>Callistemon salignus</i> as a co-dominant is diagnostic for PCT 3315 and not typical for 3446 or 3435, where <i>Callistemon</i> is generally a minor component or absent. — The mid-storey in both plots includes native shrubs (<i>Acacia falcata</i>, <i>Cupaniopsis</i> spp.) and a diverse ground layer, but also a substantial cover of exotics (e.g., <i>Ehrharta erecta</i>, <i>Tradescantia fluminensis</i>, <i>Lantana camara</i>). — While weed invasion is present, the overall structure aligns with the tall open forest described for PCT 3315, which is known to occur in disturbed contexts. — PCT 3446 and 3435 typically have a more open structure and are associated with floodplain or riverflat environments, often with a grassy ground layer dominated by native species such as <i>Microlaena stipoides</i> or <i>Themeda triandra</i>, which are not prominent in the plot data. — PCT 3315 is mapped on alluvial flats and riparian zones within the Sydney Basin, which aligns with the landscape context of the Subject land. PCT 3446 and 3435 are more closely associated with active floodplains and riverflats, often subject to regular inundation and supporting a different suite of canopy and ground layer species. — The abundance of forbs and grasses, including exotics, reflects disturbance but does not preclude the zone from meeting the majority of the PCT 3315 species benchmark. — Comparison with BioNet benchmarks for each PCT confirms that the species composition, structure, and landscape context of the plots best fit PCT 3315. — The absence of key diagnostic species and structural features for 3446 and 3435 provides a robust basis for exclusion. The vegetation zone is best assigned to PCT 3315 due to the co-dominance of <i>Casuarina glauca</i>, <i>Callistemon salignus</i>, and multiple <i>Eucalyptus</i> species, the absence of <i>Eucalyptus tereticornis</i> and <i>Eucalyptus amplifolia</i> (required for PCT 3446 and 3435), and the overall structure and composition matching the benchmark for tall open forest on alluvial flats. Weed invasion and disturbance are present but do not preclude assignment to PCT 3315.



PCT 3315 Central Hunter Ironbark-Spotted Gum Forest	
	The lack of key canopy species and ground layer structure required for PCT 3446 and 3435 provides clear justification for their exclusion.
BC Act status	Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions (Endangered)
EPBC Act status	Central Hunter Valley eucalypt forest and woodland (Critically Endangered)

4.3 Planted and non-native vegetation

Vegetation integrity surveys and general site reconnaissance confirm that non-native vegetation is the dominant feature across much of the Subject area. The sampled plots consistently recorded high cover and abundance of exotic grass and forb species, dominated by *Avena fatua* (Wild Oats), *Briza maxima* (Greater Quaking Grass), *Briza subaristata* (Lesser Quaking Grass), *Eragrostis curvula* (African Lovegrass) and a range of exotic herbs. In several plots, species such as *Briza maxima*, *Lolium perenne* (Perennial Ryegrass), and *Vulpia myuros* (Annual Fescue) reached cover values of 10–20% and abundances of up to 2,000 stems. The prevalence of these exotics, along with other invasive weeds such as *Hypochaeris radicata* (Cat's Ear), *Romulea rosea* (Onion Grass), and *Petrorhagia dubia* (Hairy Pink), demonstrates that non-native vegetation occupies a substantial proportion of the Subject area. This pattern of weed invasion and disturbance is evident throughout the vegetation zone, as confirmed by systematic plot-based surveys, and has significant implications for the ecological integrity and management priorities of the area.

4.4 Threatened ecological communities

An assessment of TECs under the BC Act and the EPBC Act which may occur within the Subject land was undertaken as part of the initial desktop assessment for the Project. At the completion of fieldwork, floristic data (species assemblage and supplementary descriptors such as landscape position and soil types) was reviewed against the TECs likely to occur and then compared to the NSW Scientific Committee's Scientific Determination and/or Commonwealth Listing Advice.

The following sections provide a summary of the state listed (Section 4.4.1) and Commonwealth listed (Section 4.4.2) TECs likely to occur within the Subject land, and justification of whether PCT 3315_moderate meets the Final determination and listing advice.

4.4.1 NSW BC Act TEC

Review of the floristic and structural features of PCT 3315 within the Subject land was undertaken and analysed against the listing criteria provided in the Final Determination for *Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions* TEC. The analysis (provided below in



Table 11) concluded that the vegetation zone sampled on the Subject land is consistent with the BC Act listed TEC, albeit in highly modified condition state. The TEC extent within the Subject land is shown in Figure 3.



Table 11: BC Act TEC alignment justification

TEC listing criteria (DCCEEW, 2010)	Vegetation alignment within the Subject land	Vegetation zone consistent with TEC?
Subject land Location — Hunter Valley region, NSW North Coast or Sydney Basin Bioregion	— Located within the Sydney Basin Bioregion	Yes
Landform and Lithology — Undulating plains, low hills, gentle slopes — Substrate: sandstone, siltstone, claystone, conglomerate (Permian origin) — Soils: loamy, clay, or sandy soils derived from these rocks — Well-drained sites (not floodplains or riparian zones)	— Located on undulating plains — Substrate present is a combination of siltstone and claystone — Soils are predominantly loamy — The Subject land is well-drained and is not a floodplain or part of a riparian zone	Yes
Climate — Warm temperate climate — Moderate rainfall — Seasonal temperature variation	— The Subject land is located inland of Newcastle and experiences a warm temperate climate with moderate rainfall and seasonable temperature variation	Yes
Species Composition — Canopy layer: — Dominated by one or more of - <i>Eucalyptus crebra</i>, <i>Corymbia maculata</i>, <i>Eucalyptus moluccana</i> — May include: <i>Eucalyptus fibrosa</i>, <i>Eucalyptus tereticornis</i> — Mid-story/Shrub Layer is sparse to moderately dense, including: — <i>Allocasuarina luehmannii</i>, <i>Acacia parvipinnula</i>, <i>Daviesia ulicifolia</i>, <i>Pultenaea spinosa</i>, <i>Breynia oblongifolia</i>, <i>Hakea sericea</i>, <i>Bursaria spinosa</i> — Ground Layer is sparse to moderately dense, and commonly includes: — <i>Cheilanthes sieberi</i>, <i>Cymbopogon refractus</i>, <i>Pratia purpurascens</i>, <i>Lomandra multiflora</i>, <i>Microlaena stipoides</i>, <i>Themeda australis</i>, <i>Stackhousia viminea</i>, <i>Wahlenbergia communis</i>, <i>Glycine tabacina</i>, <i>Dianella revoluta</i>, <i>Laxmannia gracilis</i>, <i>Desmodium varians</i>, <i>Dichondra repens</i>, <i>Eremophila debilis</i>, <i>Calotis cuneifolia</i>, <i>Hypericum gramineum</i>, <i>Chrysocephalum apiculatum</i>, <i>Opercularia diphylla</i>, <i>Paspalidium distans</i>	— The vegetation sampled on the Subject land was dominated by <i>Corymbia maculata</i>, <i>Eucalyptus crebra</i> and <i>Eucalyptus moluccana</i> — The mid-story and understorey was comprised of a mix of native and exotic species. Diagnostic mid-storey and ground-storey species were sometimes present.	Yes
Disturbance and Threats — Evidence of weed invasion (e.g., African Olive, Lantana, Coolatai Grass, Giant Parramatta Grass)	— The weed invasion in the Subject land was extensive, with large areas of <i>Lantana camara</i> forming dense thickets in some areas, and <i>Olea europaea</i> subsp. <i>cuspidata</i> present within all sampled areas	Yes



TEC listing criteria (DCCEEW, 2010)	Vegetation alignment within the Subject land	Vegetation zone consistent with TEC?
— Signs of grazing, fire, or fragmentation		
Conclusion	The vegetation present within the Subject land is consistent with the definition of the BC Act listed TEC <i>Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions</i> .	

4.4.2 Commonwealth EPBC Act TEC

Review of the floristic and structural features of PCT 3315 within the Subject land was undertaken (Table 12) and determined that the vegetation zone sampled in the Subject land is not consistent with the EPBC Act listed TEC *Central Hunter Valley eucalypt forest and woodland*.

Justification of the alignment of the relevant vegetation zone with the Scientific Committee's Scientific Determination for the TEC is included in Table 12.

Table 12: EPBC Act TEC alignment justification

TEC listing criteria (DCCEEW, 2014)	Vegetation alignment within the Subject land	Consistent with TEC?
Subject land Location Hunter River catchment	Located within the Hunter River catchment	Yes
Landform and Lithology Lower hillslopes and low ridges, or valley floors in undulating country; on soils derived from Permian sedimentary rocks It does not occur on alluvial flats, river terraces, aeolian sands, Triassic sediments, or escarpments	The Subject land is located on a valley floor in undulating country on soils derived from Permian sedimentary rocks. The Subject land is located on an alluvial flat.	No
Species Composition It is woodland or forest, with a projected canopy cover of trees of 10% or more; or with a native tree density of at least 10 native tree stems per 0.5 ha (at least 20 native tree stems/ha) that are at least 1 m in height. May include: <i>Eucalyptus fibrosa</i> , <i>Eucalyptus tereticornis</i> . The canopy of the ecological community is dominated by one or more of the following four eucalypt species: — <i>Eucalyptus crebra</i> (Narrow-leaved Ironbark), <i>Corymbia maculata</i> (syn. <i>E. maculata</i>) (Spotted Gum), <i>E. dawsonii</i> (Slaty Gum) and <i>E. moluccana</i> (Grey Box), OR, — a fifth species, <i>Allocasuarina luehmannii</i> (Bulloak, Buloke) dominates in combination with one or more of the above four eucalypt species, in sites previously dominated by one or more of the above four eucalypt species. <i>Allocasuarina torulosa</i> (Forest Oak/ She-oak, Rose She-oak/Oak), <i>Eucalyptus acmenoides</i> (White	The Subject land is a woodland with a projected canopy cover of trees >10% including <i>Eucalyptus fibrosa</i> Dominant canopy species on the Subject land includes <i>Eucalyptus crebra</i> and <i>Corymbia maculata</i> <i>Allocasuarina torulosa</i> , <i>Eucalyptus acmenoides</i> , and <i>E. fibrosa</i> largely absent from the canopy	Yes



TEC listing criteria (DCCEEW, 2014)	Vegetation alignment within the Subject land	Consistent with TEC?
Mahogany) and <i>E. fibrosa</i> (Red/Broad-leaved Ironbark) are largely absent from the canopy of a patch.		
Condition threshold (Class C) Patch size is ≥ 0.5 ha AND $\geq 50\%$ of perennial understorey vegetative cover is native; AND the patch contains at least 12 native understorey species	Patch size* is less than 2 ha, contains 11 native understorey species, and comprises perennial native understorey vegetative cover of less than 50%	No
Conclusion	The vegetation present within the Subject land is <u>not</u> consistent with the definition of the EPBC Act listed TEC <i>Central Hunter Valley eucalypt forest and woodland</i> .	

* Patch size is defined under the EPBC Act as “a discrete and mostly continuous area of an ecological community; it can include small-scale variations, gaps and disturbances.”

4.5 Vegetation zones

Two vegetation zones were recorded across the Subject land as a result of field vegetation validation and floristics and function data analysis. The details of each vegetation zone including area, patch size class, and percentage native vegetation cover are provided in Table 13. Both vegetation zones are illustrated in Figure 3.

Table 13: Vegetation zones present within the Subject land

PCT ID and Name	Vegetation zone	Vegetation formation (Keith, 2004)	BC Act TEC	EPBC Act TEC	Area within Subject Land (ha)	Patch size class (ha)	Percent native vegetation cover class
PCT 3315 – Central Hunter Ironbark Spotted Gum Forest	3315_Moderate	Grassy woodlands	Central Hunter Ironbark–Spotted Gum–Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions (Endangered)	N/A	0.48	>100	>70% (76%)
PCT 0 – Non-native vegetation (exotic pasture)	Degraded/Non-native	N/A	N/A	N/A	4.07	>100	0-10% (0%)

4.6 Vegetation integrity

4.6.1 Vegetation integrity survey plots

Six vegetation integrity plots were undertaken across the Subject area in accordance with Table 3 of the BAM 2020. A total of three plots sampled non-native vegetation (PCT 0), two plots sampled PCT 3315 and one additional plot sampled PCT 4023 (Figure 3). Of these, two plots were located within the Subject land including one in PCT 0 and one in PCT 3315.

Due to the very small area of habitat within the Subject land, one vegetation integrity plot (1987_ML_06) was undertaken directly adjacent to the Subject land boundary, within the Subject area. Alternative locations for BAM



plots were considered by the attending ecologists, but were excluded due to proximity to roads, ecotones and edge effects that would not fairly represent the vegetation zone within the Subject land. The BAM plot was undertaken in a patch which is contiguous with other patches of the vegetation zone within the Subject land and is considered to be representative of the vegetation zone.

Details of the vegetation integrity plots completed for each vegetation zone within the Subject land, in accordance with Table 3 of the BAM 2020, are provided below in Table 14. Locations of the vegetation integrity plots are shown in Figure 3. Comprehensive vegetation integrity plot survey data is provided in Appendix C.

No benchmark values were used in this assessment.

Table 14: Vegetation integrity plots for native vegetation zones representative of the Subject land

VI Plot code	PCT	Vegetation zone	HBTs present?
9187_ML_05	3315	3315_Moderate	No
9187_ML_06	3315	3315_Moderate	No

4.6.2 Vegetation integrity scores

The overall vegetation integrity score for the vegetation zone is provided below in Table 15. Comprehensive vegetation integrity plot survey data is provided in Appendix C.

Table 15: Vegetation integrity scores for vegetation zones within the Subject land

PCT	Vegetation zone	Composition	Structure	Function	Current VI score	HBTs present?
3315	3315_Moderate	20.2	38.5	66	37.2	No

Source: BAM-C



5. Habitat suitability for threatened species

5.1 Ecosystem credit species

Ecosystem credit species are those threatened species that can be reliably predicted to occur based on the PCTs identified within the Subject land. The BAM-C was used to generate a list of predicted ecosystem credit species from numerous inputs, which includes landscape features and the native vegetation communities present.

Ecosystem credit species predicted to occur on or use the Subject land are identified in Table 16.

5.2 Species credit species

Species credit species are those threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates and therefore require further consideration through an assessment of habitat suitability.

The BAM-C generates a list of species credit species based on numerous inputs such as the distribution of the species occurring within the same IBRA subregion as the Subject land and the presence of habitat features and components associated within these species.

The candidate species credit species predicted to occur within the Subject land are identified in Table 17. In accordance with Section 5.2.1(2)(b) and Section 5.2.2(2)(b) of the BAM, geographic limitations, habitat constraints, degradation or lack of suitable microhabitats are the permitted reasons for excluding species credit species. Justification is provided in Table 17 for any species that were excluded from further assessment.

No further survey for threatened species is required after Step 2 in Section 5.2 of BAM, unless suitable habitat is present for a threatened species and the species is considered to be at risk of a SAIL.

An assessment of habitat suitability was carried out for each of the species identified in Table 17. The assessment was based on details provided within the TBDC including associated PCTs and known habitat or geographical constraints as detailed within Table 17.

One candidate flora species (*Prasophyllum* sp. *Wybong*) has been excluded from further assessment in accordance with Section 5.2.3 (Subsection 2.a.i and ii) of the BAM 2020. Justification for this is provided in Section 5.3.2.

The results of the habitat suitability assessment is provided in Section 5.3.



Table 16: Predicted species within the Subject land

Common name	Scientific name	BC Act	EPBC Act	Credit type Ecosystem/Species	Sensitivity to potential gain (TBDC)	Habitat constraint/geographic limitation (BAM-C)	Species retained for assessment	Associated PCT
Black Falcon	<i>Falco subniger</i>	Vulnerable	Not Listed	Ecosystem	Moderate Sensitivity to Gain	N/A	Yes	3315
Black-chinned Honeyeater (eastern subspecies)	<i>Melithreptus gularis gularis</i>	Vulnerable	Not Listed	Ecosystem	Moderate Sensitivity to Gain	N/A	Yes	3315
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	Endangered	Not Listed	Ecosystem	Moderate Sensitivity to Gain	Swamps; Shallow, open freshwater or saline wetlands or shallow edges of deeper wetlands within 300 m of these swamps Waterbodies; Shallow lakes, lake margins and estuaries within 300 m of these waterbodies	Yes – A small waterbody is located within the Subject land	3315
Brown Treecreeper (eastern subspecies)	<i>Climacteris picumnus victoriae</i>	Vulnerable	Vulnerable	Ecosystem	High Sensitivity to Gain	Waterbodies; Shallow lakes, lake margins and estuaries within 300 m of these waterbodies	Yes – A small waterbody is located within the Subject land	3315
Corben's Long-eared Bat	<i>Nyctophilus corbeni</i>	Vulnerable	Vulnerable	Ecosystem	High Sensitivity to Gain	N/A	Yes	3315
Diamond Firetail	<i>Stagonopleura guttata</i>	Vulnerable	Vulnerable	Ecosystem	Moderate Sensitivity to Gain	N/A	Yes	3315



Common name	Scientific name	BC Act	EPBC Act	Credit type Ecosystem/Species	Sensitivity to potential gain (TBDC)	Habitat constraint/geographic limitation (BAM-C)	Species retained for assessment	Associated PCT
Dusky Woodswallow	<i>Artamus cyanopterus cyanopterus</i>	Vulnerable	Not Listed	Ecosystem	Moderate Sensitivity to Gain	N/A	Yes	3315
Eastern Coastal Free-tailed Bat	<i>Micronomus norfolkensis</i>	Vulnerable	Not Listed	Ecosystem	High Sensitivity to Gain	N/A	Yes	3315
Gang-gang Cockatoo (Foraging habitat)	<i>Callocephalon fimbriatum</i>	Endangered	Endangered	Species/Ecosystem	Moderate Sensitivity to Gain (foraging)	N/A	Yes	3315
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	Vulnerable	Not Listed	Ecosystem	High Sensitivity to Gain	N/A	Yes	3315
Grey-crowned Babbler (eastern subspecies)	<i>Pomatostomus temporalis temporalis</i>	Vulnerable	Not Listed	Ecosystem	Moderate Sensitivity to Gain	N/A	Yes	3315
Grey-headed Flying-fox (Foraging habitat)	<i>Pteropus poliocephalus</i>	Vulnerable	Vulnerable	Species/Ecosystem	High Sensitivity to Gain (foraging)	N/A	Yes	3315
Large Bent-winged Bat (Foraging habitat)	<i>Miniopterus orianae oceanensis</i>	Vulnerable	Not Listed	Species/Ecosystem	High Sensitivity to Gain (foraging)	N/A	Yes	3315



Common name	Scientific name	BC Act	EPBC Act	Credit type Ecosystem/Species	Sensitivity to potential gain (TBDC)	Habitat constraint/geographic limitation (BAM-C)	Species retained for assessment	Associated PCT
Little Bent-winged Bat (Foraging habitat)	<i>Miniopterus australis</i>	Vulnerable	Not Listed	Species/Ecosystem	High Sensitivity to Gain (foraging)	N/A	Yes	3315
Little Eagle (Foraging habitat)	<i>Hieraaetus morphnoides</i>	Vulnerable	Not Listed	Species/Ecosystem	Moderate Sensitivity to Gain (foraging)	N/A	Yes	3315
Little Lorikeet	<i>Glossopsitta pusilla</i>	Vulnerable	Not Listed	Ecosystem	High Sensitivity to Gain	N/A	Yes	3315
New Holland Mouse	<i>Pseudomys novaehollandiae</i>	Vulnerable	Vulnerable	Ecosystem	High Sensitivity to Gain	N/A	Yes	3315
Regent Honeyeater (Foraging habitat)	<i>Anthochaera phrygia</i>	Critically Endangered	Critically Endangered	Species/Ecosystem	High Sensitivity to Gain (foraging)	N/A	Yes	3315
Scarlet Robin	<i>Petroica boodang</i>	Vulnerable	Not Listed	Ecosystem	Moderate Sensitivity to Gain	N/A	Yes	3315
South-eastern Glossy Black-Cockatoo (Foraging habitat)	<i>Calyptrorhynchus lathami lathami</i>	Vulnerable	Vulnerable	Species/Ecosystem	High Sensitivity to Gain (foraging)	N/A	Yes	3315
Speckled Warbler	<i>Chthonicola sagittata</i>	Vulnerable	Not Listed	Ecosystem	High Sensitivity to Gain	Presence of Allocasuarina and Casuarina species	Yes – Casuarina species present within the Subject land	3315



Common name	Scientific name	BC Act	EPBC Act	Credit type Ecosystem/Species	Sensitivity to potential gain (TBDC)	Habitat constraint/geographic limitation (BAM-C)	Species retained for assessment	Associated PCT
Spotted Harrier	<i>Circus assimilis</i>	Vulnerable	Not Listed	Ecosystem	Moderate Sensitivity to Gain	N/A	Yes	3315
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	Vulnerable	Endangered	Ecosystem	High Sensitivity to Gain	N/A	Yes	3315
Square-tailed Kite	<i>Lophoictinia isura</i>	Vulnerable	Not Listed	Species/Ecosystem	Moderate Sensitivity to Gain	N/A	Yes	3315
Swift Parrot (Foraging habitat)	<i>Lathamus discolor</i>	Endangered	Critically Endangered	Species/Ecosystem	Moderate Sensitivity to Gain (foraging)	N/A	Yes	3315
Varied Sittella	<i>Daphoenositta chrysoptera</i>	Vulnerable	Not Listed	Ecosystem	Moderate Sensitivity to Gain	N/A	Yes	3315
White-bellied Sea-Eagle (Foraging habitat)	<i>Haliaeetus leucogaster</i>	Vulnerable	Not Listed	Species/Ecosystem	High Sensitivity to Gain (foraging)	N/A	Yes	3315
White-throated Needletail	<i>Hirundapus caudacutus</i>	Vulnerable	Vulnerable	Ecosystem	High Sensitivity to Gain	Waterbodies; Within 1 km of a rivers, lakes, large dams or creeks, wetlands and coastlines	Yes – A small waterbody is located within the Subject land and is located within 1km of a creek (Black Creek)	3315
Yellow-bellied Sheathtail-bat	<i>Saccolaimus flaviventris</i>	Vulnerable	Not Listed	Ecosystem	High Sensitivity to Gain	N/A	Yes	3315

Source: BAM-C



Table 17: Species credit species within the Subject land

Common name	Scientific name	BC Act	EPBC Act	SAIL	Habitat constraint/geographic limitation (BAM-C)	Justification for exclusion	Retained for assessment	Associated PCT
Flora species								
Acacia pendula population in the Hunter catchment	<i>Acacia pendula</i> - endangered population	Endangered Population	Not Listed	Yes	N/A	N/A	Yes	3315
North Rothbury Persoonia	<i>Persoonia pauciflora</i>	Critically Endangered	Critically Endangered	Yes	N/A	N/A	Yes	3315
Pokolbin Mallee	<i>Eucalyptus pumila</i>	Vulnerable	Vulnerable	Yes	N/A	N/A	Yes	3315
<i>Prasophyllum</i> sp. Wybong*	<i>Prasophyllum</i> sp. Wybong*	Endangered	Endangered	Yes	N/A	Required microhabitat features not present within the Subject land. See Section 5.3.2.	No	3315
Fauna species								
Brush-tailed Rock-Wallaby	<i>Petrogale penicillata</i>	Endangered	Vulnerable	Yes	Land within 1 km of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or cliffines	Subject land is not within 1 km of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or cliffines	No	3315



Common name	Scientific name	BC Act	EPBC Act	SAIL	Habitat constraint/geographic limitation (BAM-C)	Justification for exclusion	Retained for assessment	Associated PCT
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	Vulnerable	Not Listed	Yes	Caves; Within 2 km of rocky areas containing caves, overhangs, escarpments, outcrops, crevices or boulder piles, or within two kilometres of old mines, tunnels, old buildings or sheds.	Subject land is not within 2 km of rocky areas containing caves, overhangs, escarpments, outcrops, crevices or boulder piles, or within 2 km of old mines, tunnels, old buildings or sheds.	No	3315
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	Vulnerable	Not Listed	Yes	Caves; Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding	Subject land does not contain caves, tunnels, mines, culverts or other structures known or suspected to be used for breeding	No	3315
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Endangered	Endangered	Yes	Caves; Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding	Subject land does not contain caves, tunnels, mines, culverts or other structures known or suspected to be used for breeding	No	3315
Little Bent-winged Bat	<i>Miniopterus australis</i>	Vulnerable	Not Listed	Yes	Caves; Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding	Subject land does not contain caves, tunnels, mines, culverts or other structures known or suspected to be used for breeding	No	3315
Regent Honeyeater	<i>Anthochaera phrygia</i>	Critically Endangered	Critically Endangered	Yes	As per Important Habitat Map	No Important Habitat Mapping for the species is present within the Subject land	No	3315



Common name	Scientific name	BC Act	EPBC Act	SAIL	Habitat constraint/geographic limitation (BAM-C)	Justification for exclusion	Retained for assessment	Associated PCT
Swift Parrot	<i>Lathamus discolor</i>	Endangered	Critically Endangered	Yes	As per Important Habitat Map	The Subject land contains Important Habitat Mapping for the species	Yes	3315

* The NSW Herbarium considers *Prasophyllum petilum* and *Prasophyllum sp. Wybong* to be synonyms (i.e. the same species). This taxonomic recognition will be released in the next Orchidaceae taxonomic update via the Australian Plant Census, which provides a list of currently accepted names. As it stands, the two species are treated as one for NSW regulatory purposes, with the distinction maintained under Commonwealth legislation.

Source: BAM-C



5.3 Habitat constraints assessment

An assessment of habitat suitability was undertaken to determine the likelihood of species credit species occurring across the Subject land. The assessment used geographic and habitat constraints outlined in the BAM-C and TBDC. Additionally, information collected from two field surveys was also analysed to determine habitat suitability for threatened species.

5.3.1 Candidate fauna species habitat assessment

All candidate fauna species credit species (with the exception of Swift Parrot) were excluded on the basis of absence of required habitat constraints and/or geographic constraints (Table 17).

In accordance with Section 5.2.1(1)(c) of the BAM 2020, the Swift Parrot has been retained for assessment due to the presence of Important Habitat Mapping within the Subject land. As per Section 5.2.3(2)(a) of the BAM 2020, targeted surveys are not required, provided Important Habitat is identified on-site and no elevated risk of a SALL exists. Therefore, no targeted surveys were required or undertaken for the Swift Parrot.

5.3.2 Candidate flora species habitat assessment

Although habitat present within the Subject land comprises very marginal habitat for candidate flora species, comprising a very high cover of exotic understory species, all but one flora species (*Prasophyllum* sp. *Wybong*) was retained for assessment.

In accordance with BAM 2020 Section 5.2.3 (Subsection 2.a.i and ii), *Prasophyllum* sp. *Wybong* has been excluded from further assessment on the basis of the below justification supported by site-specific evidence (Table 18). Subsection 2.a.i permits exclusion where the “assessor determines that microhabitats required by the species are absent from the subject land”, and Subsection 2.a.ii allows exclusion where “habitat constraints or microhabitats are degraded to the point that the species is unlikely to use the site”.

Site inspections and BAM plot data confirms that the vegetation present within the Subject land do not provide the open native grassland/grassy woodland microhabitat required by *Prasophyllum* sp. *Wybong*, as described in Table 18 below.

Data collected confirms substantial woody cover (e.g., *Casuarina glauca* 10%, *Corymbia maculata* 5%, *Eucalyptus microcorys* up to 15%, *Callistemon/Melaleuca* 5–10%), resulting in significant shading of the ground layer. The understorey is heavily weed-dominated (e.g., *Ehrharta erecta* 30%, *Tradescantia fluminensis*, and stands of *Lantana camara*) with no native tussock grasses recorded. These conditions do not reflect the open native grassland or grassy woodland microhabitat preferred by the species (NSW OEH, 2023); (NSW DCCEEW, 2010).

Accordingly, *Prasophyllum* sp. *Wybong* has been excluded from further assessment due to habitat constraints and lack of suitable microhabitats.



Table 18: Microhabitat requirements for *Prasophyllum* sp. Wybong

Required microhabitat feature	Reference	Description of habitat within the Subject land	Microhabitat present/absent within the Subject land
Open areas within Natural Temperate Grassland	Threatened Species Profile – Tarengo Leek Orchid (NSW OEH, 2023)	The species is strongly associated with open, high-quality natural temperate grasslands. The assessed vegetation zone is a disturbed eucalypt-casuarina woodland with a dense mid-storey and heavy weed invasion, lacking the open grassland structure required.	Absent
Also grows in grassy woodland in association with River Tussock (<i>Poa labillardieri</i>), Black Gum (<i>Eucalyptus aggregata</i>) and tea-trees (<i>Leptospermum</i> spp.) near Queanbeyan and within the grassy groundlayer dominated by Kangaroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT).	Threatened Species Profile – Tarengo Leek Orchid (NSW OEH, 2023)	Known occurrences include grassy woodland with <i>Poa labillardieri</i> (River Tussock), <i>Eucalyptus aggregata</i> (Black Gum), and <i>Leptospermum</i> spp. (tea-trees), or <i>Eucalyptus</i> spp. (Box-Gum) Woodland with a <i>Themeda triandra</i> (Kangaroo Grass) ground layer. The Subject land instead supports canopy species such as <i>Corymbia maculata</i> (Spotted Gum), <i>Eucalyptus microcorys</i> (Tallowwood), and <i>Casuarina glauca</i> (Swamp Oak), with no evidence of <i>Poa labillardieri</i> (River Tussock) or <i>Themeda triandra</i> (Kangaroo Grass) dominance.	Absent
Occurs on fertile soils in grassy woodland or natural grassland	<i>Prasophyllum petilum</i> recovery plan (DECCW, 2010)	The species favours fertile soils supporting native grassland or grassy woodland. The Subject land's soils and vegetation are indicative of a mixed woodland with significant exotic cover, not the intact fertile grassland required.	Absent
Known locations (Steves Travelling Stock Reserve (TSR)) is a natural grassland in a frost hollow, surrounded by <i>Eucalyptus pauciflora</i> (Snow Gum).	<i>Prasophyllum petilum</i> recovery plan (DECCW, 2010)	Known locations occur in frost hollows surrounded by <i>Eucalyptus pauciflora</i> (Snow Gum). The Subject land does not exhibit frost-prone microhabitats or <i>E. pauciflora</i> (Snow Gum) dominance, further reducing suitability.	Absent
Known locations contain a sparse shrub layer (Hall Cemetery and Tarengo TSR). A patchy shrub layer occurs at the Captains Flat Cemetery.	<i>Prasophyllum petilum</i> recovery plan (DECCW, 2010)	Habitat descriptions note sparse shrub layers at Hall Cemetery and Tarengo TSR. The Subject land has a dense mid-storey dominated by invasive shrubs such as <i>Lantana camara</i> (Lantana) and <i>Olea europaea</i> subsp. <i>cuspidata</i> (African Olive), which suppress native regeneration and alter structure.	Absent
Known location at Tarengo TSR indicate that the species favours open swards of native grasses, including <i>Bothriochloa macra</i> , <i>Pentapogon quadrifidus</i> and <i>Austrodanthonia</i> spp.	<i>Prasophyllum petilum</i> recovery plan (DECCW, 2010)	Preferred species in the ground cover include <i>Bothriochloa macra</i> , <i>Pentapogon quadrifidus</i> , and <i>Austrodanthonia</i> spp. The Subject land's ground cover is dominated by exotic grasses (<i>Ehrharta erecta</i>) and weeds (<i>Tradescantia fluminensis</i>), with no evidence of these native grass species.	Absent



Required microhabitat feature	Reference	Description of habitat within the Subject land	Microhabitat present/absent within the Subject land
The species is only found in high quality grassland and grassland remnants not subject to continuous grazing pressure.	<i>Prasophyllum petilum</i> – Tarengo Leek Orchid DCCEEW Species Profile and Threats (SPRAT) Profile (NSW DCCEEW, 2010)	The Subject land contains disturbed woodland with significant weed invasion and edge effects, lacking the intact grassland condition required by the species.	Absent



5.4 Field surveys

Following the habitat assessments provided in Section 5.3, targeted surveys were conducted in accordance with Section 6.4 of the BAM 2020. Threatened flora surveys were conducted in accordance with Section 4.1 of *Surveying threatened plants and their habitats, NSW survey guide for the Biodiversity Assessment Method* (DPIE, 2020b).

In accordance with Section 5.2.1(1)(c) of the BAM 2020, the Swift Parrot has been retained for assessment due to the presence of Important Habitat Mapping within the subject land. Given the transient and highly nomadic nature of Swift Parrot on mainland Australia, the BAM framework recognises that presence surveys may not reliably determine absence, and therefore habitat-based assessment is an appropriate and precautionary approach to quantifying impacts. Accordingly, impacts to Swift Parrot have been assessed based on mapped important habitat and vegetation condition, consistent with the streamlined assessment approach, and targeted surveys were not considered necessary, as per Section 5.2.3(2)(a) of the BAM 2020.

Table 19 below details the candidate species subject to survey, survey outcomes and further assessment requirements. Following surveys, the only candidate species credit species subject to impact assessment is the Swift Parrot.

Table 19: Candidate species survey summary and species requiring further assessment

Common name	Scientific name	Associated PCT	BAM survey months	Month of survey	Survey method	Total area surveyed (ha)	Survey outcome
Flora species							
<i>Acacia pendula</i> population in the Hunter catchment	<i>Acacia pendula</i> - endangered population	3315	All year	November 2025	Parallel traverse	0.48	Not present (excluded through survey)
Pokolbin Mallee	<i>Eucalyptus pumila</i>	3315	All year	November 2025	Parallel traverse	0.48	Not present (excluded through survey)
North Rothbury Persoonia	<i>Persoonia pauciflora</i>	3315	All year	November 2025	Parallel traverse	0.48	Not present (excluded through survey)
Fauna species							
Swift Parrot	<i>Lathamus discolor</i>	3315	N/A	N/A	N/A	N/A	Assumed present, at risk of SAIL (Important Habitat Mapping)



6. Identifying prescribed impacts

Prescribed biodiversity impacts are impacts on biodiversity values in addition to, or instead of, impacts from clearing vegetation and/or loss of habitat. Prescribed biodiversity impacts (prescribed impacts) that must be assessed under the Biodiversity Offset Scheme (BOS) and addressed as a part of the BDAR are outlined in Clause 6.1 of the BC Regulation.

Prescribed impacts relevant to the Project and potentially affected threatened entities are identified and described in Table 20. The assessment of prescribed impacts has been carried out for all prescribed impact entities identified.

Table 20: Prescribed impacts identified

Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature
Karst, caves, crevices, rocks or other geological features of significance	☐ Yes/ ☒ No	N/A - no geological features of significance	N/A
Human-made structures	☒ Yes/ ☐ No	Project infrastructure. Existing Rothbury Zone Substation and associated infrastructure. These structures are in use and not considered old buildings or sheds suitable for sheltering threatened fauna, such as bats.	N/A
Non-native vegetation	☒ Yes/ ☐ No	Areas of non-native vegetation are limited to exotic pasture. These areas are not considered to provide habitat to any threatened entities.	N/A
Habitat connectivity	☒ Yes/ ☐ No	Areas of vegetation identified for removal for the Project include planted screening/remnant regenerating vegetation surrounding the existing Rothbury Zone Substation. The increased distance between vegetation patches intersecting the Subject land is unlikely to impact the lifecycle of highly mobile species, such as the Swift Parrot. No threatened flora that occur within the Subject land are likely to be impacted by reduced connectivity.	Swift Parrot
Waterbodies, water quality and hydrological processes	☒ Yes/ ☐ No	A small waterbody exists within the Subject Land. This waterbody is expected to be drained, filled and levelled.	N/A



Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature
		Another small waterbody is located east of the Subject land and is located within 1 km of a creek (Black Creek). Impacts such as increased run-off and sedimentation are considered to be relatively minor and short term.	
Wind turbine strikes (wind farm development only)	☐ Yes/ ☒ No	N/A - not a wind farm development	N/A
Vehicle strikes	☒ Yes/ ☐ No	A major road (Wine Country Drive) forms the eastern boundary of the Subject Land. A minor road (Old North Road) runs along the southern boundary of the Subject land. This impact is unlikely to be increased by the Project.	N/A



7. Avoid and minimise impacts

This chapter addresses proposed measures to avoid and minimise impacts to biodiversity in accordance with Section 7 of the BAM (DPIE, 2020a).

A key part of management of biodiversity for the Project is the application of the ‘avoid, minimise, mitigate and offset’ hierarchy as follows:

1. Avoid and minimise impacts as the highest priority
2. Mitigate impacts where avoidance is not feasible or practicable in the circumstance
3. Offset where residual, significant unavoidable impacts would occur (if required).

Avoidance and minimisation measures relating to the Project are detailed below.

7.1 Avoid and minimise direct and indirect impacts

The Project will have a minor impact on native vegetation and biodiversity values across the Subject land. The Project is adjacent to the existing Rothbury Zone Substation footprint to minimise impact and will result in 0.48 ha of native vegetation being removed.

7.1.1 Project location and design

Site selection processes resulted in the selection of the Project’s location based on key reasons including:

- Lack of conservation reserves, National Parks, or other similar environmental constraints within or adjacent to the Subject area
- Proximity to existing Rothbury Zone Substation and associated infrastructure
- The Subject area is largely cleared and previously disturbed.

The Project design has considered environmental constraints including ecology surveys and biodiversity constraints mapping (including Important Habitat Mapping for Swift Parrot) to avoid and minimise impacts. Where reasonably practicable, the Project design aimed to avoid and minimise impacts on areas of high value vegetation.

- Avoidance and minimising impacts in relation to the Project location and design is discussed in Table 21.

Table 21: Project location measures implemented to avoid and minimise direct impacts

Avoidance principle (as per Section 7.1 of the BAM, DPIE, 2020a)	Measures implemented
Project siting	
— Locating the Project in areas lacking biodiversity values — Locating the Project in areas where the native vegetation and threatened species habitat is in the poorest condition (i.e. areas that have low vegetation integrity score) — Locating the Project in areas that avoid habitat for species with a high biodiversity risk weighting or	Project site selection has provided opportunities to reduce impact to biodiversity values. These include avoidance of conservation reserves, National Parks, and sensitive aquatic habitats, and avoiding or minimising impacts to high value vegetation and TECs. Other opportunities identified to minimise direct impacts that were adopted as part of the Project’s site selection include: — Targeting areas of existing disturbance, such as roads



Avoidance principle (as per Section 7.1 of the BAM, DPIE, 2020a)	Measures implemented
Project siting - land mapped on the important habitat map, or native vegetation that is a TEC or highly cleared PCT - Locating the Project outside of the buffer area around breeding habitat features such as nest trees or caves	- Project location adjacent to existing structures – Rothbury Zone Substation and associated infrastructure, thereby minimising cumulative impacts. - The Project location is largely cleared and previously disturbed. - Absence of dense, mature remnant vegetation and breeding habitat features within proposed impacted vegetation.
Project location - 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 - An analysis of alternative sites that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site - An analysis of alternative sites within a property on which the Project is proposed that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site	The avoidance of impacts was adopted as a key criterion throughout the Project's design process. Measures which specifically reduced impacts to biodiversity include: - Subject land avoids creeks and large waterbodies and minimises impact to native vegetation - Prioritising the use of the existing access point and access track off Old North Road where possible
Project design - Reducing the Project clearing footprint by minimising the number and type of facilities - Locating ancillary facilities in areas where there are no biodiversity values - Locating ancillary facilities where the native vegetation or threatened species habitat is in the poorest condition (i.e. a TEC or an entity at risk of a SAIL) - Implementing actions and activities that provide for rehabilitation, ecological restoration and/ or ongoing maintenance of retained areas of native vegetation, threatened species, TECs and their habitat	Where reasonably practicable, the Project design aimed to avoid and minimise impacts on areas of native vegetation and creeks, utilising areas of non-native exotic pasture and existing infrastructure as much as possible. Removal of native vegetation for construction areas, ancillary facilities and operational areas has been limited to edges of existing vegetation that is considered to be of a lower retention value.

7.2 Avoid and minimise prescribed impacts

The Project will have a minor prescribed impact on native vegetation and biodiversity values across the Subject land. Potential prescribed impacts of relevance to the Project are identified in Section 6.

7.2.1 Project location and design

Table 22 outlines measures implemented as part of Project location and design to avoid and minimise prescribed biodiversity impacts, as detailed in Section 7.2 of the BAM (DPIE, 2020a).



Table 22: Measures implemented to avoid and minimise prescribed impacts

Avoidance principle (as per section 7.2 of the BAM, DPIE, 2020a)	Measures implemented
Project siting	
— Locating the envelope of surface work to avoid direct impacts on the habitat features identified in Chapter 6 — Locating the envelope of sub-surface work, both in the horizontal and vertical plane, to avoid and minimise operations beneath habitat features (i.e., excavation /controlled blasting sites away from geological features of significance or water dependent plant communities and their supporting aquifers) — Locating the Project to avoid severing or interfering with corridors connecting different areas of habitat, migratory flight paths or important habitat or local movement pathways — Optimising the Project layout to minimise interactions with threatened entities — Locating the Project to avoid direct impacts on water bodies or hydrological processes	Prescribed impacts relevant to the Project include: — Human-made structures — Habitat connectivity — Non-native vegetation — Waterbodies, water quality and hydrological processes — Vehicle strikes. Avoidance and minimisation of prescribed impacts was undertaken during the site selection phase of the Project. The Project is located adjacent to the existing Rothbury Zone Substation with existing infrastructure/areas of disturbance to avoid/minimise additional habitat fragmentation. By considering the current land use such as an existing access point off Old North Road and cleared agricultural areas, the potential impacts on native vegetation were minimised. To minimise impacts on waterbodies and hydrological processes, minimising direct impacts on waterways and higher risk of erosion areas within the Subject land would continue to be considered during construction. The Project location avoids areas of major water flows (such as rivers and creeks).
Project location	
— An analysis of alternative modes or technologies that would avoid or minimise prescribed biodiversity impacts and justification for selecting the proposed mode or technology — An analysis of alternative sites within a property on which the Project is proposed that would avoid or minimise prescribed biodiversity impacts and justification for selecting the proposed site — Locating the Project in consideration of bushfire protection requirements and clearing for asset protection zones — Locating the Project in consideration of flood planning levels — Locating the Project in consideration of servicing constraints	As detailed above, the Project site selection has focused on reducing impacts to biodiversity including: — Avoiding impacts on reserves, State parks and other conservation areas — Project location adjacent to existing infrastructure - Rothbury Zone Substation, thereby minimising impacts. — Project location has areas previously disturbed (non-native pasture) with lower biodiversity value — Existing infrastructure is located within the Subject land, including the access point off Old North Road that will be utilised for construction and operation of the Project — Bushfire protection requirements and asset protection zones for the Project are outlined in the Bushfire Risk Assessment.
Project design	
— Adopting engineering solutions to minimise fracturing of bedrock underlying features of geological significance, or groundwater-dependent communities and their supporting aquifers	Erosion and sedimentation risks to waterways during construction would be mitigated through soil and water management measures including erosion and sediment control outlined within a CEMP. Mitigation measures include: — Use of bunded areas for hazardous materials and fuel storage



Avoidance principle (as per section 7.2 of the BAM, DPIE, 2020a)	Measures implemented
— Adopting engineering solutions to restore connectivity and movement corridors — Adopting Project design elements that minimise interactions with threatened entities such as designing fencing to prevent animal entry to transport corridor — Maintaining environmental processes that are critical to the formation and persistence of habitat features not associated with vegetation — Maintaining hydrological processes that sustain threatened entities — Controlling the quality of water released from the site, to avoid or minimise downstream impacts on threatened entities	



8. Impact assessment

8.1 Direct impacts

8.1.1 Impacts to native vegetation and threatened ecological communities

Direct impacts include the loss of exotic and native vegetation as a result of ground disturbance. The Project will result in minor direct impacts on non-native vegetation and a TEC.

The direct impacts to native vegetation will include clearance of 0.48 ha of PCT 3315 Central Hunter Ironbark-Spotted Gum Forest in Moderate condition. This vegetation type is associated with the State listed TEC *Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions*.

Avoidance and mitigation measures associated with minimising direct impacts are discussed in Section 7.

Vegetation impacts and loss in vegetation integrity is presented in Table 23.

8.1.2 Impacts to threatened species and their habitat

A summary of threatened species with the potential to be impacted by the Project is documented in Table 17.

A total of 0.71 ha of Swift Parrot habitat (Important Habitat Mapping) is mapped within the Subject land. It is noted that only 0.42 ha of this has been mapped as native vegetation. The Subject land does not contain Swift Parrot significant habitat features such as mature hollow-bearing trees.

8.2 Indirect impacts

The Project has the potential to result in indirect impacts on native vegetation, threatened entities and their habitat as documented in Table 24.

In particular, minor indirect impacts associated with noise, dust and weeds may occur during construction.



Table 23: Impacts to vegetation integrity

Vegetation zone	PCT ID	Before development				After development				Change			
		Composition	Structure	Function	VI Score	Composition	Structure	Function	VI Score	Composition	Structure	Function	VI Score
3315_Moderate	3315	20.2	38.5	66.0	37.2	0	0	0	0	-20.2	-38.5	-66.0	-37.2



Table 24: Summary of indirect impacts

Indirect Impact	Extent	Frequency, duration and timing	Likelihood and consequences on impacted entities
Inadvertent impacts on adjacent habitat or vegetation	Within the Subject land and adjacent (i.e., within 100 m)	Consistent throughout construction and operation. Short to medium term.	There is a risk of disturbance and/or destruction of adjacent habitats and vegetation through soil disturbance, construction activities and unauthorised vehicle movements potentially resulting in accidental clearing, sedimentation, erosion and mobilisation of contaminants within the Subject land and into adjoining native vegetation and habitats. However, the consequence of the impacts is expected to be minor following the implementation mitigation measures to protect these areas.
Reduced viability of adjacent habitat due to edge effects	Adjacent (i.e., within 200 m) to the Subject land within existing native vegetation	Consistent throughout construction and operation. Long term.	Much of the landscape surrounding the Subject land has already been historically cleared, resulting in a highly fragmented environment where remaining vegetated patches are generally small, isolated, and subject to significant edge effects such as weed invasion and altered floristic composition. While additional clearing on already disturbed lands and existing access tracks may have a negligible impact due to their current degraded state, further removal of native vegetation will exacerbate existing impacts.
Reduced viability of adjacent habitat due to noise, dust, or light spill	Within the Subject land and adjacent (i.e., within 100 m)	Irregular frequency throughout construction (associated with certain construction activities). Short term.	The following construction activities would contribute to noise and vibration construction impacts: vegetation clearing, excavation, earthworks, and construction of infrastructure. Impacts of noise to fauna may include stress, displacement, and disruption to feeding and breeding behaviours. The consequence of this impact is expected to be minor due to the Subject land's highly modified condition and lack of suitable fauna habitat. Operational noise emissions are not expected to have any level of significance in relation to the threatened entity (Swift Parrot).
Transport of weeds and pathogens from the site to adjacent vegetation	Within the Subject land and adjacent (i.e., within 100 m)	Consistent throughout construction and operation. Long term.	There is the potential for the introduction or spread of weeds and pathogens by means of imported materials, machinery movements and increased foot traffic during construction and operation. Pathogens such as <i>Phytophthora cinnamomic</i> (Root Rot) and <i>Austropuccinia psidii</i> (Myrtle Rust) have the potential to occur. Should activities associated with the Project increase the spread of weeds or pathogens in the region, this could result in further associated



Indirect Impact	Extent	Frequency, duration and timing	Likelihood and consequences on impacted entities
			environmental degradation. The risk of the Project increasing the spread of weeds and pathogens in the region would be reduced through implementation of a Weed Management Plan included in the Project's CEMP.
Increased risk of starvation or exposure, and loss of shade or shelter	Within the Subject land and adjacent (i.e., within 100 m)	Consistent throughout construction. Short term.	Displacement of resident fauna species during vegetation clearing is considered relatively low due to the existing modified vegetation condition and the small area of vegetation within the Subject land.
Loss of breeding habitat	Within the Subject land and adjacent (i.e., within 100 m)	Consistent throughout construction and operation. Long term.	The impact from loss of breeding habitat due to vegetation clearing is considered relatively low due to the existing modified vegetation condition and the small area of vegetation within the Subject land.
Trampling of threatened flora species	Within the Subject land and adjacent (i.e., within 100 m)	Consistent throughout construction and operation. Long term.	No candidate threatened flora was recorded during surveys. It is unlikely that the Subject land provides suitable habitat for any threatened flora species. The likelihood of candidate threatened species occurring adjacent (i.e., within 100 m) of the Subject land is considered low. The consequence of impact on any threatened flora species is also considered low.
Inhibition of nitrogen fixation and increased soil salinity	Within the Subject land and adjacent (i.e., within 100 m)	Consistent throughout construction and operation. Long term.	The likelihood and consequence of the inhibition of nitrogen fixation and increased soil salinity is considered low due to the small area of the Subject land.
Fertiliser drift	N/A	N/A	No fertilisers are expected to be applied throughout the construction and operational phases of the Project.
Rubbish dumping	Within the Subject land and adjacent (i.e., within 100 m)	Consistent throughout construction. Short term.	Rubbish dumping would be mitigated through management measures outlined within the Project's CEMP.
Wood collection	Within the Subject land and adjacent (i.e., within 100 m)	Consistent throughout construction. Short to long term.	Wood collection is not expected to occur as all woody material will be mulched.
Removal and disturbance of rock, including bush rock	Within the Subject land and adjacent (i.e., within 100 m)	Consistent throughout construction. Short to long term.	Removal and disturbance of rock would be mitigated through management measures outlined within the Project's CEMP.



Indirect Impact	Extent	Frequency, duration and timing	Likelihood and consequences on impacted entities
Increase in predators	N/A	N/A	The Project is not anticipated to result in an increase in predators within the Subject land and/or surrounds.
Increase in pest animal populations	N/A	N/A	The Project is not anticipated to result in an increase in pest animal populations within the Subject land and/or surrounds.
Changed fire regimes	N/A	N/A	The Project is not anticipated to result in a change to fire regimes within the Subject land and/or surrounds.
Disturbance to specialist breeding and foraging habitat	N/A	N/A	The Project is not anticipated to result in a disturbance to specialist breeding and foraging habitat within the Subject land and/or surrounds. A total of 0.71 ha of Swift Parrot habitat (0.42 ha of which is mapped as native vegetation) would be removed during construction. This is not considered likely to contribute to a significant disturbance to the species foraging requirements (Section 9.2).



8.3 Prescribed impacts

As per the BAM (DPIE, 2020a), the assessor must assess the prescribed impacts that the Project would, or is likely to have, on threatened entities and their habitat, taking into account:

- TECs, threatened species and their habitat
- Ongoing or future impacts that the Project will have on biodiversity values, considering the measures taken to avoid or minimise impacts
- The spatial and temporal extent of the impacts likely to result from changes in land use arising from the Project, in accordance with subsections 8.3.1–8.3.6 of the BAM (DPIE, 2020a).

The BDAR must include an assessment of any prescribed impacts of the Project on threatened entities and their habitat, and describe:

- The nature, extent, frequency, duration and timing of prescribed impacts that may occur:
 - During construction
 - During operation
 - That are uncertain (predictions should be made).
- The consequences of prescribed impacts on biodiversity values
- Any limitations to data, assumptions, and predictions about impacts on biodiversity.

An assessment for each of the relevant prescribed biodiversity impacts has been completed and is presented in Table 25.



Table 25: Summary of prescribed impacts

Prescribed impacts	Nature (relevance to the Project)	Extent	Frequency, duration and timing	Consequences
Human-made structures	The Rothbury Zone Substation and associated infrastructure is present in the Subject land. The Project would be constructed adjacent to the existing structure.	Impacts would be negligible; the structures have limited potential for roosting bats due to their new build quality.	Throughout construction and operation. Long term/permanent.	Low
Non-native vegetation	The non-native vegetation present is limited to 4.07 ha of exotic pasture within the Subject land.	The non-native vegetation within the Subject land is not likely to produce a significant food resource or provide suitable habitat.	Throughout construction and operation. Long term/permanent.	Low
Habitat connectivity	The Subject land contains approximately 0.48 ha of native vegetation that is already fragmented and considered to be of low habitat value for species requiring connectivity between patches.	The vegetation within the Subject land does not contain any vegetation that is considered important for connectivity. Furthermore, the Project would remove edge areas of native vegetation, which would not result in a decrease in habitat connectivity values.	N/A	N/A



Prescribed impacts	Nature (relevance to the Project)	Extent	Frequency, duration and timing	Consequences
Waterbodies, water quality and hydrological processes	A waterbody (small dam) is present within the Subject land.	The Project is expected to drain, fill and level this small dam. This is not anticipated to impact areas of significant aquatic habitat or threatened aquatic species.	Throughout construction. Long-term, permanent.	Low
Vehicle strikes	An existing track exists within the Subject land.	The Project would increase traffic within the Subject land during construction; however, all construction vehicles would be observing a slow speed. Therefore, a significant increase in vehicle strikes is unlikely.	Throughout construction. Short-term/temporary. Throughout operation a low level of vehicle activity is anticipated. Long term.	Low



8.4 Impacts to Matters of National Environmental Significance

A referral is required under the EPBC Act for actions that are likely to have a significant impact on MNES.

The following considerations have been undertaken to determine whether a referral is likely to be required for the Project, in accordance with the EPBC Act Significant Impact Guidelines.

A Protected Matters Search (PMS) was completed with a 5 km buffer to the Subject land (Appendix D). This search identified the following MNES entities within 5 km of the Subject land:

- The Hunter Estuary (RAMSAR site 24) situated approximately 30-40 km upstream of the Subject land
- Seven TECs within 5 km of the Subject land
- 50 threatened species as may, likely, or known to occur within 5 km of the Subject land
- 11 migratory species as may, likely, or known to occur within 5 km of the Subject land.

The Subject land is not within or adjacent to a world heritage property, national heritage place, wetland of international importance, Commonwealth marine area or the Great Barrier Reef Marine Park. The Project is also not a nuclear action and is not likely to impact a water resource in relation to coal seam gas or coal mining.

The PMS Report identified seven TECs which are likely to or may occur within 5 km of the Subject land. No EPBC Act listed TECs were recorded within the Subject land (Section 4.4.2).

The PMS Report has identified 50 threatened species as may, likely or known to occur within 5 km of the Subject land. The list of threatened species with potential to occur has been further refined through the application of the BAM, which refines candidate species by PCT, IBRA Subregion and patch size.

Detailed surveys for threatened species have been undertaken (Section 5.4). These surveys have confirmed that no nationally listed threatened species were observed or likely to occur within the Subject land. However, one species (Swift Parrot) does have habitat within the Subject land (assumed presence based on Important Habitat Mapping). As a result, a Significant Impact Assessment (SIA) has been undertaken for this species, in accordance with the EPBC Act Significant Impact Guidelines. The assessment (Appendix E) confirmed that the Project would not result in a significant impact to Swift Parrot, and as such, no referral to the Minister for Environment and Water is required.

The PMS Report has identified 11 listed migratory species as may, likely or known to occur within 5 km of the Subject land. Detailed surveys for listed migratory species have been undertaken in conjunction with the threatened species surveys (Section 5.4), which confirmed that no nationally listed migratory species were observed or likely to occur within the Subject land.

8.5 Mitigation and management of impacts

The impacts to biodiversity values will require the preparation of general mitigation measures to be implemented through the construction period of the Project. A CEMP will be prepared for the Project with the aim to implement mitigation measures and manage the impact on biodiversity values.

The CEMP will describe the avoidance, mitigation and management measures that will be undertaken to manage potential environmental impacts of the Project. Table 26 below describes specific control measures that are recommended for the mitigation of impacts on the biodiversity features present within the Subject land.



Table 26: Mitigation measures

Mitigation measure	Technique	Timing	Responsibility
Preparation of a CEMP	— A CEMP will be developed for the Project, which documents the environmental impact mitigation, performance targets and monitoring requirements for the construction and operational phases of the Project.	Prior to construction	Construction contractor
Pre-clearing procedure	— Demarcate clearing areas to avoid accidental clearing. — Identify and mark any habitat trees (those trees containing hollows, cracks or fissures, and spouts, active nests, dreys or other signs of recent fauna usage) within the clearing areas. — Pre-clearing surveys of any habitat trees to be undertaken by a suitably qualified ecologist prior to felling works. — Where possible, schedule pre-clearing surveys for Swift Parrot foraging times (May to August). If Swift Parrots are observed foraging, implement temporary buffers or adjust timing of works in that area.	Prior to construction	Construction contractor
Clearing supervision	— The clearing would be supervised by a suitably qualified ecologist or environmental consultant to identify any fauna present and implement management to minimise harm.	Construction (clearing activities)	Construction contractor
Salvage of felled trees, as appropriate	— An effort to salvage sections of felled trees for use as habitat across other areas of the Subject land should be investigated and applied as relevant/appropriate.	Construction	Construction contractor
Weed management	— All machinery and equipment will arrive to site clean to avoid the inadvertent transportation of weeds into the property.	Construction	Construction contractor
Fencing and access control	— A temporary fence should be erected prior to construction around the approved clearing extent for the duration of the construction works, particularly around tree protection zones, and maintained until the completion of construction.	Pre-construction/construction	Construction contractor
Erosion and sediment control	— Sediment control measures will be implemented in accordance with the NSW Blue Book to prevent sediment runoff and avoid impacts to habitats within the Subject land.	Construction	Construction contractor



Mitigation measure	Technique	Timing	Responsibility
Swift Parrot considerations	— Where feasible, avoid high-noise activities during peak Swift Parrot foraging months (generally between May and August) to minimise disturbance to the species in the locality. — Retain mature flowering eucalypts and other key foraging habitat wherever possible. — Pre-clearing activities, as described above.	Pre-construction/construction	Construction contractor



Table 27: Implementation details of proposed mitigation measures

Mitigation measure	Monitoring and evaluation strategy	Performance criteria	Adaptive management threshold	Adaptive management response
Preparation of a CEMP	Implementation to be supervised by a Project Ecologist or suitably qualified environmental consultant, with regular reporting to the Regulator during construction.	Completion of all proposed environmental protection works and inspections.	Monitoring detects breach or failure to implement the CEMP.	Breaches to be included in annual compliance report to the Regulator.
Pre-clearing procedure	Reporting on preclearance surveys to be undertaken by Project Ecologist.	Completion of proposed works.	Completion of clearing works without supervision.	Breaches to be included in annual compliance report to the Regulator.
Weed management	Monitoring to be undertaken in accordance with requirements of the CEMP.	No additional weed species introduced to the site as a result of construction activities.	Monitoring detects additional weed species or infestations which are not being managed.	Alternative methods to weed control to be investigated and applied as required.
Fencing and access control	Monitoring to be undertaken in accordance with requirements of the CEMP.	All retained mature trees are protected and there is no evidence of damage as a result of the Project.	Repair or upgrade to fencing and signage to be adopted.	Fencing design and/or maintenance would be improved.
Erosion and sediment control	Monitoring to be undertaken in accordance with requirements of the CEMP.	Temporary erosion and sediment controls to be installed prior to commencement of construction and remain in place for the duration of construction.	Monitoring identifies absence or failure of erosion and sediment controls.	Breaches to be included in annual compliance report to the Regulator.
Swift Parrot considerations	Implementation to be supervised by a Project Ecologist or suitably qualified environmental consultant, with regular reporting to the Regulator during construction.	Impacts to Swift Parrot minimised during construction and operation.	Impacts to Swift Parrot detected.	Breaches to be included in annual compliance report to the Regulator.



9. Serious and irreversible impacts

Under the BC Act, a determination of whether an impact is serious and irreversible must be made in accordance with the principles prescribed in the BC Regulation. The principles have been designed to capture those impacts which are likely to contribute significantly to the risk of extinction of a threatened species or ecological community in NSW.

These include impacts that:

1. Will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline, or
2. 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, or
3. Impact on the habitat of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution, or
4. Impact on a species or ecological community that is unlikely to respond to measures to improve habitat and vegetation integrity and is therefore irreplaceable.

One species (Swift Parrot) was identified as having an assumed presence within the Subject land (Important Habitat Mapping) and is at risk of an SAI (Section 5.3.1, Table 28)

Table 28: Entities subject to additional impact assessment provisions for SAI

Species	Applicable SAI Principles	Total area at risk of SAI (ha)
Swift Parrot (<i>Lathamus discolor</i>)	Principle 1, clause 6.7(2)(a) of the BC Regulation 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.	0.71 ¹ (Important Habitat Mapping, assumed presence)

¹ Although the total area of Important Habitat Mapping for the species which would be impacted is 0.71 ha, only 0.42 ha of this is mapped as native vegetation.

The following SAI assessment was developed in accordance with the *Guidance to Assist a Decision-Maker to Determine a Serious and Irreversible Impact* (DPIE, 2019) and the TBDC.

9.1 Additional impact assessment provisions for TECs at risk of an SAI

The *Central Hunter Ironbark–Spotted Gum–Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions* TEC recorded within the Subject land is not considered at risk of SAI. Therefore, no further assessment has been undertaken on this TEC.



9.2 Additional impact assessment provisions for threatened species at risk of an SAI

Swift Parrot has been identified as being at risk of SAI (Section 5.3.1). The species has a total of 0.71 ha of habitat (Important Habitat Mapping) within the Subject land (Figure 4). It is noted that of this 0.71 ha, only 0.42 ha is mapped as native vegetation, and 0.01 ha is mapped as waterbodies (Figure 1). Despite large areas of the mapping being ground-truthed as non-native vegetation, the below SAI assessment has been undertaken considering the total extent of the Important Habitat Mapping within the Subject land.

This species has been further assessed in Table 29 and Table 30 against the principles of SAI in accordance with Section 9.1.2 of the BAM 2020.



Table 29: SAI Assessment – Evidence of rapid decline – Swift Parrot

Principle	Criteria	SAI assessment
Principle 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.	i. Decline in population of the species in NSW in the past 10 years or three generations (whichever is longer), or	The Swift Parrot is listed as Critically Endangered under the EPBC Act and Endangered under the BC Act. Population estimates have reduced from ~2,100 individuals in the early 2000s to fewer than 500 birds today, which represents a decline of over 75% in two decades and approximately two-thirds in the past decade. Research conducted by ANU confirms that the current population is likely between 300 and 500 individuals, and extinction is predicted by 2031 without intervention. This decline exceeds the threshold for a SAI under BAM, as it represents a severe reduction in population size over three generations (Swift Parrot generation length is approximately 5 years) (Olah, Stojanovic, Webb, Waples, & Heinsohn, 2020).
	ii. Decline in population of the species in NSW in the past 10 years or three generations (whichever is longer) as indicated by: an index of abundance appropriate to the species; decline in geographic distribution and/or habitat quality; exploitation; effect of introduced species, hybridisation, pathogens, pollutants, competitors or parasites	Long-term monitoring and genetic studies confirm a continuing downward trend, with fewer than 500 individuals remaining and predictions of fewer than 50 by 2031 (Olah, Stojanovic, Webb, Waples, & Heinsohn, 2020). In NSW, 70% of box-ironbark forest habitat has been cleared, and cumulative loss of important wintering habitat continues, with 717 ha lost in Hunter–Central Coast in the past two decades and projections of up to 17.9% additional loss in the next 20 years. Breeding habitat in Tasmania has been degraded by logging, with over 50% of the breeding range affected and degradation occurring at rates 6.5 times higher than deforestation. Habitat fragmentation and edge effects reduce the availability of flowering eucalypts and hollow-bearing trees critical for foraging and nesting (Crates, Nathan, & Heinsohn, 2025). Habitat quality is further reduced by loss of mature eucalypts that provide nectar resources, and by edge effects and weed invasion in remnant patches. Important wintering sites in the Hunter and Central Coast have experienced ongoing clearing for agriculture and urban development, reducing connectivity and resource availability. Cumulative impacts of land clearing, forestry operations, and urban expansion continue to erode habitat quality and increase fragmentation.



Table 30: SAI Assessment – Impact assessment – Swift Parrot

Assessment criteria	Relevant assessment information	SAI Assessment
The impact on the species' population (Principles 1 and 3)	i. an estimate of the number of individuals (mature and immature) present in the subpopulation on the subject land (the site may intersect or encompass the subpopulation) and as a percentage of the total NSW population, and	It is not possible to determine how many individuals utilise the Subject land from available data. No individual Swift Parrots were incidentally observed within the Subject land. No targeted surveys were undertaken for the species, as the Subject land contains Important Habitat Mapping. The total NSW population (which is assumed to be the total population of the species) migrate to NSW during the warmer months to forage for food. This total population is assumed to be approximately ~500 individuals (Olah, Stojanovic, Webb, Waples, & Heinsohn, 2020). A total of four records of Swift Parrot have been recorded within 10 km of the Subject area within the last 10 years. No records of Swift Parrot have been recorded within the Subject land within the past 10 years, however the total number of records within 5 km represents a total of 0.8% of the total population.
	ii. an estimate of the number of individuals (mature and immature) to be impacted by the proposal and as a percentage of the total NSW population, or	Given the species was not recorded and is only assumed present, it is not possible to determine the number of individuals (mature and immature) to be impacted by the amended Project and as a percentage of the total NSW population.
	iii. if the species' unit of measure is area, provide data on the number of individuals on the site, and the estimated number that will be impacted, along with the area of habitat to be impacted by the proposal	The species' unit of measure is area. The species was not incidentally recorded within the Subject land during surveys, however it is noted that no targeted surveys were undertaken for the species, as Important Habitat Mapping is mapped within the Subject land. Presence has been assumed in these areas. The total area of this species habitat to be directly impacted by the amended Project is 0.71 ha as defined by the Important Habitat Mapping, though it is noted that only 0.42 ha of this is mapped as native vegetation. Given that there are only four nearby records within 10 km of the Subject land within the past 10 years, and higher quality habitat in the surrounding landscape would be retained, it is unlikely that the Project would impact the local population for this species.
The impact on geographic range (Principles 1 and 3)	i. the area of the species' geographic range to be impacted by the proposal in hectares,	The Subject land comprises 0.71 ha of habitat mapped on the Important Habitat Map for the species, of which only 0.42 ha is native vegetation.



Assessment criteria	Relevant assessment information	SAIL Assessment
	and a percentage of the total AOO, or EOO within NSW	The extent of occurrence (EOO) across the species whole range (i.e. foraging habitat in NSW and breeding habitat in Tasmania) was estimated to be ~5,700,000 ha (Commonwealth TSSC, 2016). However, the total EOO within NSW has been calculated through the total extent of Important Habitat Mapping, which is approximately ~113,000 ha (NSW DCCEEW, 2025). The 0.71 ha of mapped habitat that would be impacted by the Project represents approximately 0.0006% of the total EOO of the species. The foraging area of occupancy (AOO) of the species is considered to be highly variable, with the total area ranging from 750 ha to 9,800 ha over a six year period (Commonwealth TSSC, 2016). The average of these (5,275 ha) has been used below to determine the total AOO to be impacted by the Project. The 0.71 ha of mapped habitat that would be impacted by the Project represents approximately 0.01% of the total AOO of the species.
	ii. the impact on the subpopulation as either: all individuals will be impacted (subpopulation eliminated); OR impact will affect some individuals and habitat; OR impact will affect some habitat, but no individuals of the species will be directly impacted	The Project would impact 0.71 ha of mapped habitat for the species within the Subject land, of which only 0.42 ha is mapped as native vegetation. This includes impact of marginal foraging habitat, but no individuals of the species is likely to be directly impacted. The species polygon extent represents the total extent of habitat mapped by the Important Habitat Map, which is based on assumed presence for the species. As such, the number of individuals cannot be quantified.
	iii. estimate (based on published and unpublished sources such as scientific publications, technical reports, databases or documented field observations) the habitat area required to support the remaining population, and habitat available within dispersal distance, and distance over which genetic exchange can occur (e.g. seed dispersal) and pollination distance for the species	The AOO in NSW is typically around 5,275 ha (Commonwealth TSSC, 2016), however this area shifts vastly across the EOO as individuals track sporadic flowering of specific foraging tree species. The species migrates annually between Tasmania and the mainland, which covers a minimum dispersal distance of 240 km across the Bass Strait, and up to 1,000 km from Tasmania to southern Queensland during periods of extreme drought. At a smaller scale, observational data show that Swift Parrots can travel tens of kilometres within a single day between roosting sites and multiple foraging locations. These movements often span across fragmented landscapes and entire districts. The species may travel these distances for a number of reasons, including unpredictability of flowering patterns of key foraging habitat, competition for nectar resources and fragmentation of



Assessment criteria	Relevant assessment information	SAll Assessment
		habitats, which requires birds to move between isolated patches of foraging habitat (Webb, et al., 2012). Many areas of higher quality habitat exist within this dispersal distance, including large areas of suitable and higher quality habitat directly adjacent to the Subject land. There are a large number of BioNet records for the species in higher quality vegetation that is present within the dispersal distance to the Subject land.
	iv. estimate changes in environmental factors including changes to fire regimes (frequency, severity); hydrology, pollutants; species interactions (increased competition and effects on pollinators or dispersal); fragmentation, increased edge effects, likelihood of disturbance; and disease, pathogens and parasites.	The Project is not likely to increase any of the above listed threats to the species because there are only four records of this species within 10 km of the Subject land within the past 10 years. The impact on the sub-population(s) cannot be quantified, as the species polygon has been calculated based on assumed presence (Important Habitat Mapping). If the species is present, individuals in the Subject land may be affected by changes to fire regimes, increased edge effects, disturbance from vegetation removal and maintenance within the updated indicative disturbance area. These impacts are considered to be very minor in nature and not likely to lead to a decrease of the species or populations such that it would lead to extinction of the species.
Likely SAll assessment outcome against relevant principles		Swift Parrot has been assumed present over 0.71 ha of the Subject land (of which, 0.42 ha has been identified as native vegetation). This species migrates to the mainland from Tasmania during colder months for foraging only. It relies heavily on mature eucalypt and corymbia species for foraging. The species has a low likelihood of occurring within the Subject land, and large areas of higher quality habitat are present within the dispersal distance to the Subject land.



10. Impact summary

10.1 Determine an offset requirement for impacts

10.1.1 Impacts on native vegetation and TECs (ecosystem credits)

The Project is expected to impact 0.48 ha of native vegetation (PCT 3315 Central Hunter Ironbark-Spotted Gum Forest) in moderate condition. Table 31 summarises the impacts and credit requirements associated with the proposed development in relation to native vegetation.

Table 31: Impacts that require an offset – ecosystem credits

PCT name	TEC	Impact area (ha)	Current VI score	Future VI score	Change in VI score	Biodiversity risk weighting	Ecosystem credits required
3315 Central Hunter Ironbark-Spotted Gum Forest	Central Hunter Ironbark Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions	0.48	37.2	0	-37.2	2	9

10.1.2 Impacts on threatened species and their habitat (species credits)

The Project is expected to result in a loss of 0.71 ha of Swift Parrot Important Habitat, 0.42 ha of which is mapped as native vegetation. Table 32 summarises the impacts and credit requirements associated with the Project in relation to threatened species.

Table 32: Impacts that require an offset – species credits

Common name	Scientific name	BC Act status	EPBC status	Loss of habitat (ha)	Biodiversity risk weighting	Species credits required
Swift Parrot	<i>Lathamus discolor</i>	Endangered	Critically Endangered	0.42 ¹	Very high (3)	12

¹ Although the total area of Important Habitat Mapping for the species which would be impacted is 0.71 ha, only 0.42 ha of this is mapped as native vegetation and therefore subject to offsetting.

10.2 Impacts that do not need further assessment

Areas of exotic vegetation were excluded from further assessment within the BDAR due to the lack of native flora species and suitable threatened species habitat occurring within this zone. The Subject land contains 4.07 ha of non-native vegetation and 0.01 ha of waterbodies that do not require assessment in accordance with Section 10.1 of the BAM 2020.



11. Biodiversity credit obligations

Table 33 and Table 34 summarises ecosystem and species credit classes and their matching credit profiles respectively. The BAM credit report is included in Appendix F.

Table 33: Ecosystem credit class and matching credit profile

PCT name	PCT vegetation class	PCT vegetation formation	Associated TEC	IBRA region	Vegetation zone	Hollow bearing trees present?	Credits
3315 Central Hunter Ironbark-Spotted Gum Forest	Coastal Valley Grassy Woodlands	Grassy Woodlands	Central Hunter Ironbark Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions (Endangered)	Sydney Basin	3315_Moderate	No	9

Table 34: Species credit class and matching credit profile

Scientific name	Common name	Kingdom	BC Act status	EPBC Act status	IBRA region	Vegetation zone	Area (ha)	Credits
Swift Parrot	<i>Lathamus discolor</i>	Fauna	E	CE	Sydney Basin	3315_Mode rate	0.42	12



12. References

- BoM. (2025). *Bureau of Meteorology*. Retrieved from <https://www.bom.gov.au/>
- Commonwealth TSSC. (2016). *Conservation Advice - Lathamus discolor (Swift Parrot)*. Commonwealth Threatened Species Scientific Committee.
- Crates, R., Nathan, R., & Heinsohn, R. (2025). Quantifying Past and Predicting Future Cumulative Loss of. *Austral Ecology*.
- Cth DCCEEW. (2025). Retrieved from Protected Matters Search Tool: <https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool>
- Cth DCCEEW. (2025b). *SEED*. Retrieved from <https://datasets.seed.nsw.gov.au/dataset/interim-biogeographic-regionalisation-for-australia-ibra-version-7-regions>
- DCCEEW, C. (2016). *Central Hunter Valley eucalypt forest and woodland: a nationally protected ecological community*.
- DPIE. (2019). *Guidance to assist a decision-maker to determine a serious and irreversible impact*.
- DPIE. (2020a). *Biodiversity Assessment Method 2020*. Department of Planning, Industry and Environment.
- DPIE. (2020b). *Biodiversity Assessment Method 2020 Operational Manual - Stage 1*. Department of Planning, Industry and Environment.
- DPIE. (2020b). *Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method*. Department of Planning, Industry and Environment.
- DPIE. (2025c). *eSPADE*. Retrieved from <https://espade.environment.nsw.gov.au/#>
- NSW DCCEEW. (2010). *National Recovery Plan for Prasophyllum petilum, Department of Environment and Climate Change and Water (NSW), Hurstville*.
- NSW DCCEEW. (2025). *NSW BAM Important Habitat Map - Swift Parrot*. NSW Department of Climate Change, Energy, the Environment and Water.
- NSW DCCEEW. (2025). *NSW BAM Important Habitat Map - Swift Parrot*. NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW).
- NSW DCCEEW. (2025a). *BioNet Atlas*. Retrieved from <https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet/about-bionet-atlas>
- NSW DCCEEW. (2025b). *BioNet Threatened Biodiversity Data Collection*. Retrieved from <https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet>
- NSW DCCEEW. (2025c). Retrieved from BioNet Vegetation Classification: <https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet/about-bionet-vegetation-classification>
- NSW DCCEEW. (2025d). *SEED*. Retrieved from <https://datasets.seed.nsw.gov.au/dataset/nsw-mitchell-landscapes-version-3-1>
- NSW DCCEEW. (2025f). *SEED*. Retrieved from <https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map>
- NSW DCCEEW. (2025f). *SEED*. Retrieved from <https://datasets.seed.nsw.gov.au/dataset/nsw-landuse-2017>
- NSW Environment and Heritage. (2022). *Areas of Outstanding Biodiversity Value Register*. Retrieved from <https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/areas-of-outstanding-biodiversity-value/area-of-outstanding-biodiversity-value-register>
- NSW OEH. (2023). *Tarengo Leek Orchid - profile*. Retrieved from <https://threatenedspecies.bionet.nsw.gov.au/profile?id=10666>
- Olah, G., Stojanovic, D., Webb, M. H., Waples, R. S., & Heinsohn, R. (2020). Comparison of three techniques for genetic estimation of effective population size in a critically endangered parrot. *Animal Conservation*, 491-498.
- Saunders, D., Tzaros, C., Webb, M., & Thurstan, S. (2010). *Background Document - Swift Parrot Recovery*. Department of Environment, Climate Change and Water.
- TSSC. (2010). *Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the NSW North Coast and Sydney Basin Bioregions - endangered ecological community listing*. NSW Threatened Species Scientific Committee.



Webb, M. H., Wotherspoon, S., Stojanovic, D., Heinson, R., Cunningham, R., & Terauds, A. (2012). Movement patterns and habitat use of the endangered Swift Parrot (*Lathamus discolor*). *Biological Conservation*, 80-91.



13. Figures

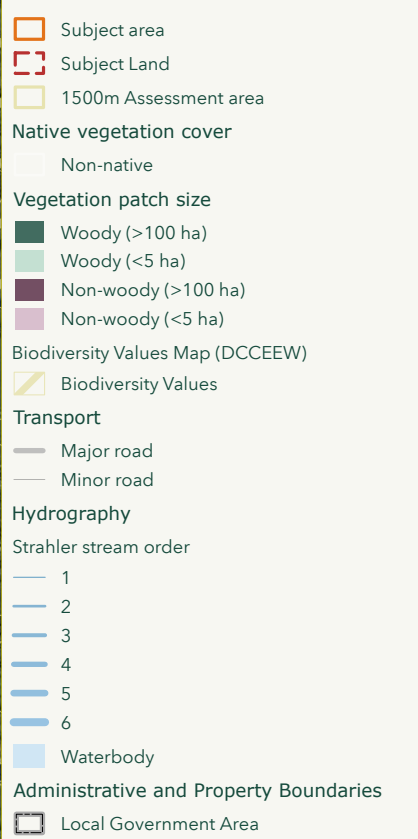


Figure 2

Location map

AECOM Rothbury BESS BDAR

Niche PM: Thea Kane
Niche Proj. #: 9187
Client: AECOM Australia

Drawn by: Penelope Geering File: C:\OneDriveSync\FolderNiche\GIS - APRX - APRX\9100\9100a9187_AECOMRothburyBESS_NSW\Proja9187_AECOMRothburyBESS_BDAR.aprx Last updated: 4/02/2026 1:58 PM



- Study Area
- Operational Footprint
- Subject Land
- BAM plot locations
- Validated vegetation
 - 0 Non-native (Niche, 2025)
 - 3315 Central Hunter Ironbark-Spotted Gum Forest, Moderate (Niche, 2025)
 - 4023 Coastal Valleys Riparian Forest, Low (Niche, 2025)
 - 9997 Waterbodies, Non-native (Niche, 2025)
- BC Act TEC
 - Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions
 - Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions
- Transport
 - Major road
 - Minor road
- Hydrography
 - Strahler stream order
 - 1
 - 5
 - 6
 - Waterbody
- Administrative and Property Boundaries
 - Lot



Figure 3
Native Vegetation and TECs
AECOM Rothbury BESS BDAR

Niche PM: Thea Kane
Niche Proj. #: 9187
Client: AECOM Australia



BAM plot locations: / Operational Footprint: / Subject Land: / Study Area: / Project boundaries: / IBRA Subregions: / Road: / Rail: / Waterbody: / NPWS Reserve: / State Forest: / Lot: / Local Government Area: / Hillshade: Sources: Esri, Vantor, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatasysteisen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, and the GIS user community/ Validated vegetation: | Watercourses, Waterbodies, Road and Rail alignments, Protected areas of NSW © Spatial Services 2021. | Niche uses GDA2020 as standard for all project-related data. In order to ensure that data from numerous sources and coordinate systems is aligned, on-the-fly transformation to GDA2020 MGA Zone 56 is used in the map above. For ease of reference, the grid tick marks and labels shown around the border of the map are presented in GDA2020 MGA Zone 56. | Print Date: 4/02/2026

Drawn by: MikeFairlie File: C:\OneDriveSync\Folder\Niche\GIS - APRX - APRX\A9100\A9187_AECOMRothburyBESS_NSW\Pro\A9187_AECOMRothburyBESS_BDAR.aprx Last updated: 7/01/2026 3:57 PM



- Subject area
- Subject Land
- Swift Parrot Important Habitat
- Transport
 - Major road
 - Minor road
- Hydrography
 - Strahler stream order
 - 1
 - 5
 - 6
 - Waterbody



Figure 4
Important Habitat Mapping - Swift Parrot
AECOM Rothbury BESS BDAR

Niche PM: Thea Kane
Niche Proj. #: 9187
Client: AECOM Australia



Drawn by: Penelope Geering File: C:\OneDriveSync\Folder\Niche\GIS - APRX - APRX\A9100\A9187_AECOMRothburyBESS_NSW\Proja9187_AECOMRothburyBESS_BDAR.aprx Last updated: 4/02/2026 1:58 PM



Figure 5
Impact footprint
AECOM Rothbury BESS BDAR

Niche PM: Thea Kane
Niche Proj. #: 9187
Client: AECOM Australia



This figure is an aerial photograph of a wetland or marsh area, overlaid with a coordinate grid. A large yellow circle highlights a central region of interest. Within this circle, there is a small orange-outlined polygon and two purple dots. The map is overlaid with a coordinate grid. The x-axis (top) ranges from 334,000 to 352,000. The y-axis (left) ranges from 6372,000 to 6386,000.





Appendix A

BDAR requirements compliance



Table 35: Assessment of compliance with BDAR minimum information requirements

BDAR section	BAM ref.	BAM requirement	Section reference(s) in the BDAR
Introduction	Chapters 2 and 3	Information	
		Introduction to the biodiversity assessment including:	-
		☐ brief description of the proposal	[1.1]
		☐ identification of subject land boundary, including: ☐ operational footprint ☐ construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure	[1.2, Figure 1, Figure 3]
		☐ general description of the subject land	[1.2]
		☐ sources of information used in the assessment, including reports and spatial data	[1.5]
		☐ identification of assessment method applied (i.e. linear or site-based)	[1.2]
		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 5]
		Data	
		N/A	-
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	[3.2]



BDAR section	BAM ref.	BAM requirement	Section reference(s) in the BDAR
		☐ per cent native vegetation cover in the assessment area (as described in BAM Subsection 3.2(4.))	[3.3]
		☐ IBRA bioregions and subregions (as described in BAM Subsection 3.1.3(2.))	[3.2]
		☐ rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3(3-4.) and Appendix E)	[3.2]
		☐ wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(4.))	[3.2]
		☐ connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5-6.))	[3.2]
		☐ areas of geological significance and soil hazard features (as described in BAM Subsections 3.1.3(7.) and 3.1.3(10.))	[3.2]
		☐ areas of outstanding biodiversity value occurring on the subject land and assessment area (as described in BAM Subsection 3.1.3(8-9.))	[3.2]
		Maps and tables	
		☐ Site Map ☐ 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 ☐ areas of outstanding biodiversity value within the subject land	[Figure 1]
		☐ 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	[Figure 2]



BDAR section	BAM ref.	BAM requirement	Section reference(s) in the BDAR
		☐ areas of outstanding biodiversity value within the assessment area	
		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 ☐ rivers, streams and estuaries ☐ wetlands and important wetlands ☐ connectivity of different areas of habitat ☐ areas of geological significance and soil hazard features	[Figure 1]
		Data	
		☐ All report maps as separate jpeg files	-
		Individual digital shape files of:	-
		☐ subject land boundary	-
		☐ assessment area (i.e. buffer area) boundary	-
		☐ cadastral boundary of subject land	-
		☐ areas of native vegetation cover	-
		☐ areas of habitat connectivity	-
Native vegetation, TECs and vegetation integrity	Chapter 4	Information	
		☐ Patch size (in accordance with BAM Subsection 4.3.2)	[4.5]
		☐ Identification of the dominant PCT on the subject land and extent (ha) with justification of method used (existing information or plot-based survey data)	[4.5]



BDAR section	BAM ref.	BAM requirement	Section reference(s) in the BDAR
		☐ Identification of any TEC associated with the PCT (BAM Subsection 4.2.2)	[4.5]
		☐ Estimate of percent cleared value of dominant PCT (BAM Subsection 4.2.1 (5.))	[Table 10]
		☐ Identification of any TEC on site that is not associated with the dominant PCT (Note: This TEC is required to be assessed and offset.)	N/A
		☐ Equivalence with mapping units of previous vegetation maps reviewed as part of the assessment (i.e. equivalent mapping units)	[4.1.2]
		☐ Vegetation integrity of the PCT(s) on the subject land as individual vegetation zones	[4.6.2]
		☐ Justification for how this was determined (i.e. qualitatively by observing values for the condition attributes set out in Table 2 of the BAM or quantitatively by collecting field data for the condition attributes at a plot in accordance with BAM Subsection 4.3.4)	[4.6.1]
		☐ Use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsections 4.3.3 (5.))	Table 10
		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
		Maps and tables	
		☐ Map of native vegetation extent for the subject land (as described in BAM Section 3.1)	[Figure 3]



BDAR section	BAM ref.	BAM requirement	Section reference(s) in the BDAR
		☐ Map of PCT/vegetation zones within the subject land (as described in BAM Section 4.2 (1.))	[Figure 3]
		☐ Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCT boundaries	[Figure 3]
		☐ Map of TEC distribution on the subject land	[Figure 3]
		☐ Patch size of native vegetation (as described in BAM Subsection 4.3.2)	[Figure 3]
		Table of current vegetation integrity scores for vegetation zone within the site including:	
		☐ composition condition score	Table 15
		☐ structure condition score	Table 15
		☐ function condition score	Table 15
		☐ Report from BAM-C (Small area module) including vegetation integrity scores (BAM Section 4.4)	Appendix C
		Data	
		☐ All report maps as separate jpeg files	-
		☐ Plot field data (MS Excel format)	
		☐ Digital shape files for all maps and spatial data	-
		☐ Field data sheets (if relevant) for determining vegetation integrity (BAM Subsection 4.3.4)	[Appendix C]
Habitat Suitability for threatened species	Chapter 5 and Section 9.1	Information	
		☐ Describe the review of existing information and any field survey undertaken to assess habitat constraints and microhabitats for threatened species within the subject land	[2.2, 2.3.3, 5.4]



BDAR section	BAM ref.	BAM requirement	Section reference(s) in the BDAR
		☐ Determination of the suite of threatened species likely to occur on or use the proposed site according to Steps 1 and 2 in BAM Section 5.2 including species to be assessed for ecosystem credits and the list of species to be assessed for species credits	[5.3.1, 5.3.2]
		☐ List of ecosystem credit species derived from the TBDC (as described in BAM Subsections 5.2.1 and 5.2.2) with justification for the exclusion of any ecosystem credit species based on habitat constraints (as described in BAM Subsection 5.2.2)	[5.1]
		☐ Identification of candidate species credit species that are at risk of an SAI and therefore, must be further assessed (BAM Section 9.1)	[9.2]
		Note: Candidate species credit species that are not at risk of an SAI and not incidentally recorded on the subject land do not require further assessment. For candidate species credit species that are at risk of an SAI, a description of the species, any habitat constraints or microhabitats associated with the species on the subject land and information used to create the species polygon/s in accordance with Steps 3 to 5 of BAM Section 5.2 including:	
		☐ justification for determining that a candidate species credit species at risk of an SAI is unlikely to have suitable habitat on the subject land or specific vegetation zone (based on a field assessment of the subject land and published literature or an expert report prepared in accordance with Box 3 of the BAM)	[Table 28]
		☐ determination of the presence of remaining candidate species credit species at risk of an SAI (by assuming presence, conducting a threatened species survey or an expert report).	N/A
		Note: If the subject land is mapped on an important habitat map for a species, or for a component of its habitat, the subject land is considered to have suitable habitat for the species to be present.	
		☐ species polygons identifying the location and area of suitable habitat for each candidate threatened species at risk of an SAI that is recorded on the subject land and is measured by area, OR	[Figure 4]
		☐ species polygons identifying the area of suitable habitat and targeted surveys identifying the count and location of individuals on the subject land for each candidate threatened flora species at risk of an SAI that is recorded on the subject land and is measured by count	N/A



BDAR section	BAM ref.	BAM requirement	Section reference(s) in the BDAR
		☐ species polygons for each threatened species identified on the subject land that is not at risk of an SAll (i.e. incidentally observed during site visit)	N/A
		☐ Determination of habitat condition within species polygon/s for each threatened species (measured by area) at risk of an SAll or incidentally observed during the site visit (Step 6 of BAM Section 5.2)	[Table 28]
		☐ For flora species credit species at risk of an SAll or incidentally observed during site visit, provide a count, or an estimation, of the number of individual plants present on the subject land (as described in BAM Subsection 5.2.5 (4.))	N/A
		Maps and tables	
		☐ Table showing ecosystem credit species in accordance with BAM Subsection 5.1.1, and:	[Table 16]
		☐ identifying any ecosystem credit species removed from the list of species on the basis of further assessment in accordance with BAM Subsections 5.2.2 and 5.2.3	N/A
		☐ identifying the sensitivity to gain class of each species (BAM Section 5.4)	[Table 16]
		☐ Table detailing species credit species within the subject land at risk of an SAll (BAM Section 9.1) or incidentally observed during the site visit including any associated habitat feature/components and its abundance (flora)/extent of habitat (flora and fauna) and biodiversity risk weighting (BAM Sections 5.2 -5.4)	[Table 17]
		☐ Map of species credit species records within the subject land and species polygons for flora and fauna species at risk of an SAll or incidentally observed during the site visit (as described in BAM Subsection 5.2.5 (1 -7.))	[Figure 4, Figure 6]
		Data	
		☐ Digital shape files of species polygons	-
		☐ species polygon map in jpeg format	-
		☐ expert reports and any supporting data used to support conclusions of the expert report	-



BDAR section	BAM ref.	BAM requirement	Section reference(s) in the BDAR
Prescribed impacts	Chapter 6	☐ field data sheets (if relevant) for threatened species surveys	-
		Information	
		☐ any prescribed impacts from the small area proposal must be set out in the BDAR consistent with Appendix K	[6]
		Maps and tables	
		☐ if relevant, maps showing location of any prescribed impact features (i.e. karst, caves, crevices, cliffs, rocks, human-made structures, etc.)	N/A
		Data	
		☐ if relevant, digital shape files of prescribed impact feature locations	-
Avoid and minimise impacts	Chapter 7	☐ prescribed impact features map in jpeg format	-
		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	[7.1 & 7.2]
		☐ alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location	[7.1 & 7.2]
		☐ alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site	[7.1 & 7.2]
		☐ Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design (as described in BAM Sections 7.1 and 7.2)	[7.1 & 7.2]



BDAR section	BAM ref.	BAM requirement	Section reference(s) in the BDAR
		☐ Identification of any other site constraints that the proponent has considered in determining the location and design of the proposal (as described in BAM Subsection 7.2.1(3.))	[7.1 & 7.2]
		Maps and tables	
		☐ Table of measures to be implemented to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility	[Table 26 & Table 27]
		☐ Map of final proposal footprint, including construction and operation	[Figure 5]
		☐ Maps demonstrating indirect impact zones where applicable	[N/A]
		Data	
		Digital shape files of:	-
		☐ final proposal footprint	-
		☐ direct and indirect impact zones	-
		☐ Maps in jpeg format	-
Assessment of impacts	Chapter 8, Sections 8.1 and 8.2	Information	
		Determine the impacts on native vegetation and threatened species habitat, including:	-
		☐ description of direct impacts of clearing of native vegetation, threatened ecological communities and threatened species habitat (as described in BAM Section 8.1)	[8.1]
		☐ description of the nature, extent, frequency, duration and timing of indirect impacts of the proposal (as described in BAM Subsection 8.2)	[8.2]
		☐ any prescribed impacts from the small area proposal must be set out in the BDAR consistent with Appendix K	[8.3]
		Maps and tables	



BDAR section	BAM ref.	BAM requirement	Section reference(s) in the BDAR
		☐ Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts	[Table 23]
		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 8.4.1 and 8.4.2, including (as described in BAM Subsection 8.4.1(2.)):	-
		☐ techniques, timing, frequency and responsibility	[8.5]
		☐ identify measures for which there is risk of failure	
		☐ evaluate the risk and consequence of any residual impacts	
		☐ document any adaptive management strategy proposed	[8.5]
		Identification of measures for mitigating impacts related to:	-
		☐ displacement of resident fauna (as described in BAM Subsection 8.4.1)	[8.5]
		☐ 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)	[8.5]
		Maps and tables	
		☐ 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 26 & Table 27]
		Data	



BDAR section	BAM ref.	BAM requirement	Section reference(s) in the BDAR
		N/A	-
Thresholds for assessing and offsetting the impacts of the proposal	Chapter 9	Information	
		☐ Information from the TBDC and/or other sources to report on the current status of threatened species, threatened populations at risk of an SAIL and TEC/s for the proposal, and	-
		☐ report on impacts of the proposal on TEC/s in accordance with BAM Subsection 9.2.1	[8.1.1]
		☐ report on impacts of the proposal on threatened species and/or threatened populations at risk of an SAIL in accordance with BAM Section 9.1	[9.1 & 9.2]
		☐ Identification of impacts requiring offset in accordance with BAM Section 9.2	[10.1.1& 10.1.2]
		☐ 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	[10.2]
		Maps and tables	
		☐ Map showing the extent of TECs at risk of an SAIL within the subject land	N/A
		☐ Map showing location of threatened species at risk of an SAIL within the subject land	[Figure 4 & Figure 6]
		Map showing location of:	-
		☐ impacts requiring offset	[Figure 5]
		☐ impacts not requiring offset	[Figure 5]
		☐ areas not requiring assessment	[Figure 5]
		Data	
		Digital shape files of:	-



BDAR section	BAM ref.	BAM requirement	Section reference(s) in the BDAR
		☐ extent of TECs at risk of an SAll within the subject land	-
		☐ location of threatened species at risk of an SAll within the subject land	-
		☐ boundary of impacts requiring offset	-
		☐ boundary of impacts not requiring offset	-
		☐ boundary of areas not requiring assessment	-
		☐ Maps in jpeg format	-
Applying the no net loss standard	Chapter 10	Information	
		☐ Description of the impact on PCTs/TECs	[8.1.1]
		☐ Description of the impact on threatened species at risk of an SAll or incidentally observed via site visit	[9.2]
		☐ Number of ecosystem credits required for impacts on biodiversity values according to BAM Subsection 9	[10.1.1]
		☐ Number of species credits required for impacts on biodiversity values according to BAM Subsection 10.1.3, including any species credit species that has been incidentally observed on the subject land	[10.1.2]
		Note: Species credits for any species at risk of an SAll are calculated in the event that the decision-maker forms the opinion that the proposed impact is unlikely to be serious and irreversible and therefore can be offset.	
		☐ Identification of credit class for ecosystem credits and species credits according to BAM Section 10.2 (this can be generated from BAM-C)	Appendix F
		Maps and tables	
		☐ Table showing biodiversity risk weightings	[Table 31 & Table 32]
		☐ Table of BC Act listing status for PCTs and threatened species requiring offset	[Table 31]



BDAR section	BAM ref.	BAM requirement	Section reference(s) in the BDAR
		☐ Table of PCTs requiring offset and the number of ecosystem credits required (Subsection 10.2.1)	[Table 31]
		☐ Table of species at risk of an SAI or incidentally observed on site assessed for species credits and the number of credits required	[Table 32]
		☐ BAM-C credit report	Appendix F
		Data	
		N/A	-



Appendix B

Biodiversity Values Map and Threshold tool report

Biodiversity Values Map and Threshold Report

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

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

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

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

Biodiversity Values Map and Threshold Report

Date of Report Generation		08/01/2026 3:42 PM
1. Biodiversity Values (BV) Map - Results Summary (Biodiversity Conservation Regulation Section 7.3)		
1.1	Does the development Footprint intersect with BV mapping?	yes
1.2	Was <u>ALL</u> BV Mapping within the development footprint added in the last 90 days? (dark purple mapping only, no light purple mapping present)	no
1.3	Date of expiry of dark purple 90 day mapping	N/A
1.4	Is the Biodiversity Values Map threshold exceeded?	yes
2. Area Clearing Threshold - Results Summary (Biodiversity Conservation Regulation Section 7.2)		
2.1	Size of the development or clearing footprint	45,623.0 sqm
2.2	Native Vegetation Area Clearing Estimate (NVACE) (within development/clearing footprint)	3,043.2 sqm
2.3	Method for determining Minimum Lot Size	LEP
2.4	Minimum Lot Size (10,000sqm = 1ha)	400,000 sqm
2.5	Area Clearing Threshold (10,000sqm = 1ha)	10,000 sqm
2.6	Does the estimate exceed the Area Clearing Threshold? (NVACE results are an estimate and can be reviewed using the Guidance)	no
REPORT RESULT: Is the Biodiversity Offset Scheme (BOS) Threshold exceeded for the proposed development footprint area?		yes
(Your local council will determine if a BDAR is required)		

What do I do with this report?

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

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

Review Options:

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

Acknowledgement

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

Signature: _____

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

Date: _____

08/01/2026 03:42 PM

Biodiversity Values Map and Threshold Tool

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

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

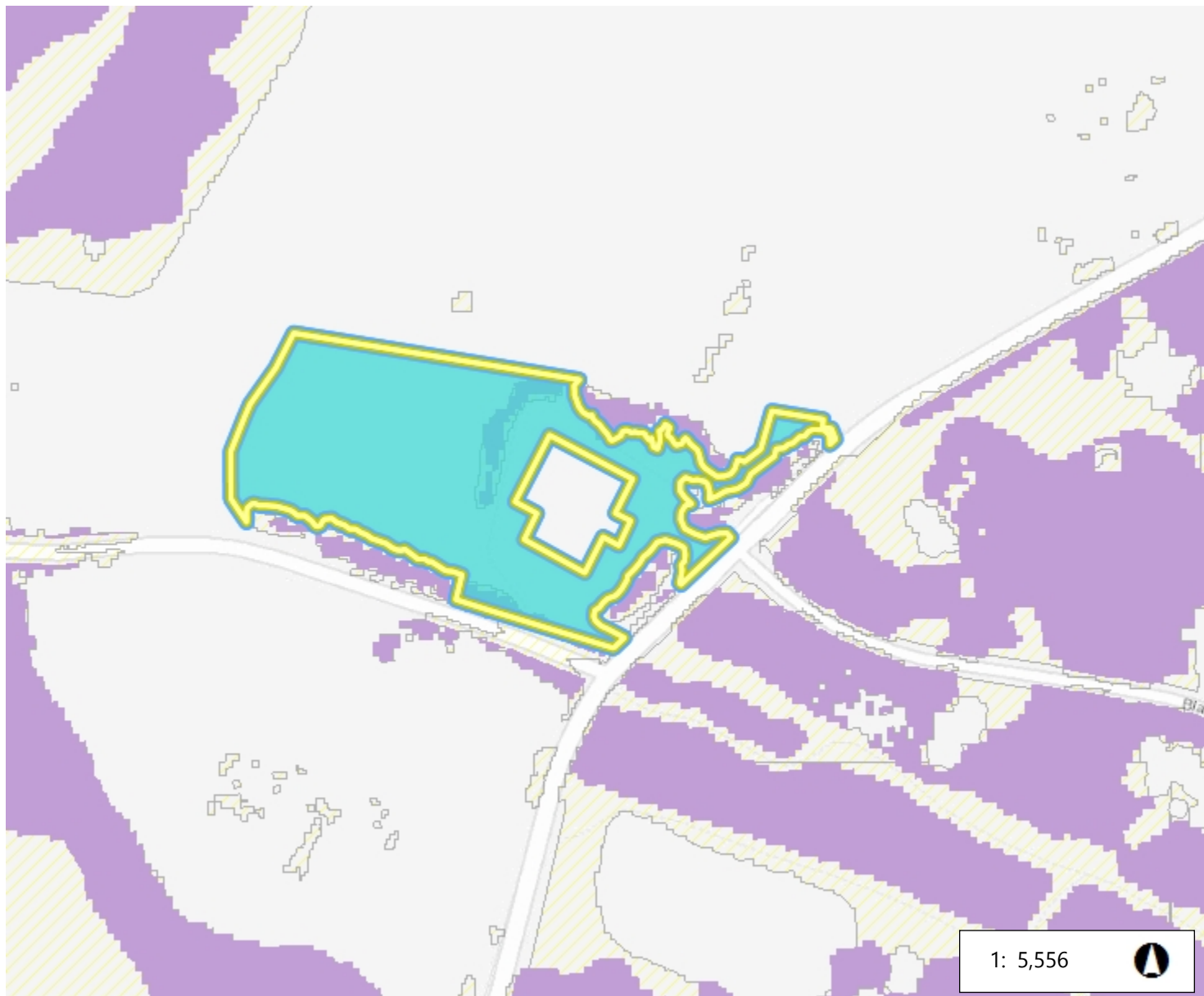
This report may be used as evidence for development applications submitted to councils. You may also use this report when considering native vegetation clearing under the State Environmental Planning Policy (Biodiversity and Conservation) 2021 - Chapter 2 vegetation in non-rural areas.

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

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

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

Biodiversity Values Map



282.3 0 141.13 282.3 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

Legend

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

08/01/2026 03:42 PM

1: 5,556 

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

Imagery © Airbus DS/Spot Image 2016
© NSW Department of Customer Service, Basemaps 2019
© NSW Department of Planning and Environment

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

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



Appendix C

BAM Plot Data

Species name (scientific)	Species name (common)	9187_ML_05		9187_ML_06	
		Cover (%)	Abundance	Cover (%)	Abundance
<i>Acacia falcata</i>		0.1	1	0.2	1
<i>Ageratum houstonianum</i>				0.5	100
<i>Angophora floribunda</i>	Rough-barked Apple	1	1		
<i>Atriplex prostrata</i>				3	1000
<i>Bidens pilosa</i>	Cobbler's Pegs			0.2	20
<i>Breynia oblongifolia</i>	Coffee Bush	0.2	2		
<i>Bromus catharticus</i>	Praire Grass	0.2	20		
<i>Callistemon linearis</i>	Narrow-leaved Bottlebrush	0.3	1	0.5	1
<i>Callistemon salignus</i>	Willow Bottlebrush	5	10	10	12
<i>Cardiospermum grandiflorum</i>	Balloon Vine	0.1	1		
<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>	River Oak			10	10
<i>Casuarina glauca</i>	Swamp Oak	10	50	10	10
<i>Cirsium vulgare</i>	Spear Thistle	0.1	1		
<i>Corymbia maculata</i>	Spotted Gum	5	1	4	1
<i>Cupaniopsis spp</i>	Tuckeroo	0.2	2	0.2	5
<i>Cynodon dactylon</i>	Common Couch	0.3	50	2	50
<i>Dolichandra unguis-cati</i>	Cat's Claw Creeper	0.2	5		
<i>Doryanthes excelsa</i>	Gynea Lily			0.5	1
<i>Ehrharta erecta</i>	Panic Veldtgrass	30	2000	30	2000
<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	2	2	3	2
<i>Eucalyptus fibrosa</i>	Red Ironbark	1	2	2	1
<i>Eucalyptus microcorys</i>	Tallowwood	15	2	5	1
<i>Galenia pubescens</i>	Galenia			0.2	50
<i>Galium aparine</i>	Goosegrass	0.4	100		
<i>Lantana camara</i>	Lantana	6	5	4	5
<i>Lepidium africanum</i>	Common Peppercreess			0.2	50
<i>Ligustrum lucidum</i>	Large-leaved Privet	0.2	2		
<i>Lolium perenne</i>	Perennial Ryegrass	0.1	10		
<i>Melia azedarach</i>	White Cedar	1	5		
<i>Morus alba</i>	White Mulberry	0.2	1		
<i>Nothoscordum gracile</i>		1	100		
<i>Olea europaea</i> subsp. <i>cuspidata</i>	African Olive	0.2	3	0.2	2

Species name (scientific)	Species name (common)	9187_ML_05		9187_ML_06	
		Cover (%)	Abundance	Cover (%)	Abundance
<i>Pennisetum clandestinum</i>		1	50		
<i>Phytolacca octandra</i>	Inkweed	0.2	1	0.1	1
<i>Schinus molle</i>		0.2	1		
<i>Sida rhombifolia</i>	Paddy's Lucerne	0.2	10	10	200
<i>Solanum americanum</i>	Glossy Nightshade	0.2	2	1	50
<i>Solanum lycopersicum</i>		0.1	1		
<i>Solanum mauritianum</i>	Wild Tobacco Bush	0.2	1	0.2	1
<i>Solanum seaforthianum</i>	Climbing Nightshade			0.4	50
<i>Sonchus asper</i>	Prickly Sowthistle	0.1	1	0.4	100
<i>Tradescantia fluminensis</i>	Wandering Jew	1	1000	0.2	50



Appendix D

MNES PMS Report



Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 08-Jan-2026

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	7
Listed Threatened Species:	50
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	21
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	1
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	12
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Hunter estuary wetlands	30 - 40km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities	[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps. Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.	

Community Name	Threatened Category	Presence Text	Buffer Status
Central Hunter Valley eucalypt forest and woodland	Critically Endangered	Community likely to occur within area	In feature area
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community may occur within area	In feature area
Hunter Valley Weeping Myall (Acacia pendula) Woodland	Critically Endangered	Community may occur within area	In feature area
Kurri sand swamp woodland of the Sydney Basin bioregion	Endangered	Community likely to occur within area	In feature area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community may occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species			[<u>Resource Information</u>]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat known to occur within area	In feature area
Erythroriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area	In buffer area only
FROG			
Heleioporus australiacus australiacus Giant Burrowing Frog, Eastern Owl Frog [92013]	Endangered	Species or species habitat known to occur within area	In feature area
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat known to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat may occur within area	In feature area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
Acacia bynoeana Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat known to occur within area	In feature area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area	In feature area
Eucalyptus glaucina Slaty Red Gum [5670]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eucalyptus parramattensis subsp. decadens Earp's Gum, Earp's Dirty Gum [56148]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Eucalyptus pumila Pokolbin Mallee [16510]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area	In feature area
Grevillea parviflora subsp. parviflora Small-flower Grevillea [64910]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Ozothamnus tesselatus [56203]	Vulnerable	Species or species habitat may occur within area	In feature area
Persoonia pauciflora North Rothbury Persoonia [67214]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pomaderris brunnea Rufous Pomaderris, Brown Pomaderris [16845]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area	In feature area
Prostanthera cineolifera [11233]	Vulnerable	Species or species habitat may occur within area	In feature area
Pterostylis gibbosa Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood [4562]	Endangered	Species or species habitat may occur within area	In feature area
Rhizanthella slateri Eastern Underground Orchid [11768]	Endangered	Species or species habitat may occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rutidosis heterogama Heath Wrinklewort [13132]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat may occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
Thismia clavarioides [90425]	Endangered	Species or species habitat may occur within area	In feature area
REPTILE			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat known to occur within area	In feature area
Delma vescolineata Hunter Valley Delma [92599]	Endangered	Species or species habitat likely to occur within area	In feature area
Listed Migratory Species [Resource Information]			
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Listed Marine Species	[Resource Information]		
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In feature area
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area overfly marine area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Tiraki	Nature Reserve	NSW	In buffer area only

Regional Forest Agreements	[Resource Information]
Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.	

RFA Name	State	Buffer Status
Lower North East	New South Wales	In feature area

EPBC Act Referrals					[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status	
Controlled action					
Construction of Train Support Facility and Associated Infrastructure	2009/5243	Controlled Action	Post-Approval	In buffer area only	
F3 to Branxton Link Electricity Adjustments	2007/3814	Controlled Action	Post-Approval	In buffer area only	
Hanwood Stage 5 Residential Development	2010/5443	Controlled Action	Completed	In buffer area only	
New dual carriageway from F3 Fwy to Branxton Link	2007/3431	Controlled Action	Post-Approval	In buffer area only	
Residential development	2011/5898	Controlled Action	Post-Approval	In feature area	
Residential Development - Hanwood Stage 5	2006/2705	Controlled Action	Completed	In buffer area only	
Subdivision of portion of Lot 46	2006/2944	Controlled Action	Post-Approval	In buffer area only	
The Huntlee New Town	2007/3557	Controlled Action	Post-Approval	In feature area	
Upgrade of approx 32km of Main Northern Railway, including construction of 3rd track	2009/4897	Controlled Action	Post-Approval	In buffer area only	
Not controlled action					
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area	
Not controlled action (particular manner)					
Aerial baiting for wild dog control	2006/2717	Not Controlled Action (Particular	Post-Approval	In feature area	

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
Manner)				

Referral decision				
Residential Subdivision of Lot 47 DP 722211	2008/4472	Referral Decision	Completed	In buffer area only

Bioregional Assessments			[Resource Information]
SubRegion	BioRegion	Website	Buffer Status
Hunter	Northern Sydney Basin	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

[© Commonwealth of Australia](#)

Department of Climate Change, Energy, the Environment and Water

GPO Box 3090

Canberra ACT 2601 Australia

+61 2 6274 1111



Appendix E

EPBC Act Significant Impact Assessment

E.1 Swift Parrot (*Lathamus discolor*)

The Swift Parrot is listed as Critically Endangered under the EPBC Act.

E.1.1 Description

The Swift Parrot is a medium-sized species with a slim body, approximately 25 centimetres (cm) long. The body is mostly bright green with a dark blue-purple crown and red around the face, and a red chin and throat edged with yellow. Bright red patches are also found under the wings. From a distance, it's 12 cm long, dark red thin tail and angular pointed wings give it a characteristic streamlined silhouette, distinguishing it from the similar lorikeets. It has a flute-like chirruping or metallic "kik-kik-kik" call (Commonwealth TSSC, 2016).

The Swift Parrot is migratory, breeding in Tasmania during spring and summer, and the entire population then migrates north to mainland Australia during autumn and winter. The breeding range of the Swift Parrot is largely restricted to the Tasmanian east and south-east coast, closely mirroring the distribution of blue gum (*Eucalyptus globulus*) (Commonwealth TSSC, 2016). On mainland Australia, it is distributed in the south-east, from Victoria and the eastern regions of South Australia to south-east QLD. In NSW, the species is found on the coast and south-west slopes, and the indicative habitat distribution mapping for the species includes the Subject land. Overall, the species is considered unlikely to rely heavily on habitat located within the Subject land.

On the mainland, the Swift Parrot is primarily found in Victoria and NSW, although it disperses widely throughout its indicative distribution. It is dependent on the flowering resources in a variety of habitats, primarily the flowers and psyllid lerps of eucalyptus. In Victoria, they are predominantly found on the inland slopes of the Great Dividing Range in the dry forests and woodlands of the box-ironbark region. Whereas in NSW, they occur in woodlands and forests of the coastal and western slopes and key foraging species include *Eucalyptus sideroxylon*, *E. microcarpa*, *E. albens* and *E. melliodora*. Larger, mature specimens of these species are more likely to be used for foraging than younger plants (Webb, et al., 2012). During periods of drought in Victoria, the species may occur in coastal drought refuge habitats in NSW which tend to support a larger number of birds (Commonwealth TSSC, 2016).

E.1.2 Relevant Commonwealth guidelines and policy statements

A summary of the relevant Commonwealth guidelines and policy statements available for this species are as follows:

- Approved conservation advice for *Lathamus discolor* Swift Parrot (Commonwealth Threatened Species Scientific Committee [TSSC], 2016f), in effect under the EPBC Act from 05 May 2016
- National Recovery Plan for the Swift Parrot (*Lathamus discolor*) (Saunders, Tzaros, Webb, & Thurstan, 2010), in effect under the EPBC Act from 10 Feb 2012.

E.1.3 Specific impacts

The Subject land contains areas mapped as important habitat (Important Habitat Mapping) for the Swift Parrot (NSW DCCEEW, 2025), which is present on the Subject land within native and non-native vegetation. The species has a moderate likelihood of occurrence as a nomadic forager within the region, due to the presence of records in proximity to the Subject land (four records within 5 km of the Subject area within the past 10 years).

The Project would result in the loss of approximately 0.71 ha of mapped habitat, of which only 0.42 ha is native vegetation. This 0.42 ha provides low to moderate foraging habitat. The estimated EOO for the species across its entire range (i.e. foraging habitat in NSW and breeding habitat in Tasmania) was estimated to be ~5,700,000 ha (TSSC, 2016). However, the total EOO within NSW has been calculated through the total extent of Important Habitat Mapping, which is approximately ~113,000 ha (NSW DCCEEW, 2025). The 0.71 ha of mapped habitat

that would be impacted by the Project represents approximately 0.0006% of the total foraging EOO of the species.

E.1.4 Significant impact criteria

An action is likely to have a significant impact on a Critically Endangered species if there is a chance or possibility it will result in the below criteria (Table 36).

Table 36: Significant impact assessment – Swift Parrot

Significant impact criteria	Response
Lead to a long-term decrease in the size of a population	The Subject land contains a small area (0.71 ha) of low-quality and fragmented foraging habitat for the species. A small number of records (four) within the past 10 years, and many more historic records, are present within 5 km of the Subject area, the vast majority of which are located in nearby large areas of higher-quality in-tact native vegetation (Figure 6). The species is highly mobile, and therefore, unlikely to be at risk during vegetation clearing. It breeds in Tasmania so the amended Project would not impact on any breeding events for the species. However, despite the presence of 0.71 ha mapped habitat within the Subject land, it is considered that the removal of a small area of mapped native vegetation and potential foraging habitat (0.42 ha) is unlikely to lead to a long-term decrease in the population size of the Swift Parrot.
Reduce the area of occupancy of the species	The foraging AOO of the species is considered to be highly variable, with the total area ranging from 750 ha to 9,800 ha over a six year period (Commonwealth TSSC, 2016). The average of these (5,275 ha) has been used below to determine the total AOO to be impacted by the Project. The 0.71 ha of mapped habitat that would be impacted by the Project represents approximately 0.01% of the total AOO of the species. It is therefore not considered likely that the Project would reduce the area of occupancy for the Swift Parrot beyond a marginal amount (0.01%).
Fragment an existing population into two or more populations	The Swift Parrot occurs as a single, migratory population (Saunders, Tzaros, Webb, & Thurstan, 2010) and the Subject land does not impact breeding habitat. The species is highly mobile, and the Subject land would not act as a barrier to movement. It is therefore considered unlikely that the Project would fragment the existing population into two or more populations.
Adversely affect habitat critical to the survival of the species	The National Recovery Plan for the Swift Parrot identifies habitat critical to the species' survival as areas of priority habitat for which the Swift Parrot has a level of site fidelity or possesses phenological characteristics likely to be of importance to the Swift Parrot or are otherwise identified by the recovery team. The Recovery Plan does not explicitly identify any sites of priority habitat or high site fidelity; however, it is noted that the Subject land contains areas mapped as Important Habitat for the species (NSW DCCEW, 2025). It is therefore possible that the Project would result in loss of critical habitat, however it is not likely that the removal of 0.71 ha of mapped habitat (of which 0.42 is native vegetation) within the Subject land would result in an adverse effect to the species survival.
Disrupt the breeding cycle of a population	The Project does not affect breeding habitat for this species and is a considerable distance from the species known breeding sites in Tasmania. It therefore considered unlikely the Project would disrupt the breeding cycle of a population of the Swift Parrot.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat	The Project would result in removal of a total of 0.71 ha of mapped habitat and 0.42 of potential foraging habitat. The species is not reliant on habitat within the Subject land for breeding, and their nomadic nature means that they move large distances across their

Significant impact criteria	Response
to the extent that the species is likely to decline	range in search of seasonal foraging resources. It is not likely that the species would rely heavily on the resources within the Subject land given the abundance of higher-quality suitable habitat in close proximity to the Project. It is not likely that the Project would impact on habitat to the extent that the species would be likely to decline as a result of its removal.
Result in invasive species that are harmful to a critically endangered species becoming established in the species habitat	The Swift Parrot relies on nectar from a few key species which predisposes the species to resource competition. Noisy Miners (<i>Manorina melanocephala</i>) and Honeybees (<i>Apis mellifera</i>) are listed as a Key Threatening Process and a Threatening Process for nectivorous birds (Saunders, Tzaros, Webb, & Thurstan, 2010). The Swift Parrot is also known to experience resource competition from Sugar Gliders (<i>Petaurus breviceps</i>) and European Starlings (<i>Sturnus vulgaris</i>) (Saunders, Tzaros, Webb, & Thurstan, 2010). These species are present throughout the locality and broader landscape. However, the Project would result in the removal of foraging habitat only, which is widespread in the region and across the species range. Given the availability of potential foraging habitat in the region, an increase in resource competition between the Swift Parrot, Noisy Miners and Honeybees and other competitive species as a result of the Project is considered unlikely.
Introduce disease that may cause the species to decline	Whilst there is a risk that construction machinery and workers may disperse soil and plant pathogens that can affect foraging species of the Swift Parrot, this risk would be mitigated through hygiene protocols implemented through the CEMP for the Project. The Swift Parrot may also be affected by Psittacine Beak and Feather Disease (PBFD), a deadly disease that naturally occurs in parrot populations. The disease is prevalent in parrots that are injured, rehabilitated and released back into the wild, which could interact with the Swift Parrot. The disease already exists in the wild and the Project would not result in the increased likelihood of diseased birds interacting with the Swift Parrot. It is therefore considered unlikely that the amended Project would introduce a disease that may cause the Swift Parrot to decline.
Interfere with the recovery of the species	Mitigation and avoidance measures would be refined and implemented where practicable to reduce the impact of the Project on suitable foraging resources. However, the Project would impact Important Habitat Mapping for the species. The 0.71 ha of mapped habitat and 0.42 of potential foraging habitat to be removed is not considered likely to potentially interfere with the recovery of the Swift Parrot.

E.1.5 Conclusion

In line with the above findings, the Project is not considered likely to potentially have a significant impact on the Swift Parrot. As such, no referral to the Minister for the Environment is required.



Appendix F

Credit reports

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00057025/BAAS24036/25/00057026	AECOM Rothbury BESS BDAR	09/04/2026
Assessor Name	Report Created	BAM Data version *
Thea Kane	11/05/2026	Current classification (live - default) (94)
Assessor Number	BAM Case Status	Date Finalised
BAAS24010	Finalised	11/05/2026
Assessment Revision	BOS entry trigger	Assessment Type
2	BOS Threshold: Biodiversity Values Map	Part 4 Developments (Small Area)

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

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

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

BAM Credit Summary Report

Central Hunter Ironbark-Spotted Gum Forest											
1	3315_Moderate	Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions	37.2	37.2	0.48	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	9
										Subtotal	9
										Total	9

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAIL	Species credits
Lathamus discolor / Swift Parrot (Fauna)									
3315_Moderate	37.2	37.2	0.42	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	12
								Subtotal	12



Contact us

info@niche-eh.com
niche-eh.com

NSW office

Sydney: Gadigal Country
02 9630 5658
Level 3, 31 Alfred Street
Sydney NSW 2000

QLD office

Brisbane: Turrbal and Jagera Country
07 2104 8594
Level 6, 200 Adelaide Street
Brisbane QLD 4000

VIC office

Melbourne: Wurundjeri Country
0488 224 036
Level 3, 162 Collins Street
Melbourne VIC 3000

Our expertise



Natural capital
and offsetting



Ecology



Heritage
management



Spatial Services