ECOLOGICAL ASSESSMENT

FOR PROPOSED TWENTY-FOUR-LOT SUBDIVISION AT 256 LENNOXTON RD, VACY NSW 2421

Prepared by:

Firebird ecoSultants Pty Ltd
ABN – 16 105 985 993

PO Box 354
Newcastle NSW 2300

Mob: 0414 465 990
Ph: 02 4910 3939
Fax: 02 4929 2727
Email: sarah@firebirdeco.com.au

Site Details:	256 Lennoxton Rd, Vacy NSW 2421
Prepared by:	***Sarah Jones*** ***Firebird ecoSultants Pty Ltd*** ABN – 16 105 985 993 PO Box 354, Newcastle NSW 2300 M: 0414 465 990 Email: sarah@firebirdeco.com.au T: 02 4910 3939 Fax: 02 4929 2727
Prepared for:	Perception Planning
Reference No.	Vacy – Perception Planning – May 2024
Document Status & Date:	20th May 2024 3rd July 2024

Terms & Abbreviations

Abbreviation	Meaning
API	Aerial Photograph Interpretation
BAM	Biodiversity Assessment Methodology
BC Act	*Biodiversity Conservation Act 2016*
DCP	Development Control Plan
APZ	Asset Protection Zone
DPIE	Department of Planning, Industry and Environment
DEE	Commonwealth Department of Environment and Energy
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
Ha	Hectare
KTP	Key Threatening Process
LHCCREMS	Lower Hunter and Central Coast Regional Environment Management Strategy
LEP	Local Environmental Plan
NPWS	National Parks and Wildlife Service
NP	National Park
PFC	Projected Foliage Cover
OEH	Office of Environment and Heritage
ROTAP	Rare or threatened Australian Plants
SEPP	State Environmental Planning Policy
TEC	Threatened Ecological Community
WONS	Weed of National Significance

CONTENTS

TABLES

FIGURES

1 INTRODUCTION

1.1 Background

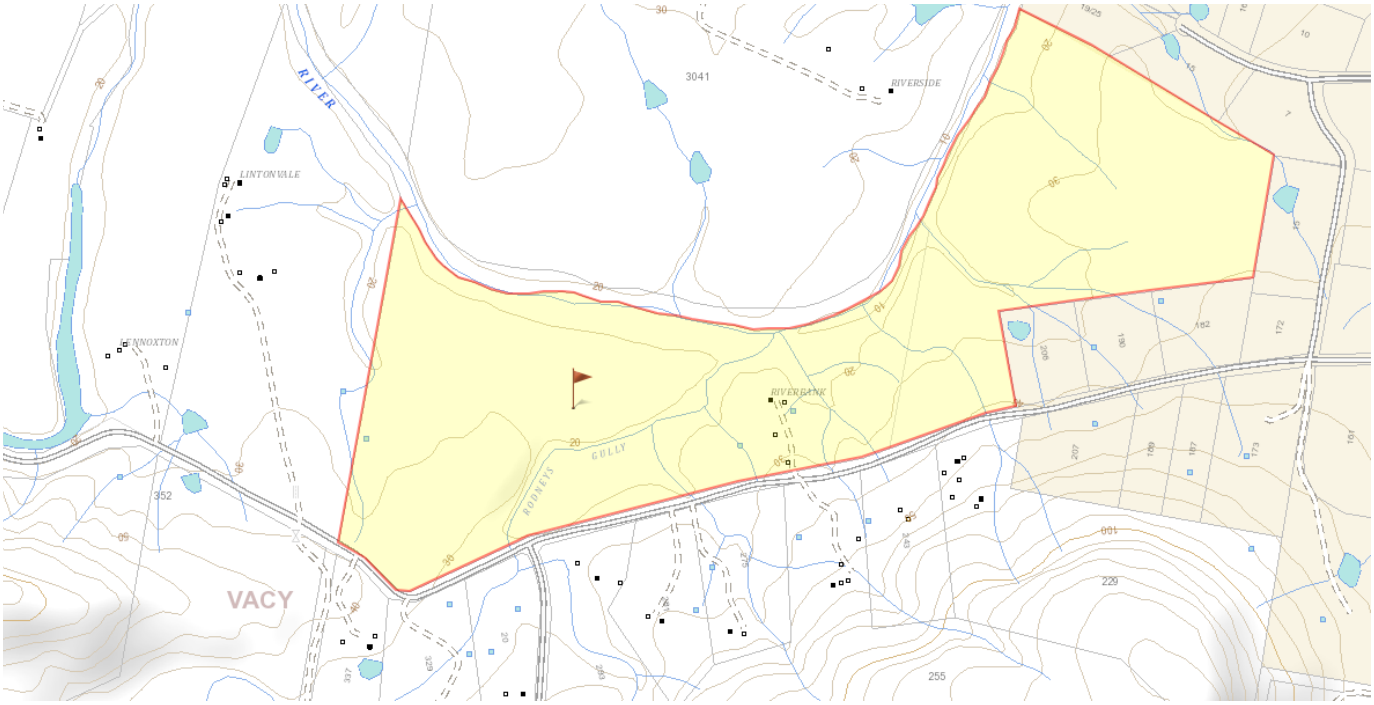
Firebird ecoSultants Pty Ltd has been engaged by Perception Planning to provide an ecological assessment for a proposed twenty-four-lot subdivision at 256 Lennoxton Rd, Vacy (Lot 8/DP739338) (Lot 94/DP788016). This assessment aims to recognise the relevant requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act), *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

A literature review and desktop research was combined with flora and fauna surveys, and a habitat assessment. Commonwealth, state and local government policies and guidelines formed the basis of project surveying and assessment methodology.

1.2 Site Particulars

Locality:	256 Lennoxton Rd, Vacy NSW 2421
LGA:	Dungog Shire
Lot / DP:	(Lot 8/DP739338) (Lot 94/DP788016)
Land size:	~358200m^2
Zoning:	R5 (Large Lot Residential) and C3 Environmental Management
Current Land Use:	Vacant Lots

Figure 1-1: Site Location



1.3 Description of the Proposal

The proposal is for the construction of a twenty-four-lot subdivision at 256 Lennoxton Rd, Vacy NSW 2421. The subdivision will result in proposed lots having an area of approximately ~358200m2.

See Appendix A for the site plans.

1.3 Purpose and Scope of Study

The scope of this ecological assessment report is to:

- Identify vascular flora species on the site;
- Identify and map existing vegetation communities;
- Identify fauna species for the site through desk-top analysis, assuming presence for some marginal species. Any sightings observed at the site were also noted.
- Identify existing habitat types on the site and assess the habitat potential for threatened species / populations, or Threatened ecological communities (TECs) known from the proximate area;
- Assess the status of identified or potentially occurring flora species, vegetation communities and fauna species under relevant legislation;
- Assess the potential impacts of the proposal on threatened species / populations or TECs, or their habitats;
- Identify the biodiversity values and constraints on the site; and
- Provide recommendations to ensure that the recorded biodiversity values on the site are adequately managed and/or protected.

Whilst survey work has been undertaken wholly within the bounds of the site, consideration has been afforded to areas off the site in order to appreciate the environmental context of the site.

The purpose of this report is to:

- Ensure planning, management and development decisions are based on sound scientific information and advice by documenting the presence of any biodiversity components or potential significant impacts that may exist on the site;
- Provide information to enable compliance with applicable assessment requirements contained within the EP&A Act, BC Act, EPBC Act and any other relevant state, regional and local environmental planning instruments; and
- Enable the provision and analysis of ecological data that is comparable with data for other sites within the region to ensure continuity and consistency for survey and results.

1.4 Qualifications and Licensing

Qualifications

Fieldwork for this project was undertaken by Sarah Jones. Report writing was undertaken by Sarah Jones. Qualifications are provided in Appendix B.

Licensing

Research was conducted under the following licences:

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

Certification

As the principal author, I, Sarah Jones make the following certification:

- The results presented in the report are, in the opinion of the principal author and certifier, a true and accurate account of the species recorded, or considered likely to occur within the site;
- Commonwealth, state and local government policies and guidelines formed the basis of project surveying methodology, or where the survey work has been undertaken with specified departures from industry standard guidelines, details of which are discussed and justified in Section 2;
- All research workers have complied with relevant laws and codes relating to the conduct of flora and fauna research, including the *Animal Research Act 1995, National Parks and Wildlife Act 1974* and the *Australian Code of Practice for the Care and Use of Animals for Scientific Purposes*.

Signature of Principal Author and Certifier:

Sarah Jones
B.Env.Sc., G.DIP.DBPA (Design for Bushfire Prone Areas)
Ecologist / Bushfire Planner

2 METHODOLOGY

This assessment included a desktop-based analysis of previous records of threatened species in the area, a review of any relevant literature and field-based surveys of the site and surrounding area. Where possible, survey methods have been designed in accordance with the relevant survey and assessment guidelines.

2.1 Desktop Research

2.1.1 Database Searches

The following database searches were undertaken, in order to compile a list of threatened flora and fauna species and Matters of National Environmental Significance (MNES), predicted to occur in the area:

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

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

2.1.2 Literature Review

Information sources reviewed included, but were not limited to:

- Aerial Photograph Interpretation (API);
- Relevant ecological survey guidelines, including:
  - LHCCREMS Flora and Fauna Survey Guidelines, Lower Hunter Central Coast Region 2002, Volume 1 & Volume 2 (Murray et al. 2002);
  - OEH *Threatened species assessment guidelines: The assessment of significance* (Department of Environment and Climate Change (DECC, 2007)
  - OEH *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (Department of Environment and Conservation (DEC) 2004) and *NSW Guide to Surveying Threatened Plants* (OEH 2016)
- Environmental / planning reports relevant to the site / area, including:
  - *Lake Macquarie Local Environmental Plan (LMLEP) 2014*
  - *Hunter Regional Plan 2036* (Department of Planning & Environment)
  - *Lake Macquarie Development Control Plan (DCP) 2014*
- Any relevant recovery plans.
- OEH Threatened Species, Populations and Ecological Communities website <http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/>; and
- Collective knowledge gained from previous ecological assessments in the local area.

2.2 Flora Survey and Vegetation Mapping

A flora survey was conducted on 10th August 2022. This included a survey using the Biodiversity Assessment Method, to record flora species and to determine the boundaries of any vegetation communities.

Opportunistic searches for threatened / significant flora species were undertaken on the site. A list of potentially occurring significant flora species from the locality (10 km radius) was compiled (see Section 2.1); these included threatened species listed under the BC Act, EPBC Act, Rare or Threatened Australian Plants (ROTAP) (Briggs and Leigh 1996), as well as any other species deemed to be of local importance. Targeted searches were then undertaken over the site, whereby the entire site was systematically traversed.

2.3 Fauna and Habitat Assessment

An assessment of the relative habitat values of the site was undertaken at the site on the 10th August 2022. The habitat assessment focused on the identification of habitat types and resources favoured by all major guilds of native flora and fauna, including threatened species known from the region. The assessment was based on specific habitat requirements in regards to home range, feeding, roosting, breeding, movement patterns and corridor requirements. Consideration was given to contributing factors including topography, soil, light and hydrology.

2.3.1 Targeted *Phascolarctos cinereus* (Koala) Survey

A targeted survey for *P. cinereus* (Koala) was undertaken on the 23rd of May 2024. Several koala feed trees, including *Eucalyptus tereticornis* (Forest Red Gum), were identified on site. Koala use trees were also identified on site, this being *Eucalyptus paniculata* (Grey Ironbark). Brief searches were undertaken at the base of all these trees within the site, for indirect evidence (scats and scratch marks) and in the tree canopy, for direct sightings. No koala evidence was found on site.

2.3.2 Diurnal Bird Watching Survey

A diurnal bird watching survey was conducted on 23rd of May 2024. Birds were identified through direct observation or recognition of calls and/or distinctive features such as nests, feathers and owl regurgitation pellets etc.

Common bird species were observed on site, such as the Australian Magpie and Noisy Miner.

2.3.3 Herpetofauna Surveys

No Herpetofauna were observed on site.

2.4 Survey Limitations

The field surveys were undertaken on 10th August 2022. In order to address any potential limitations which are inherent in ecological surveys due to seasonal and weather restrictions, the habitat assessment and the presence of local records for threatened species were used to assess whether threatened species were likely to be present. Furthermore, where necessary the precautionary principle of ‘assumed presence’ has been applied.

The survey methods undertaken are unlikely to detect all of the species present within the study area or have potential to occur within the study area due to seasonal and temporal conditions.

3 RESULTS

3.1 Desktop Research

3.1.1 Database Searches

A number of threatened species and TECs have been recorded on the Atlas of NSW Wildlife database and EPBC Act Protected Matters Search Tool, within a 10 km^2 area of the site. These are listed in Table 3-1. Note that marine species have been excluded. See Appendix C for the full EPBC Protected Matters report.

Table 3-1: Threatened Species and TECs Identified Within a 10 km Radius of the Site by a Search of the NSW Atlas of Wildlife and the EPBC Act Protected Matters Search Tool

Scientific Name	Common Name	TSC Act	EPBC Act
Threatened Flora			
Arthraxon hispidus	Hairy Joint grass	V	V
Caladenia tessellate	Thick-lipped Spider-orchid, Daddy Long-legs	E	V
Cynanchum elegans	White flowered Wax Plant	E	E
Cryptostylis hunteriana	Leafless Tongue-orchid	V	V
Dichanthium setosum	Bluegrass	V	V
Eucalyptus glaucina	Salty Red Gum	V	V
Euphrasia arguta	-	CE	CE
Persicaria elatior	Tall Knotweed	V	V
Pterostylis gibbosa	Illawarra Greenwood	E	E
Prasophyllum sp.	A Leek-orchid	CE	CE
Rhizanthella slateri	Eastern Australian Underground Orchid	V	E
Rhodamnia rubescens	Scrub Turpentine	CE	-
Rhodomyrtus psidioides	Native Guava	CE	-
Rutidosis heterogama	Heath wrinklewort	V	V
Syzygium paniculatum	Magenta Lilly Pilly	E	V
Tetratheca juncea	Black-eyed Susan	V	V
Thesium australe	Austral Toadflax	V	V
Threatened Birds			

Scientific Name	Common Name	TSC Act	EPBC Act
Anthochaera phrygia	Regent Honeyeater	CE	CE
Botaurus poiciloptilus	Australasian Bittern	E	E
Calidris acuminata	Sharp-tailed Sandpiper	V	V, M
Calidris ferruginea	Curlew Sandpiper	E	CE, M
Callocephalon fimbriatum	Gang-gang Cockatoo	V	E
Calyptorhynchus lathami lathami	South-eastern Glossy Black Cockatoo	V	V
Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover	V	V, M
Circus assimilis	Spotted Harrier	V	-
Climacteris picumnus victoriae	Brown Treecreeper	V	V
Daphoenositta chrysoptera	Varied Sittella	V	-
Erythrotriorchis radiatus	Red Goshawk	CE	V
Falco hypoleucos	Grey Falcon	E	V
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	V	V, M
Glossopsitta pusilla	Little Lorikeet	V	-
Grantiella picta	Painted Honeyeater	V	V
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	
Hirundapus caudacutus	White-throated Needletail	V	V, M
Lathamus discolor	Swift Parrot	E	E
Melanodryas cucullata cucullate	Hooded Robin (south-eastern form)	V	E
Neophema chrysostoma	Blue-winged Parrot	V	V
Ninox strenua	Powerful Owl	V	-
Ptilinopus magnificus	Wompoo Fruit-Dove	V	V
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V	-
Pycnoptilus floccosus	Pilotbird	-	V
Rostratula australis	Australian Painted Snipe	E	E
Stagonopleura guttata	Diamond Firetail	V	V
Tringa nebularia	Common Greenshank, Greenshank	E	E, M

Scientific Name	Common Name	TSC Act	EPBC Act
Tyto novaehollandiae	Masked Owl	V	
Threatened Mammals			
Chalinolobus dwyeri	Large-eared Pied Bat	V	V
Dasyurus maculatus subsp. *maculatus*	Spotted-tailed Quoll	V	E
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	-
Miniopterus australis	Little Bent-winged Bat	V	-
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-
Notamacropus parma	Parma Wallaby	V	V
Petauroides volans	Greater Glider	-	V
Petaurus norfolcensis	Squirrel Glider	V	V
Petaurus australis australis	Yellow-bellied Glider	V	V
Petrogale penicillata	Brush-tailed rock-wallaby	E	V
Phascolarctos cinereus	Koala	V	V
Phascogale tapoatafa	Brush-tailed Phascogale	V	-
Potorous tridactylus tridactylus	Long-nosed Potoroo (SE mainland)	VP	VP
Pseudomys novaehollandiae	New Holland Mouse	-	V
Pseudomys gracilicaudatus	Eastern Chestnut Mouse	V	-
Pteropus poliocephalus	Grey-headed Flying-fox	V	V
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-
Threatened Herpetofauna			
Aprasia parapulchella	Pink-tailed Worm Lizard, Pink tailed Legless Lizard	V	V
Delma impar	Striped Legless Lizard, Striped Snake Lizard	V	V
Litoria aurea	Green and Golden Bell Frog	E	V
Mixophyes balbus	Stuttering Frog	E	V
Ecological Communities			
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland		CE	CE

Scientific Name	Common Name	TSC Act	EPBC Act
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria		E	CE
Lowland Rainforest of Subtropical Australia		-	CE
Central Hunter Valley eucalypt forest and woodland		-	CE
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community		-	E
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland		E	-
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions		-	E

Status: V: Vulnerable**,** E: Endangered**,** CE: Critically Endangered, M: Migratory

3.2 Flora Survey and Vegetation Mapping

A flora assessment and site inspection was undertaken at the site on the 10th August 2022. The following describes the vegetation within the development footprint.

Figure 3-1 provides an aerial map of the site's vegetation and Appendix D provides a full list of recorded species. A description of the site's vegetation is described below.

The site contains open grassland areas, with native groundcovers such as *imperata cylindrica* (Blady grass), *microlena ttipoides* (Weeping Grass) and cynodon dactylon (Common Couch), though it is disturbed, containing predominantly exotic species including paspalum dilatatum (Paspalum), sporobolus africanus (Parramatta Grass) and verbena bonariensis (Purpletop vervain). Canopy species include *Eucalyptus siderophlia* (Grey Ironbark), Eucalyptus tereticornis (Forest Red Gum) and corymbia maculata (Spotted Gum).

Hollow bearing trees were recorded on site. Refer to Figure 3-2 for map of hollow bearing trees recorded on the site.

Refer to Site Photos 3.2.1 for vegetation within the site.

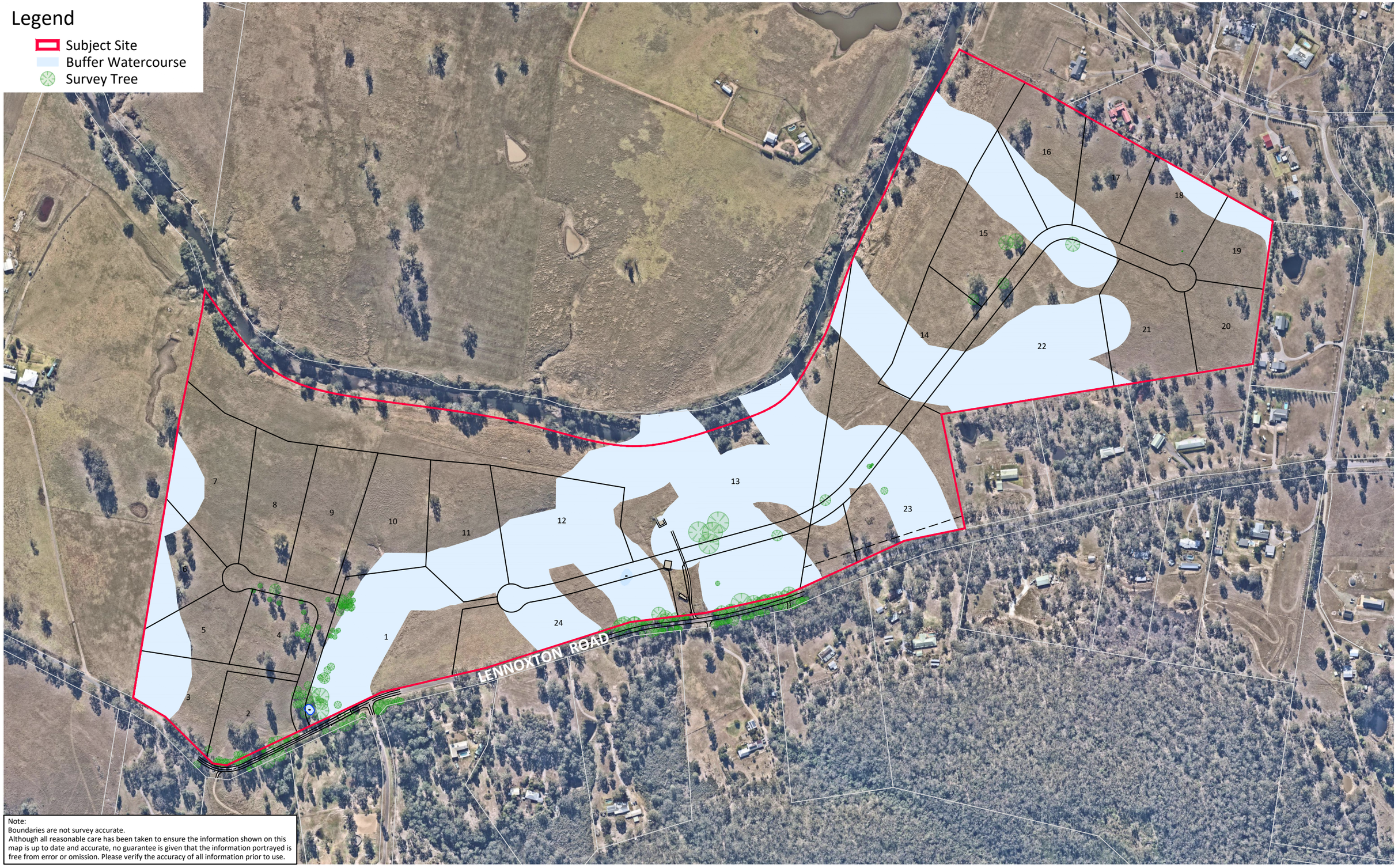


FIGURE 3-1:VEGETATION MAP

Ref No 3346

CLIENT	Client
SITE DETAILS	No.256 Lennoxton Road Vacy
DATE	14 May 2024

NORTH

0 50 150 250

SCALE 5000 @ A3

PIXELDRAFTING

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

firebird

Legend

- Subject Site
- GPS Track 23.5.24
- Hollow-bearing Tree
- Survey Tree

LENNOXTON ROAD

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

FIGURE 3-2: HOLLOW-BEARING TREE LOCATIONS

Ref No 3346

CLIENT	Client
SITE DETAILS	No.256 Lennoxton Road Vacy
DATE	30 May 2024

NORTH

0 50 150 250

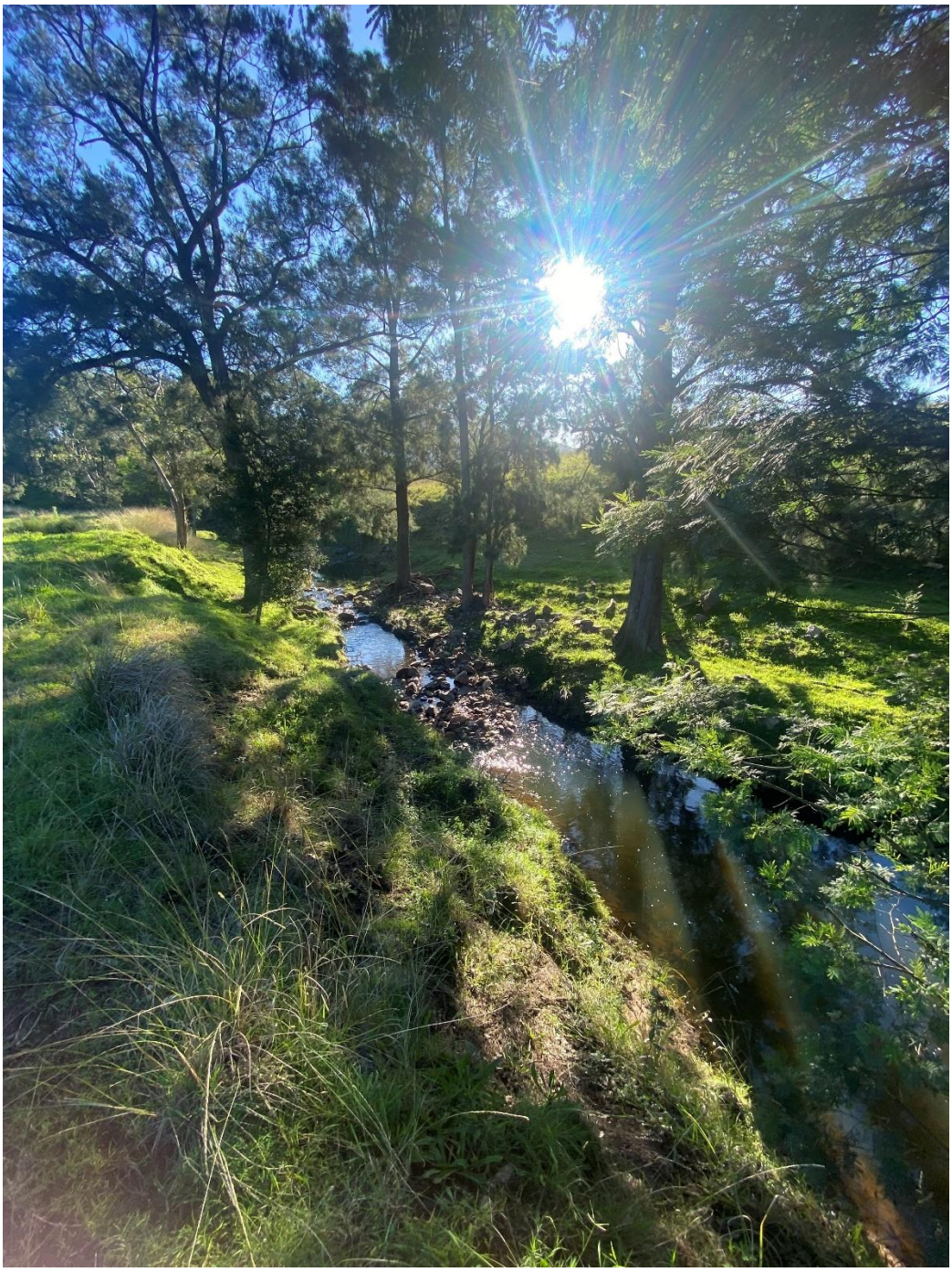
SCALE 5000 @ A3

PIXELDRAFTING

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

firebird

3.2.1 Site Photos



3.2.2 Vegetation Integrity

The vegetation within the development footprint is highly disturbed or altered, with a high occurrence of introduced species (open grassy areas).

3.2.3 Threatened Ecological Communities and Threatened Flora Species

No threatened Ecological community or flora species were observed on the site. It is considered that the current disturbed state of the site would prevent the establishment and persistence of threatened flora species predicted to occur in the area. Thus, it is concluded that they are unlikely to be present.

3.2.4 Threatened Fauna Species / Populations

The site may provide some marginal habitat for some of the threatened fauna species predicted to occur in the area. The principle of assumed presence has been applied to all potentially occurring threatened fauna species. See Section 4 of this report for further assessment of these potentially occurring species.

3.3 Habitat Assessment

The following provides a summary of the site's habitat values:

- The site's trees may provide minor foraging, nesting, resting and roosting habitat for a wide range of fauna, adapted to open areas.
- The vegetation within the development footprint lacks any significant understory, which would limit the site's value for species that require dense understory vegetation.
- The site contains limited natural ground timber.
- 14 hollow bearing trees were recorded within the site.
- The site lacks rocky surfaces, outcrops, caves or ledges.

3.4 Fauna Assessment

Birds

Bird sightings were confined to common species typical of the area, including *Cracticus tibicen* (Australian Magpie) and *Manorina melanocephala* (Noisy Miner).

Arboreal Mammals

Assumed presence is applied for all potentially occurring species. Hollow-bearing trees were found within the site but are being retained, therefore no targeted surveys have been undertaken.

Terrestrial Mammals

Assumed presence is applied for all potentially occurring species. No suitable habitat was found within the impact area therefore no targeted surveys have been undertaken.

Herpetofauna

No Herpetofauna was recorded on site, therefore no targeted surveys have been undertaken.

Megabats

Assumed presence is applied for all potentially occurring species. No cliffs are located on the site and the site is not within 2km of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within 2km of old mines or tunnels, therefore no targeted surveys have been undertaken.

Microbats

Assumed presence is applied for all potentially occurring species. No caves, tunnels, mines, culverts or other structure known or suspected to be used for breeding is within the site; therefore, no targeted surveys have been undertaken.

3.4.1 Threatened Fauna

Assumed presence is applied for all potentially occurring species.

3.4.2 Koala Survey and Habitat Assessment

A targeted survey for *Phascolartos cinereus* (Koala) was undertaken on 23rd May 2024, which found no direct or indirect (e.g. scats and scratch marks on trees) evidence of *P. cinereus* (Koala) on or near the site.

Potential feed trees were recorded on the site, such as *E. tereticornis* (Forest Red Gum). Brief searches were undertaken at the base of other preferred Koala trees including *Eucalyptus paniculata* (Grey Ironbark) within the site, for indirect evidence (scats and scratch marks) and in the tree canopy, for direct sightings. No evidence of koala use was found on the site.

3.5 Corridors and Connectivity

Several fauna species could use the surrounding forest and grassland for their movement. The movement of these species may be impacted to some extent by this proposal; however, the surrounding vegetation can be used as a movement corridor by these species. As such, it is considered unlikely that the proposal will substantially sever any existing wildlife corridor functionality.

4 THREATENED SPECIES / COMMUNITIES LIKELIHOOD OF OCCURRENCE ASSESSMENT

Several threatened species and TECs were identified in Section 3 of this report, as potentially occurring in the area. An assessment of the likelihood of occurrence for each of these threatened species and TECs was conducted; see Table 4-1. This assessment deals with the following heads of consideration in tabulated form:

'**Species / Community'** – Lists each threatened species / community known from the vicinity. The status' of each, under the BC Act and EPBC Act, are also provided.

'Habitat Description and Known Populations' – Provides a brief account of the preferred habitat attributes required for the existence / survival of each species / community and information on known populations in the area.

'Likelihood of Occurrence' – Assesses the likelihood of each species / community to occur in or within the immediate vicinity of the study area in terms of the aforementioned habitat description and taking into account local habitat preferences, results of current field investigations, data gained from various sources (such as OEH Atlas of NSW Wildlife, herbariums, etc.) and previously gained knowledge via fieldwork undertaken within other ecological assessments in the locality.

'Potential for Impact'– Assesses the likely level / significance of impacts to each species / community that would result from the proposed development, taking into account direct and indirect short and long-term impacts.

Note; Species highlighted in grey will be assessed under section 7.3 of the BC Act (i.e. five-part test) in section 5 of this report.

Table 4-1: Threatened Species Chance of Occurrence & Potential for Impact

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Threatened Flora			
Arthraxon hispidus Hairy-joint Grass	*Arthraxon hispidus* is moisture and shade-loving grass, found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps. With 2-6cm long blades, long white hairs edging the leaf and purple in colour stems, this grass is a perennial species that dies down in Winter. Occurs over a wide area in south-east Queensland, and on the northern tablelands and north coast of NSW, but is never common. Also found from Japan to central Eurasia (OEH, 2024a).	**Low** Was not recorded on site. It is unlikely to have been overlooked during the survey effort. Not near any known population.	**Low** Unlikely to occur on site.
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs (E, V)	The Thick Lip Spider Orchid is known from the Sydney area (old records), Wyong, Ulladulla and Braidwood in NSW. Populations in Kiama and Queanbeyan are presumed extinct. It was also recorded in the Huskisson area in the 1930s. The species occurs on the coast in Victoria from east of Melbourne to almost the NSW border. Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil.	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site.
Cryptostylis hunteriana Leafless Tongue-orchid (V, V)	The Leafless Tongue Orchid has been recorded from as far north as Gibraltar Range National Park south into Victoria around the coast as far as Orbost. It is known historically from a number of localities on the NSW south coast and has been observed in recent years at many sites between Batemans Bay and Nowra (although it is uncommon at all sites). Also recorded at Munmorah State Conservation Area, Nelson Bay, Wyee, Washpool National Park, Nowendoc State Forest, Ku-Ring-Gai Chase National Park and Ben Boyd National Park. Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by Scribbly Gum (Eucalyptus sclerophylla), Silvertop Ash (E. sieberi), Red Bloodwood (Corymbia gummifera) and Black Sheoak (Allocasuarina littoralis); appears to prefer open areas in the understorey of this community and is often found in association with the Large Tongue Orchid (C. subulata) and the Tartan Tongue Orchid (C. erecta).	**Low** Not recorded on or near the site**.**	**Low** Would not be impacted as it does not occur on or near the site**.**
Cynanchum elegans White flowered Wax Plant (E, E*)	The White-flowered Wax Plant usually occurs on the edge of dry rainforest vegetation. Other associated vegetation types include littoral rainforest; Coastal Tea-tree Leptospermum laevigatum – Coastal Banksia Banksia integrifolia subsp. integrifolia coastal scrub; Forest Red Gum Eucalyptus tereticornis aligned open forest and woodland; Spotted Gum Corymbia maculata aligned open forest and woodland; and Bracelet Honeymyrtle Melaleuca armillaris scrub to open scrub. Flowering occurs between August and May, with a peak in November. Flower abundance on individual plants varies from sparse to prolific. Restricted to eastern NSW where it is distributed from Brunswick Heads on the north coast to Gerroa in the Illawarra region. The species has been recorded as far west as Merriwa in the upper Hunter River valley (OEH, 2024a).	**Low** Was not recorded on the site. The site lacks suitable, steep gully habitat.	**Low** Would not be impacted as it is unlikely to occur on the site.

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Dichanthium setosum Bluegrass (V, V)	Bluegrass is often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture. (Often collected from disturbed open grassy woodlands on the northern tablelands, where the habitat has been variously grazed, nutrient-enriched and water-enriched). It is open to question whether the species tolerates or is promoted by a certain amount of disturbance, or whether this is indicative of the threatening processes behind its depleted habitat. Flowering time is mostly in summer. Bluegrass occurs on the New England Tablelands, North West Slopes and Plains and the Central Western Slopes of NSW, extending to northern Queensland. It occurs widely on private property, including in the Inverell, Guyra, Armidale and Glen Innes areas (2024a).	**Low** Was not recorded on site. Potential habitat occurs on site due to the site's disturbed nature.	**Low** Would not be impacted as it does not occur on or near the site.
Eucalyptus glaucina Slaty Red Gum (V, V*)	*Eucalyptus glaucina*, a medium-sized upto 30 m tall tree with smooth and mottled white to slaty grey bark. It grows in grassy woodland and dry eucalypt forest. Grows on deep, moderately fertile and well-watered soils. Found in separate districts along the eastern seaboard of NSW, from near Casino, to Taree, south to Broke, and recently discovered on the eastern side of the Blue Mountains National Park near Warragamba Dam (OEH, 2024a).	**Low-Moderate** Recorded close to the west boundary of the site in 2022 and 47 other recordings in the 10km radius search (OEH, 2024b).	**Low-Moderate** There are no species recorded on the site and the site does not present typical habitat for this species.
Euphrasia arguta (CE, CE)	An erect, semi-parasitic annual herb, growing between 20-45cm in height. It has 18-30pairs of leaves along each stem. Leaf surface can be rough or smoot and flowers are white to lilac in color, with yellow markings. Is known to occur from Nundle State Forest and adjacent private land, in NSW. It was sighted in 2008, where previously it had not been sighted since 1904. Occurs in eucalypt forest with mixed grass and shrub understory within Nundle State Forest.	**Low** Not recorded on or near the site**.**	**Low** Would not be impacted as it does not occur on or near the site.
Persicaria elatior Tall Knotweed (V, V)	An erect herb growing to 90cm tall, with stalked glandular hairs on most plant parts. It has pink flower segments, less than 4mm long. The leaves are up to 11cm long and a sheath encircles the stem at the base of each leaf. Records in South-eastern NSW, Moruya State Forest, the upper Avon River catchment north of Robertson, Bermagi and Picton Lakes. It is also known to occur from Raymond Terrace to the Grafton area. There are occuances in QLD also. It usually grows in damp places, besides streams or lakes.	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site.
Prasophyllum sp. Wybong A leek-orchid (-, CE*)	This species occurs within the Sydney Basin, New England Tablelands, Brigalow Belt South and NSW South Western Slopes IBRA Bioregions and the Border Rivers–Gwydir, Namoi, Hunter–Central Rivers and Central West Natural Resource Management Regions. The distribution of this species overlaps with the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland EPBC Act-listed threatened ecological Community Endemic to NSW, it is known from near Ilford, Premer, Muswellbrook, Wybong, Yeoval, Inverell, Tenterfield, Currabubula and the Pilliga area. Most populations are small, although the Wybong population contains by far the largest number of individuals. A perennial orchid, appearing as a single leaf over winter and spring. Known to occur in open eucalypt woodland and grassland (OEH, 2017a).	**Low** Not recorded on or near the site**.**	**Low** Would not be impacted as it does not occur on or near the site.

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Pterostylis gibbosa Illawarra Greenwood (E, E)	A ground dwelling orchid. Known in a small number of populations in the Hunter, Illawarra and Shoalhavan regions. Grow in open forest or woodland, on flat or gentle slopes with poor drainage.	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site**.**
Rhizanthella slateri Eastern Australian Underground Orchid (V, E)	An orchid with a whitish, fleshy, underground stem up to 15cm long. The flower heads mature underneath the soil surface or extend up to 2cm above the ground. Each flower has 30, tubular, purplish flowers. Occurs from South-east Queensland to south-east NSW. Currently known in NSW at fewer than 10 locations, including near Bulahdelah, the Watagan mountains, the Blue Mountains, Wiseman's ferry area, Agnes Banks and near Nowra. Habitat requirements are poorly understood, known to occur in sclerophyll forest however.	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site.
Rhodamnia rubescens Scrub Turpentine (CE)	Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Populations of R. rubescens typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000-1,600 mm. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site
Rhodomyrtus psidioides Native Guava (CE)	A small shrub or tree with brown scaly bark. Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines. Occurs from Broken Bay, NSW to Marybourough in QLD. Populations are typically in coastal and subcoastal areas of low elevation, however there are some occurrences up to 120km inland in the Hunter and Clarence River catchments and along the Boarder Ranges.	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site.
Rutidosis heterogama Heath Wrinklewort (V, V*)	*Rutidosis heterogama* grows in heath on sandy soils and moist areas in open forest, and has been recorded along disturbed roadsides. Recorded from near Cessnock to Kurri Kurri with an outlying occurence at Howes Valley. On the Central Coast it is located north from Wyong to Newcastle. There are north coast populations between Wooli and Evans Head in Yuraygir and Bundjalung National Parks. It also occurs on the New England Tablelands from Torrington and Ashford south to Wandsworth south-west of Glen Innes (OEH, 2024a).	**Moderate** Not recorded on the site. 57 records occur in a 10km radius of the site (OEH, 2024b).. The site could provide habitat as it is moderately disturbed and has open forest nearby.	**Low** A recent search on NSW Bionet Atlas has sown 57 records within a 10km radius, however, this species was not recorded on site and therefore is unlikely to be impacted.
Syzygium paniculatum Magenta Lilly Pilly (E,V*)	A small to medium sized rainforest tree that grows to 8 m tall. Bark is flaky and the leaves are shiny, dark-green above and paler underneath. Leaves can be up to 10 cm long. Plants produce white flower-clusters at the end of each branch, between November and February. This species is found only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. On the central coast it occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities (OEH, 2017a).	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site.
Tetratheca juncea Black-eyed Susan (V,V*)	Found in sandy, occasionally moist heath and in dry sclerophyll vegetation communities endemic to coastal NSW. Prefers ridges in areas from 0–200 m in altitude with an annual rainfall of 1000–1200 mm and restricted to open forest of Angophora costata, Eucalyptus haemastoma, E. globoidea, Corymbia gummifera, and E. capitellata. The preferred substrates are: sandy skeletal soil on sandstone, sandy-loam soils, low nutrients; and clayey soil from conglomerates, pH neutral. This species is difficult to see unless in flower which occurs between July and December.	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site.

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Thesium australe Austral Toadflax (V, V)	A small straggling herb to 40cm tall, with pale green to yellow leaves. It has minute, white flowers that emerge where the leaves meet the stem. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (*Themeda australis*). Found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. It is also found in Tasmania and Queensland and in eastern Asia.	**Low** Not recorded on or near the site.	**Low** Would not impact as it does not occur on or near the site.
Threatened Birds			
Anthochaera Phrygia Regent Honeyeater (CE, CE*)	The Regent Honeyeater is a flagship threatened woodland bird whose conservation will benefit a large suite of other threatened and declining woodland fauna. The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. Once recorded between Adelaide and the central coast of Queensland, its range has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests (OEH, 2024a).	**Low** Not recorded on or near the site. The site is predominately cleared of vegetation. This species is unlikely to occur within the site.	**Low** Would not impact as it does not occur on or near the site.
Botaurus poiciloptilus Australasian Bittern (E, E*)	*Botaurus poiciloptilus* favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (Typha spp.) and spikerushes (Eleocharis spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west (OEH, 2024a).	**Low** Not recorded on or near the site. The site does not provide the habitat the species requires.	**Low** Would not impact as it does not occur on or near the site.
Calidris ferruginea Curlew Sandpiper (E,CE*)	Occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. Breeds in Siberia and migrates to Australia for the non-breeding period, arriving in Australia between August and November, and departing between March and mid-April. It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts (OEH, 2024a).	**Low** Not recorded on or near the site. The site does not provide the habitat the species requires.	**Low** Would not impact as it does not occur on or near the site.

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Callocephalon fimbriatum Gang-gang Cockatoo (V, E)	The Gang-gang Cockatoo is distributed from southern Victoria through south- and central-eastern New South Wales. In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It occurs regularly in the Australian Capital Territory. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. May also occur in sub-alpine Snow Gum (Eucalyptus pauciflora) woodland and occasionally in temperate rainforests. Favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 7 cm in diameter or larger in eucalypts and 3 metres or more above the ground.	**Low** Not recorded on or near the site.	**Low** Would not impact as it does not occur on or near the site.
Calyptorhynchus lathami Glossy Black-Cockatoo (V)	The glossy black-cockatoo inhabits coastal woodlands and drier forest areas, open inland woodlands or timbered watercourses where casuarinas or sheoaks are common. In NSW, the current distribution of the glossy black-cockatoo covers areas from the coast to the tablelands, and as far west as the Riverina and Pilliga Scrub (OEH, 2017a).	**Low** Not recorded on or near the site. The site does not provide the habitat the species requires.	**Low** Would not impact as it does not occur on or near the site.
Charadrius leschenaultia Greater Sand-plover (V,V*)	The Greater Sand-plover breeds in central Asia from Armenia to Mongolia, moving further south for winter. In Australia the species is commonly recorded in parties of 10-20 on the west coast, with the far northwest being the stronghold of the population. The species is apparently rare on the east coast, usually found singly. In NSW, the species has been recorded between the northern rivers and the Illawarra, with most records coming from the Clarence and Richmond estuaries. Almost entirely restricted to coastal areas in NSW, occurring mainly on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks. Roosts during high tide on sandy beaches and rocky shores; begin foraging activity on wet ground at low tide, usually away from the edge of the water; individuals may forage and roost with other waders.	**Low** Not recorded on or near the site. The site does not provide the habitat the species requires.	**Low** Would not impact as it does not occur on or near the site.
Circus assimilis Spotted Harrier (V)	The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands (OEH, 2017a).	**Low** Not recorded on or near the site.	**Low** Would not impact as it does not occur on or near the site.
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) (V, V*)	The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (Eucalyptus camaldulensis) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains (OEH, 2024a).	**Low** Not recorded on or near the site. The site does not provide the habitat the species requires.	**Low** Would not impact as it does not occur on or near the site.

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Daphoenositta chrysoptera Varied Sittella (V)	Distribution in NSW is nearly continuous from the coast to the far west. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and acacia woodland. Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy (OEH, 2017a).	**Low** Was not recorded on site. 4 records occur within 10km of the site (OEH, 2024b). This species generally requires intact forest or woodland where it can feed on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy. This species is unlikely to occur within the site as the site does not offer preferred habitat.	**Low** The proposed development is unlikely to impact this species.
Erythrotriorchis radiates Red Goshawk (CE,V*)	The Red Goshawk is a large, reddish-brown hawk with long and broad wings, deeply 'fingered' wing-tips, and heavy yellow legs. Red Goshawks inhabit open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water, and are often found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, *Melaleuca* swamp forest and riparian *Eucalyptus* forest of coastal rivers This unique Australian endemic raptor is distributed sparsely through northern and eastern Australia, from the western Kimberley Division of northern Western Australia to north-eastern Queensland and south to far north-eastern NSW, and with scattered records in central Australia. The species is very rare in NSW, extending south to about 30°S, with most records north of this, in the Clarence River Catchment, and a few around the lower Richmond and Tweed Rivers. Formerly, it was at least occasionally reported as far south as Port Stephens (OEH, 2024a).	**Low** Not recorded on or near the site. The site does not provide the habitat the species requires.	**Low** Would not impact as it does not occur on or near the site.
Falco hypoleucos Grey Falcon (E)	*Falco hypoleucos* is usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey. The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. There are possibly less than 5000 individuals left. Population trends are unclear, though it is believed to be extinct in areas with more than 500mm rainfall in NSW (OEH, 2024a).	**Low** Not recorded on or near the site. The site does not provide the habitat the species requires.	**Low** Would not impact as it does not occur on or near the site.
Glossopsitta pusilla Little Lorikeet (V)	Found in dry, open *Eucalyptus* forests and woodlands. Feeds on abundant flowering *Eucalyptus* sp., but will also take nectar from *Melaleuca* sp and fruit from *Mistletoe* sp. On the eastern slopes and coastal areas favoured food sources are *Corymbia maculata* (Spotted Gum), *E. fibrosa* (Broad-leaved Ironbark), *E. robusta* (Swamp Mahogany) and *E. pilularis* (Blackbutt). Requires hollow-bearing trees for nesting (OEH, 2017a). One record from 2016 occurs approximately 2km to the site's west (OEH 2017b).	**Low** Was not recorded on the site. 1 record occurs within 10km of the site (OEH, 2024b). The site does not provide the habitat features this species requires and is therefore unlikely to utilise the site.	**Low** The proposed development is unlikely to impact this species.

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Grantiella picta Painted Honeyeater (V, V*)	Painted Honeyeater inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus *Amyema*. The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution (OEH, 2024a).	**Low** Not recorded on or near the site.	**Low** Would not impact as it does not occur on or near the site.
Haliaeetus leucogaster White-bellied Sea-Eagle (V)	The White-bellied Sea-eagle is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest). Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'.	**Low** Was not recorded on site. 1 record occurs within 10km of the site (OEH 2024b). Large areas of open water are not present on or nearby the site, which is core habitat, therefore this species is unlikely to occur.	**Low** The proposed development is unlikely to impact this species.
Hirundapus caudacutus White-throated Needletail (V*)	Although they occur over most types of habitat, they are recorded most often above wooded areas, including open forest and rainforest, and may also fly below the canopy between trees or in clearings (Higgins 1999). When flying above farmland, they are more often recorded above partly cleared pasture, plantations or remnant vegetation at the edge of paddocks (Emison & Porter 1978; Friend 1982; Tarburton 1993). In coastal areas, they have been observed flying over sandy beaches or mudflats (Cooper 1971; Crompton 1936; Davis 1965), and often around coastal cliffs and other areas with prominent updraughts, such as ridges and sand-dunes (Cooper 1971; Dawson et al. 1991; Loyn 1980; Mitchell et al. 1996; Schulz & Kristensen 1994). The White-throated Needletail is widespread in eastern and south-eastern Australia (Barrett et al. 2003; Blakers et al. 1984; Higgins 1999). In eastern Australia, the species is recorded in all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Dividing Range and occasionally onto the adjacent inland plains. Further south on the mainland, it is widespread in Victoria, though more so on and south of the Great Dividing Range, and there are few records in western Victoria. The species occurs in adjacent areas of south-eastern South Australia, where it extends west to the Yorke Peninsula and the Mount Lofty Ranges. It is widespread in Tasmania (Barrett et al. 2003; Blakers et al. 1984; Higgins 1999).	**Low** Was not recorded on site. 3 records occur within 10km of the site (OEH 2024b). The Paterson River does occuron the site but not large areas of open water, which is core habitat, therefore this species is unlikely to occur.	**Low** The proposed development is unlikely to impact this species.
Lathamus discolor Swift Parrot (E, CE)	Occurs where eucalypts are flowering profusely or where there are abundant lerp (from sap sucking bugs) infestations. Favoured feed trees include winter flowering species such as E. robusta (Swamp Mahogany), C. maculata (Spotted Gum), E. gummifera (Red Bloodwood), E. sideroxylon (Mugga Ironbark) and E. albens (White Box). Commonly used lerp infested trees include Grey Box E. macrocarpa (Grey Box), E. moluccana (Grey Box) and E. pilularis (Blackbutt). Breeds in Tasmania during spring and summer and migrates to south-eastern Australia during autumn and winter. In NSW, it mostly occurs on the coast and south west slopes (OEH, 2024a).	**Low** Not recorded on or near the site.	**Low** Would not impact as it does not occur on or near the site.

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Melanodryas cucullata cucullata Hooded Robin (south-eastern form) (V)	The Hooded Robin is a large Australian robin reaching 17 cm in length. Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. The Hooded Robin is widespread, found across Australia, except for the driest deserts and the wetter coastal areas - northern and eastern coastal Queensland and Tasmania. However, it is common in few places, and rarely found on the coast. It is considered a sedentary species, but local seasonal movements are possible. The south-eastern form (subspecies *cucullata*) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies *picata*. Two other subspecies occur outside NSW (OEH, 2024a).	**Low** Not recorded on or near the site.	**Low** Would not impact as it does not occur on or near the site.
Neophema chrysostoma Blue-winged Parrot (V, V*)	*Neophema chrysostoma* breeds on mainland Australia south of the Great Dividing Range in southern Victoria from Port Albert in Gippsland west to Nelson, and sometimes in the far south-east of South Australia, and the north-western, central and eastern parts of Tasmania (Emison *et al*. 1987; Higgins 1999). A partial migrant, variable numbers of birds migrate across Bass Strait in winter. During the non-breeding period, from autumn to early spring, birds are recorded from northern Victoria, eastern South Australia, south-western Queensland and western New South Wales with some birds reaching south-eastern New South Wales and eastern Victoria, particularly on the southern migration (Higgins 1999). The Blue-winged Parrot inhabits a range of habitats from coastal, sub-coastal and inland areas, right through to semi-arid zones. Throughout their range, they favour grasslands and grassy woodlands. They are often found near wetlands both near the coast and in semi-arid zones. Blue-winged Parrots can also be seen in altered environments such as airfields, golf courses and paddocks (Birdlife Australia, 2024). No records have occurred within 5km radius of the site (OEH, 2024b).	**Low** Not recorded on or near the site.	**Low** Would not impact as it does not occur on or near the site.
Ninox strenua Powerful Owl (V)	The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation comprising species such as Turpentine Syncarpia glomulifera, Black She-oak Allocasuarina littoralis, Blackwood Acacia melanoxylon, Rough-barked Apple Angophora floribunda, Cherry Ballart Exocarpus cupressiformis and a number of eucalypt species. The main prey items are medium-sized arboreal marsupials, particularly the Greater Glider, Common Ringtail Possum and Sugar Glider. In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains suggesting occupancy prior to land clearing. Now at low densities throughout most of its eastern range, rare along the Murray River and former inland populations may never recover. Recent increases in population density across Sydney and some other semi-urban areas do not seem to be solely due to increased awareness of this flagship species (OEH, 2024a).	**Low** Was not recorded on site. 1 record occurs within 10km of the site (OEH 2024b). The site could potentially provide hunting habitat for this species but does not provide any other habitat features and therefore is unlikely to be impacted.	**Low** The proposed development is unlikely to impact this species.

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Rostratula australis Australian Painted Snipe (E,E*)	*Rostratula australis* prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. The Australian Painted Snipe is restricted to Australia. Most records are from the south east, particularly the Murray Darling Basin, with scattered records across northern Australia and historical records from around the Perth region in Western Australia. In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Other important locations with recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys (OEH, 2024a).	**Low** Not recorded on or near the site.	**Low** Would not impact as it does not occur on or near the site.
Ptilinopus magnificus Wompoo Fruit-Dove (V)	Occurs along the coast and coastal ranges from the Hunter River in NSW to Cape York Peninsula. It is rare south of Coffs Harbour. Three subspecies are recognised, with the most southerly in NSW and south-eastern Queensland. It used to occur in the Illawarra, though there are no recent records. Occurs in, or near rainforest, low elevation moist eucalypt forest and brush box forests. Feeds on a diverse range of tree and vine fruits and is locally nomadic - following ripening fruit. Thought to be an effective medium to long-distance vector for seed dispersal.	**Low** Was not recorded on site. 1 record occurs within 10 km^2 area of the site (OEH 2024b). This species is unlikely to occur within the site due to a lack of appropriate rainforest habitat with a range of fruits.	**Low** Would not be impacted as the site lacks preferred habitat.
Pomatostomus temporalis temporalis Grey-crowned Babbler (eastern subspecies) (V)	Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions. The eastern subspecies (temporalis occurs from Cape York south through Queensland, NSW and Victoria and formerly to the south east of South Australia. This subspecies also occurs in the Trans-Fly Region in southern New Guinea. In NSW, the eastern sub-species occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. It also occurs in woodlands in the Hunter Valley and in several locations on the north coast of NSW. (OEH, 2024a).	**Low** Was not recorded on site. 1 record occurs within 10 km^2 area of the site (OEH 2024b). This species is unlikely to occur within the site due to a lack of appropriate habitat.	**Low** Would not be impacted as the site lacks preferred habitat.
Pycnoptilus floccosus Pilotbird	Pilotbirds are endemic to south-east Australia. Upland Pilotbirds occur above 600 m in the Brindabella Ranges in the Australian Capital Territory, and in the Snowy Mountains in New South Wales and north-east Victoria (Higgins & Peter 2002; Loyn et al. 2021). Lowland Pilotbirds occur in forests from the Blue Mountains west of Newcastle, around the wetter forests of eastern Australia, to Dandenong near Melbourne (Higgins & Peter 2002; Loyn et al. 2021). Pilotbirds are strictly terrestrial, living on the ground in dense forests with heavy undergrowth (Higgins & Peter 2002). Largely sedentary, they are typically seen hopping briskly over the forest floor and foraging on damp ground or among leaf-litter. Flight is described as fairly weak, though, if disturbed, birds can sometimes ascend into shrubs (but no more than 1–2 m from the ground) (Higgins & Peter 2002). They are typically seen in pairs or occasionally in family parties, occupying small territories all year round (OEH, 2024a).	**Low** Not recorded on or near the site.	**Low** Would not impact as it does not occur on or near the site.

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Stagonopleura guttate Diamond Firetail (V)	Diamond Firetail is found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Eucalyptus pauciflora Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland. The Diamond Firetail is endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Central and Southwestern Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. This species has a scattered distribution over the rest of NSW, though is very rare west of the Darling River (OEH, 2024a).	**Low** Not recorded on or near the site.	**Low** Would not impact as it does not occur on or near the site.
Tyto novaehollandiae Masked Owl (V)	Lives in dry eucalypt forests and woodlands from sea level to 1100m. Often will hunt along edges of forests, including roadsides. Roots and breeds in moist eucalypt forested gullies, using large tree hollows and sometimes caves for nesting. Extends from the east coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner. There is no seasonal variation in its distribution. (OEH, 2024a).	**Low** Was not recorded on site. 1 record occurs within 10 km^2 area of the site, (OEH 2024b) This species is unlikely to occur within the site due to absence of moist forested gullies and large tree hollows or caves for nesting.	**Low** The proposal is unlikely to impact this species.
Threatened Mammals			
Chalinolobus dwyeri Large-eared Pied Bat (V, V*)	Large-eared Pied Bat roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Petrochelidon ariel), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in caves, overhangs, mine adits and concrete structures such as derelict buildings. They remain loyal to the same cave over many years. Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes (OEH, 2024a).	**Low** This species was not recorded on or near the site.	**Low** Would not impact as it does not occur on or near the site.
Dasyurus maculatus subsp. *maculatus* Spotted-tailed Quoll (V, E*)	The range of the Spotted-tailed Quoll has contracted considerably since European settlement. It is now found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania. Only in Tasmania is it still considered relatively common. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Quolls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites (OEH, 2024a).	**Moderate** This species was not recorded on site. 11 recordings occur in a 10km radius of the site (OEH 2024).	**Low** This species has the potential to occur on site. however, the development is retaining the hollow bearing trees this species would use, therefore the potential for impact is lowered.

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Macropus parma Parma Wallaby (V)	Preferred habitat of *Notamacropus parma* is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest. Typically feed at night on grasses and herbs in more open eucalypt forest and the edges of nearby grassy areas. The species once occurred in north-eastern NSW from the Queensland boarder to the Bega area in the southeast. Their range is now confined to the coast and ranges of central and northern NSW from the Gosford district to south of the Bruxner Highway between Tenterfield and Casino (OEH, 2024a).	**Low** Not recorded on or near the site.	**Low** Would not impact as it does not occur on or near the site.
Miniopterus australis Little Bent-winged bat (V)	Occurs in moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day. Only five nursery sites /maternity colonies are known in Australia. Found on the East coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW. (OEH, 2020a).	**Low** Was not recorded on site. 1 record occurs within 10 km^2 area of the site, (OEH 2024b). The site contains no potential roosting areas or suitable habitat and is therefore unlikely to occur.	**Low** The vegetation on the site is to be retained and would therefore be unlikely to impact this species.
Miniopterus orianae oceanensis Large Bent-winged Bat (V)	Primarily roosts in caves but can also use derelict mines, storm-water tunnels, buildings and other man-made structures. Utilises a range of habitats for foraging, including rainforest, wet and dry sclerophyll forests, woodlands and open grasslands. Occurs along the east and north-west coasts of Australia. (OEH, 2019a)	**Low** Was not recorded on site. 1 record occurs within 10 km^2 area of the site, (OEH 2024b). The site contains no potential roosting areas and is therefore unlikely to occur.	**Low** The vegetation on the site is to be retained and would therefore be unlikely to impact this species.
Micronomus norfolkensis Eastern Coastal Freetail-bat (V)	Occurs in dry sclerophyll forest, woodland, swamp forests, and mangrove forests east of the Great Dividing Range. Roots mainly in tree hollows but will roost under bark or in man-made structures. Is found along the East-coast from South QLD to Southern NSW. (OEH, 2024a).	**Low** Was not recorded on site. 2 records occur within 10 km^2 area of the site, (OEH 2024b). The site contains no potential roosting areas or suitable habitat and is therefore unlikely to occur.	**Low** The vegetation on the site is to be retained and would therefore be unlikely to impact this species.
Petaurus norfolcensis Squirrel Glider (V)	Occurs in eucalypt forests and woodlands where it feeds on sap exudates and blossoms. Inhabits mature or old growth Box, Box-Ironbark Woodlands and River Red Gum Forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understory in coastal areas. Prefers mixed species stands with a shrub or acacia midstorey. Requires abundant tree hollows for refuge and nest sites. The species is widely though sparsely distributed in eastern Australia, from northern QLD to western Victoria. (OEH, 2024a).	**Low** Was not recorded on site. 11 records occur within 10 km^2 area of the site (OEH 2024). The development is to retain all trees, including those few with hollows, and is therefore unlikely to impact this species.	**Low** The site offers marginal habitat for this species, however, the canopy on the site is to be retained and therefore the proposed development is unlikely to impact this species

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Petaurus australis Yellow-bellied Glider (V)	Yellow-bellied Glider occurs in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. Feed primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein. The Yellow-bellied Glider is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria (OEH, 2024a).	**Low** Was not recorded on site. 1 record occurs within 10 km^2 area of the site (OEH 2024). The site lacks the habitat features this species prefers and is therefore unlikely to impact.	**Low** The site lacks suitable vegetation for this species and is therefore unlikely to impact.
Petauroides volans Southern Greater Glider (E, E)	Petauroides volans feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelter during the day in tree hollows and will use up to 18 hollows in their home range. Occupy a relatively small home range with an average size of 1 to 3 ha. The Southern Greater Glider occurs in eastern Australia, in eucalypt forests and woodlands, where it has a broad distribution from around Proserpine in Queensland, south through NSW and the Australian Capital Territory into Victoria (OEH, 2024a).	**Low** Not recorded on or near the site.	**Low** The site lacks preferred habitat for this species and is therefore unlikely to impact.
Petrogale penicillata Brush-tailed Rock-wallaby (E,V*)	Brush-tailed Rock-wallaby occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night when foraging. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. The range of the Brush-tailed Rock-wallaby extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. However, the distribution of the species across its original range has declined significantly in the west and south and has become more fragmented. In NSW they occur from the Queensland border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit (OEH, 2024a).	**Low** Not recorded on or near the site.	**Low** The site lacks preferred habitat for this species and is therefore unlikely to impact.
Phascolarctos cinereus Koala (E, E)	The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range. Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species (OEH, 2024a).	**High** Species was not recorded on site, however, a recent search on BioNet Atlas in May 2024 found 16 records of this species within 10km of the site. The site contains Koala feed and use trees, therefore, has a high likelihood of occurrence.	**Low** Evidence of Koala species was not observed on or near the site during surveys, therefore there is a low potential for impact.
Phascogale tapoatafa Brush-tailed Phascogale (V)	Inhabits dry open forest and woodlands, often in areas with sparse groundcover. Hunts mainly invertebrates, although some vertebrate prey is taken on occasion. Utilises small tree hollows for nesting and refuge sites (OEH, 2017a).	**Moderate** Was not recorded on site. 17 records occur within 10 km^2 area of the site (OEH 2024). The site contains potential habitat for this species.	**Low** The proposed development will retain the potential habitat within the site.

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Potorous tridactylus tridactylus Long-nosed Potoroo (V, V*)	Long-nosed Potoroo inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature. The long-nosed potoroo is found on the south-eastern coast of Australia, from Queensland to eastern Victoria and Tasmania, including some of the Bass Strait islands. There are geographically isolated populations in western Victoria. In NSW it is generally restricted to coastal heaths and forests east of the Great Dividing Range, with an annual rainfall exceeding 760 mm (OEH, 2024a).	**Low** Not recorded on or near the site. The site does not offer preferred habitat for this species.	**Low** Would not impact as it does not occur on or near the site.
Pseudomys gracilicaudatus Eastern Chestnut Mouse (V)	Eastern Chestnut Mouse mainly occurs north from the Hawkesbury River area as scattered records along to coast and eastern fall of the Great Dividing Range extending north into Queensland. In NSW the Eastern Chestnut Mouse is mostly found, in low numbers, in heathland and is most common in dense, wet heath and swamps. Optimal habitat appears to be in vigorously regenerating heathland burnt from 18 months to four years previously.	**Low** Was not recorded on site. 1 record occurs within 10 km^2 area of the site (OEH 2024). The site lacks the habitat features this species prefers and is therefore unlikely to impact.	**Low** The site lacks suitable vegetation for this species and is therefore unlikely to impact.
Pseudomys novaehollandiae New Holland Mouse (V*)	The New Holland Mouse has a fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. In 2006 there were known to be 6 - 8 metapopulations of the species (NSW Atlas of Wildlife, VIC Atlas of Wildlife, TAS Natural Values Atlas). Across the species' range, the total population size of mature individuals estimated to be less than 10,000 individuals (Menkhorst et al., 2008). Across the species' range the New Holland Mouse is known to inhabit open heathlands, open woodlands with a heathland understorey and vegetated sand dunes (Keith and Calaby, 1968; Posamentier and Recher, 1974; Fox and Fox, 1978; Hocking, 1980; Fox and Mckay, 1981; Norton, 1987; Pye, 1991; Wilson, 1991; Lazenby et al., 2008). The New Holland Mouse is a social animal, living predominantly in burrows shared with other individuals (Kemper, 1980; Lazenby et al., 2008).	**Low** The site does not offer preferred habitat for this species.	**Low** Would not impact as it does not occur on or near the site and the site lacks preferred habitat for this species.
Pteropus poliocephalus Grey-headed Flying-Fox (V, V*)	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. In times of natural resource shortages, they may be found in unusual locations. Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Can travel up to 50 km from the camp to forage; commuting distances are more often <20 km. Feed on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines. Also forage in cultivated gardens and fruit crops. (OEH, 2024a).	**Low** Was not recorded on site. 10 records occur within 10 km^2 area of the site (OEH 2024). The development is to retain all trees on site and is therefore unlikely to impact this species.	**Low** The development is to retain all trees on site and is therefore unlikely to impact this species.

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Scoteanax rueppellii Greater Broad-nosed Bat (V)	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Roots in tree hollows and buildings. Open woodland habitat and dry open forest suits the direct flight of this species as it forages. The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the New England Tablelands, however does not occur at altitudes above 500 m. (OEH, 2024a)	**Low** Was not recorded on site. 1 record occurs within 10 km^2 area of the site (OEH 2024). The development is to retain all trees on site and is therefore unlikely to impact this species.	**Low** The development is to retain all trees on site and is therefore unlikely to impact this species.
Threatened Herpetofauna			
Aprasia parapulchella Pink-tailed Legless Lizard (V,V*)	The Pink-tailed Legless Lizard is only known from the Central and Southern Tablelands, and the South Western Slopes. There is a concentration of populations in the Canberra/Queanbeyan Region. Other populations have been recorded near Cooma, Yass, Bathurst, Albury and West Wyalong. This species is also found in the Australian Capital Territory. Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (Themeda australis). Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks.	**Low** A recent search on NSW BioNet Atlas in May 2024 has shown no records of this species occurring within 10km of the subject site (OEH 2024), therefore it is unlikely to occur.	**Low** Low potential for impact, as the site does not contain typical habitat for this species.
Delma impar Striped Legless Lizard (V,V*)	The Striped Legless Lizard Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass Themeda australis, spear-grasses Austrostipa spp. and poa tussocks Poa spp., and occasionally wallaby grasses Austrodanthonia spp. It occurs in the Southern Tablelands, the South West Slopes, the Upper Hunter and possibly on the Riverina. Populations are known in the Goulburn, Yass, Queanbeyan, Cooma, Muswellbrook and Tumut areas. Also occurs in the ACT, Victoria and south-eastern South Australia (OEH, 2024a).	**Low** A recent search on NSW BioNet Atlas in May 2024 has shown no records of this species occurring within 10km of the subject site (OEH 2024), therefore it is unlikely to occur.	**Low** Low potential for impact, as the site does not contain typical habitat for this species.
Litoria aurea Green and Golden Bell Frog (E, V*)	The Green and Golden Bell Frog inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.). Optimum habitat includes waterbodies that are unshaded, free of predatory fish such as Plague Minnow (*Gambusia holbrooki*), have a grassy area nearby and diurnal sheltering sites available. Formerly distributed from the NSW north coast near Brunswick Heads, southwards along the NSW coast to Victoria where it extends into east Gippsland. Records from west to Bathurst, Tumut and the ACT region. Since 1990 there have been approximately 50 recorded locations in NSW, most of which are small, coastal, or near coastal populations. These locations occur over the species' former range; however they are widely separated and isolated. Large populations in NSW are located around the metropolitan areas of Sydney, Shoalhaven and mid north coast (one an island population). There is only one known population on the NSW Southern Tablelands (OEH, 2024a).	**Low** A recent search on NSW BioNet Atlas in May 2024 has shown no records of this species occurring within 10km of the subject site (OEH 2024). The site lacks suitable habitat for this species, therefore it is unlikely to occur.	**Low** Low potential for impact, as the site does not contain suitable habitat for this species.
Mixophyes balbus Stuttering Frog (E, V*)	Stuttering frog is found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Outside the breeding season adults live in deep leaf litter and thick understorey vegetation on the forest floor. Stuttering Frogs occur along the east coast of Australia from southern Queensland to north-eastern Victoria. Considered to have disappeared from Victoria and to have undergone considerable range contraction in NSW, particularly in south-east NSW. It is the only *Mixophyes* species that occurs in south-east NSW and in recent surveys it has only been recorded at three locations south of Sydney. The Dorrigo region, in north-east NSW, appears to be a stronghold for this species (OEH, 2024a).	**Low** A recent search on NSW BioNet Atlas in May 2024 has shown no records of this species occurring within 10km of the subject site (OEH 2024). The site lacks suitable habitat for this species, therefore it is unlikely to occur.	**Low** Low potential for impact, as the site does not contain suitable habitat for this species.

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Ecological Communities			
White Box Yellow Box Blakely's Red Gum Woodland (E, CE*)	Remnants generally occur on fertile lower parts of the landscape where resources such as water and nutrients are abundant (OEH, 2017a).	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site.
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (E)	Associated with silts, clay-loams and sandy loams, on periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains (OEH, 2017a).	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site.
Central Hunter Valley eucalypt forest and woodland (CE)	Comprises eucalypt woodlands and open forests; typically, with a shrub layer of variable density and/or a grassy ground layer. Across its range, one or more of a complex of four eucalypt tree species typically dominate the canopy. The ecological community occurs in the Hunter Valley region (primarily in the Central Hunter). The Hunter Valley region is mostly in the north east of the Sydney Basin IBRA1 Bioregion (SYB) (OEH, 2024a).	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site.
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community (E)	Thee ecological community is typically found where groundwater is saline or brackish, but can occur in areas where groundwater is relatively fresh. It is typically found on coastal flats, floodplains, drainage lines, lake margins, wetlands and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated (OEH, 2024a).	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site.
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland (E)	The Coastal Swamp Sclerophyll Forest typically features a canopy and/or sub-canopy dominated by Melaleuca spp. and/or Eucalyptus robusta. Other eucalypts, which are also tolerant of regular inundation and are adapted to sandy soils, may emerge from the canopy with the mix of species present varying depending on the location (OEH, 2024a).	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site.
Lowland Rainforests of Subtropical Australia (CE*)	Primarily occurs from Maryborough in QLD to the Clarence River in NSW. The ecological community also includes isolated areas between the clarence river and Hunter River such as the Bellinger and Hastings Valleys. Occurs on basalt and alluvial soils, including sand and old/elevated alluvial soils as well as floodplain alluvia. Mostly on areas <300m above sea level. The community is generally moderately tall to tall closed forest. Buttresses are common and Eucalypts, Melaleuca and Casuarina are low in abundance.	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site.
Subtropical Eucalypt Floodplain Forest and Woodland of the New South Wales North Coast and South East Queensland Bioregions (E*)	Is typically occurs in the NSW North Coast and South Eastern QLD IBRA bioregions and on Curtis Island in the Brigalow Belt Morth IBRA bioregion. This includes an area from just north of Newcastle, NSW to north of Gladstone in QLD. The community is found on alluvial landforms, including floodplains, the riparian zones of parent rivers and other tributaries, alluvial flats, floodplain/alluvial terraces and periodically flooded depressions. Generally occurring 50m above sea level.	**Low** Not recorded on or near the site.	**Low** Would not be impacted as it does not occur on or near the site.

Notes: V = Vulnerable (BC Act), **V* =** Vulnerable (EPBC Act), **E** = Endangered (BC Act), **E*** = Endangered (EPBC Act), **CE** = Critically Endangered (BC Act), **CE*** = Critically, **M** = Migratory (EPBC Act)

5 IMPACT ASSESSMENTS

5.1 Description of Potential Impacts

The area of vegetation within the development footprint is highly disturbed, being grazed by cattle and consists of exotic grasses.

No evidence of Koala species were found within the site. A recent BioNet Atlas search undertaken in May has shown only 16 records of the species within a 10km radius of the site. Potential feed trees were recorded on the site on the southern boundary i.e. *E. tereticornis* (Forest Red Gum). Koala use trees were also identified on site, this being *Eucalyptus paniculata* (Grey Ironbark). Brief searches were undertaken at the base of all these trees within the site, for indirect evidence (scats and scratch marks) and in the tree canopy, for direct sightings. No koala evidence was found on site.

Further, it is considered unlikely that the proposal will sever any existing wildlife corridor functionality across the site. Overall, it is considered that the area of vegetation to be removed would represent an insignificant portion of habitat.

Potential direct impacts to flora and fauna include:

- Risk of runoff, erosion and sedimentation, during construction; and
- Temporary disturbance to fauna during construction work.

Potential indirect impacts to flora and fauna include:

- Long and short-term edge effects resulting from the clearing of vegetation (e.g. change in light filtration, increase in edge effect);

Section 5.2 outlines proposed mitigation measures. If these are adhered to, it is considered unlikely that the proposal would significantly impact any threatened species, populations or TECs.

5.2 Avoidance and Minimisation

The following measures of avoidance have been or are required to be undertaken (and will be conditioned as part of any development consent);

- Landscaping / habitat revegetation within the site.
- Any significant dead wood / fallen timber within development footprint should be retained and moved to adjacent vegetated areas.
- Areas of native vegetation adjacent to the development footprint should be protected during construction works, by the use of appropriate temporary fencing, signposting and tree protection measures.
- Hydrological and erosion / sediment controls should be implemented during construction, to maintain the quality and quantity of pre-development water flows into downstream areas.
- Constructions works should include appropriate protocols and procedures to prevent spread of weeds and disease (e.g. all weeds removed from a site should be transported in a sealed container or bag and disposed of at a licenced waste disposal facility).
- All rubbish is to be removed from the site.
- Materials, plant and equipment must not be stored within the drip-lines of any retained trees.

5.3 Biodiversity Conservation Act 2016

The site has been mapped as having high biodiversity value, in the Biodiversity Values Map, however no vegetation is being removed from the area having high biodiversity values. Also any vegetation removal associated with the proposal would be under the relevant clearing threshold (i.e. <1ha for a minimum lot size of <1ha).

An assessment under section 7.3 of the BC Act (i.e. five-part test) needs to be undertaken to identify whether the proposal will significantly impact on the following threatened species and TECs. The threatened species test of significance is used to determine if a development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. It is applied as part of the Biodiversity Offsets Scheme entry requirements and for Part 5 activities under the Environmental Planning and Assessment Act 1979.

However, no such assessment has been done in this case as the proposal will not impact any threatened species and TECs.

5.3.1 Biodiversity Offset Scheme

The BC Act sets out the Biodiversity Offsets Scheme (BOS) framework, which aims to avoid, minimise and offset impacts on biodiversity from development and clearing, and to ensure land that is used to offset impacts is secured in-perpetuity. The types of developments that the BOS applies to, include local development (under Part 4 of the EP&A Act) that is likely to significant affect threatened species / TECs, as determined by:

- BOS development threshold; or
- Assessment of Significance; or
- Development on Areas of Outstanding Biodiversity Value (AOBV) (note, at this stage AOBVs include areas of declared critical habitat under the *Threatened Species Conservation Act 1995.* This site does not contain any such areas).

The BOS development threshold has two elements:

- Area Criteria – whether the amount of native vegetation being cleared exceeds a threshold area set out below; and
- Biodiversity Values Map (BVM) – whether the impacts occur on an area mapped on the BVM.

Consideration of the site, under the BOS development threshold is discussed below.

5.3.2 Area Criteria

The proposed development will remove 1956sqm of native vegetation and hence doesn't exceed the area clearing threshold (i.e., 0.25 ha). Refer to Figure 5-1 showing of vegetation to be removed.

Legend

- Subject Site
- Hollow-bearing Tree
- Survey Tree
- Tree to be Removed

LENNOXTON ROAD

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

FIGURE 5-1: VEGETATION REMOVAL

Ref No 3346

CLIENT	Client
SITE DETAILS	No.256 Lennoxton Road Vacy
DATE	30 May 2024

NORTH

0 50 150 250

SCALE 5000 @ A3

PIXELDRAFTING

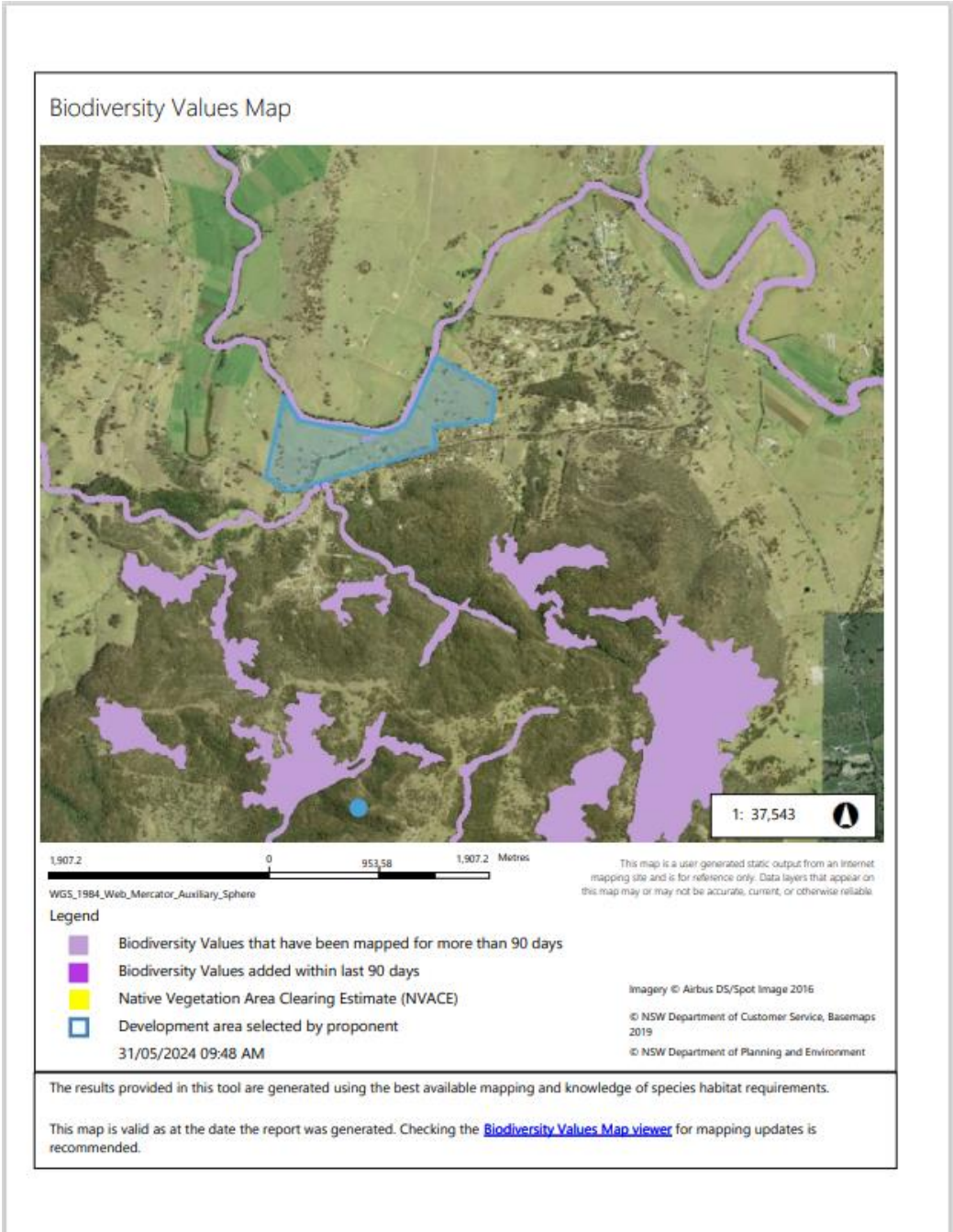
Firebird ecoSultants Pty Ltd
ABN - 16 105 985 993
Level 1, 146 Hunter Street, Newcastle NSW 2300
P O Box 354 Newcastle NSW 2300

firebird

5.3.3 Biodiversity Values Map

The site is not mapped as having high biodiversity value in the BVM. Refer to Appendix E for the Biodiversity Values Map and Threshold Report for the site.

Figure 5-2: Extract from the Biodiversity Values Map and Threshold Report for the site



5.3.4 BC Act Conclusion

The proposal being less than 1ha of clearing would not meet the BOS development threshold (based on the area criteria), has not been mapped on the BV Map nor will the proposal impact any threatened species and TECs.

5.4 Fisheries Management Act 1994 (FM Act)

NSW Department of Primary Industries (NSW DPI) is responsible for conserving the State's fishery resources and protecting and conserving fish habitat and threatened aquatic species in NSW waters (including permanent and intermittent, marine, estuarine and freshwater waterways). The Department issues permits for several types of activities that may harm fish habitats and for aquaculture development that are included in the Integrated Development Assessment process. Developments works and activities (other than aquaculture) within or adjacent to waterways mapped or defined as Key Fish Habitat require permits and are captured by the integrated development assessment provisions. NSW DPI is an "approval body" for development that requires one or more of the following permits under the FM Act:

- Section 144 - aquaculture permit (i.e. cultivating fish or marine vegetation for sale or commercial purposes).
- Section 201 - permit to carry out works of dredging or reclamation.
- Section 205 - permit to harm (cut, remove, damage, destroy etc) marine vegetation on public water land or the foreshore of such land or on an aquaculture lease.
- Section 219 - permit to obstruct the free passage of fish

Separate licencing requirements outside of the integrated development provisions may also be required under the FM Act under section 220ZW - if an action is likely to result in:

- harm to a threatened species, population or ecological community; damage to critical habitat; or
- damage to the habitat of a threatened species, population or ecological community.

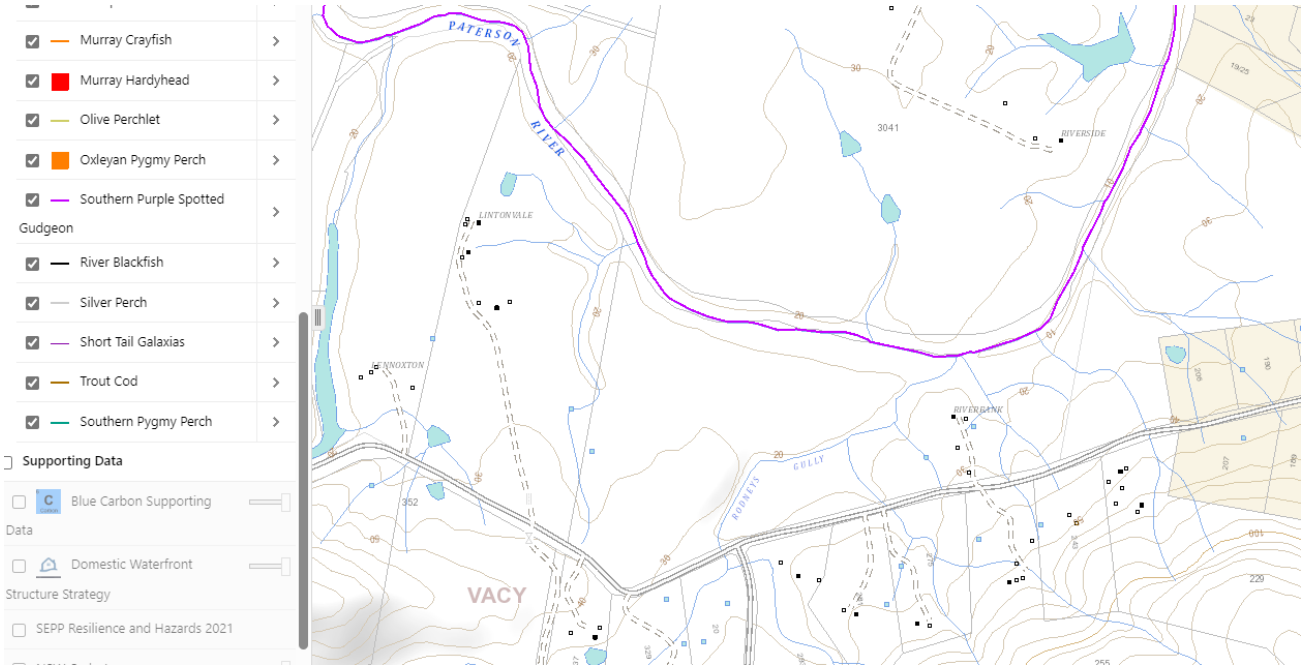
The stream overlapping the southern portion of the site is mapped as Key Fish Habitat (KFH). Refer to Figure 5-2.

5.4.1 Desktop Assessment

A search of the Commonwealth Protected Matters Search tool, BioNet database and Fisheries Threatened Species distribution maps were undertaken. The search found that no threatened aquatic species, was recorded on the BioNet or the Commonwealth Protected Matters Search tool. The only aquatic species that were recorded in the locality was Carp, Gambusia and Mosquito fish being introduced species.

Review of the Fisheries Threatened Species distribution map showed predicted areas for Southern Purple Spotted Gudgeon as detailed on Figure 5-1. This predicted area for the Southern Purple Spotted Gudgeon occurs 900m of the site. This species is found in a variety of habitats such as rivers, creeks, streams and billabongs with slow-flowing or still waters. Cover in the form of aquatic vegetation, overhanging vegetation from river banks, leaf litter, rocks or snags are important for the species. Species that occur within the drainage area are *Typha orientalis*, *Juncus usitatus*, *Juncus continuus*, *Triglochin microtuberosa, Triglochin procerum sens. lat., Centella asiatica*. The site lacks suitable habitat and therefore is highly unlikely that this species would occur within the study area.

Figure 5-2 Predicted areas for Southern Purple Spotted Gudgeon



5.4.2 Aquatic Habitat Assessment

The Policy and guidelines for fish habitat conservation and management (DPI, 2013) (herein referred to as the 'Policy') is a supplementary document that outlines the requirements and obligations under the *FM Act and the Fisheries Management* (General) Regulation 2010 and was developed to maintain and enhance fish habitat and assist in the protection of threatened species. The Policy provides a definition of key fish habitat and provides guidance for assigning a rating for the type of key fish habitat and fish habitat sensitivity (Table 5-1) as well as waterway classes for fish passage (Table 5-2).

Table 5-1 Key fish habitat and associated sensitivity classification scheme (from Table 1 in Fairfull 2013)

Table 1 – Key fish habitat and associated sensitivity classification scheme
(for assessing potential impacts of certain activities and developments on key fish habitat types)

TYPE 1 - Highly sensitive key fish habitat:

- *Posidonia australis* (strapweed)
- *Zostera, Heterozostera, Halophila and Ruppia* species of seagrass beds >5m^2 in area
- Coastal saltmarsh >5m^2 in area
- Coral communities
- Coastal lakes and lagoons that have a natural opening and closing regime (i.e. are not permanently open or artificially opened or are subject to one off unauthorised openings)
- Marine park, an aquatic reserve or intertidal protected area
- SEPP 14 coastal wetlands, wetlands recognised under international agreements (e.g. Ramsar, JAMBA, CAMBA, ROKAMBA wetlands), wetlands listed in the Directory of Important Wetlands of Australia[2]
- Freshwater habitats that contain in-stream gravel beds, rocks greater than 500 mm in two dimensions, snags greater than 300 mm in diameter or 3 metres in length, or native aquatic plants
- Any known or expected protected or threatened species habitat or area of declared 'critical habitat' under the FM Act
- Mound springs

TYPE 2 – Moderately sensitive key fish habitat:

- *Zostera*, *Heterozostera, Halophila* and *Ruppia* species of seagrass beds <5m^2 in area
- Mangroves
- Coastal saltmarsh <5m^2 in area
- Marine macroalgae such as *Ecklonia* and *Sargassum* species
- Estuarine and marine rocky reefs
- Coastal lakes and lagoons that are permanently open or subject to artificial opening via agreed management arrangements (e.g. managed in line with an entrance management plan)
- Aquatic habitat within 100 m of a marine park, an aquatic reserve or intertidal protected area
- Stable intertidal sand/mud flats, coastal and estuarine sandy beaches with large populations of in-fauna
- Freshwater habitats and brackish wetlands, lakes and lagoons other than those defined in TYPE 1
- Weir pools and dams up to full supply level where the weir or dam is across a natural waterway

TYPE 3 – Minimally sensitive key fish habitat may include:

- Unstable or unvegetated sand or mud substrate, coastal and estuarine sandy beaches with minimal or no in-fauna
- Coastal and freshwater habitats not included in TYPES 1 or 2
- Ephemeral aquatic habitat not supporting native aquatic or wetland vegetation

Notes: For the purposes of these policy and guidelines the following are **not considered key fish habitat**[5]:

- First and second order streams on gaining streams (based on the Strahler method of stream ordering)
- Farm dams on first and second order streams or unmapped gullies
- Agricultural and urban drains
- Urban or other artificial ponds (e.g. evaporation basins, aquaculture ponds)
- Sections of stream that have been concrete-lined or piped (not including a waterway crossing)
- Canal estates

Table 5-2 Classification of waterways for fish passage (from Table 2 in Fairfull 2013)

Table 2 - Classification of waterways for fish passage	
Classification	**Characteristics of waterway class**
CLASS 1 Major key fish habitat	Marine or estuarine waterway or permanently flowing or flooded freshwater waterway (e.g. river or major creek), habitat of a threatened or protected fish species or 'critical habitat'.
CLASS 2 Moderate key fish habitat	Non-permanently flowing (intermittent) stream, creek or waterway (generally named) with clearly defined bed and banks with semi-permanent to permanent waters in pools or in connected wetland areas. Freshwater aquatic vegetation is present. TYPE 1 and 2 habitats present.
CLASS 3 Minimal key fish habitat	Named or unnamed waterway with intermittent flow and sporadic refuge, breeding or feeding areas for aquatic fauna (e.g. fish, yabbies). Semi-permanent pools form within the waterway or adjacent wetlands after a rain event. Otherwise, any minor waterway that interconnects with wetlands or other CLASS 1-3 fish habitats.
CLASS 4 Unlikely key fish habitat	Waterway (generally unnamed) with intermittent flow following rain events only, little or no defined drainage channel, little or no flow or free standing water or pools post rain events (e.g. dry gullies or shallow floodplain depressions with no aquatic flora present).

The Fish Key habitat and associated sensitivity has been mapped as **TYPE 3 – Minimally sensitive key fish habitat** being Coastal and freshwater habits not included in Types 2 and 3. The classification of the waterway for fish passage has been determined as Class 3 Minimal Key Fish Habitat.

5.5 SEPP Koala Habitat Protection 2021

Targeted surveys for *Phascolarctos cinereus* (Koala) undertaken on 23rd May 2024, found no direct or indirect (e.g. scats and scratch marks on trees) evidence of *P. cinereus* (Koala) on or near the site. Several koala feed trees i.e. *Eucalyptus tereticornis* (Forest Red Gum) were identified on site. Koala use trees i.e. *Eucalyptus paniculata* (Grey Ironbark) were also recorded.

As this proposed development is therefore considered to have low or no impact on Koalas or Koala habitat [Koala Habitat Protection 2021, Part 2 Sect.11(3)], no further application of the SEPP is required.

5.6 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act focuses Commonwealth interests on MNES. The MNES identified in the EPBC Act, which require assessment and approval by the Commonwealth, include:

- World Heritage Properties;
- National Heritage Places;
- Wetlands of International Importance (declared Ramsar wetlands);
- Listed threatened species and ecological communities;
- Listed migratory species;
- Commonwealth marine areas;
- Commonwealth land; and
- The Great Barrier Reef Marine Park.

The assessment and approval process applies to any action that has, will have, or is likely to have, a significant impact on MNES. The MNES and study area-specific responses are as follows.

World Heritage Areas

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

National Heritage Places

The study area is not part of a National Heritage Place, and is not in close proximity to any such area.

Wetlands of International Importance (declared Ramsar wetlands)

One (1) Wetlands of International Importance is located within 10km of the site, this being the Hunter estuary wetlands. However, the proposed development would not have any impact on this Ramsar wetlands.

Listed Threatened Species and Ecological Communities

The development site was chosen because it is already predominately cleared and disturbed. The proposal is unlikely to significantly impact any MNES and would not require referral to the Commonwealth Department of Environment and Energy (DEE).

Listed Migratory Species

The proposal will not have a significantly adverse effect on any Listed migratory species, as these do not occur within the region.

Commonwealth Marine Area

The proposal will not have a significantly adverse effect on any Commonwealth marine area, as there are no such marine areas occur within the region.

Commonwealth Land

The proposal will not have a significantly adverse effect on any Commonwealth lands, as there are no such lands occur within the region.

The Great Barrier Reef Marine Park

The proposal will not have a significantly adverse effect on any Great Barrier Reef Marine Park, as there are no such parks occur within the region.

EPBC Act Assessment Conclusion

Based on the above, it is considered the current proposal would be unlikely to impact on any MNES under the EPBC Act. Refer to Thus referral to the Commonwealth DoE is not considered necessary.

6 CONCLUSION/RECOMMENDATIONS

This assessment aims to recognise the relevant requirements of the Environmental Planning and Assessment Act 1979 (EP&A Act), Biodiversity Conservation Act 2016 (BC Act) and the Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act).

A literature review and desktop research were combined with flora and fauna surveys, and a habitat assessment. Commonwealth, state and local government policies and guidelines formed the basis of project surveying and assessment methodology.

This Ecological Assessment has shown that the proposal is unlikely to place any viable local populations / communities at risk of extinction.

It is concluded that the BOS is not required. It is also concluded that an EPBC Act Referral and approval of DEE is not required. Finally, the provisions of SEPP Koala Habitat Protection have also been considered and it is concluded that the site no impact posed on Koalas by this development.

The following recommendations should be conditioned as part of the consent;

- Landscaping / habitat revegetation within the site.
- Any significant dead wood / fallen timber within development footprint should be retained and moved to adjacent vegetated areas.
- Areas of native vegetation adjacent to the development footprint should be protected during construction works, by the use of appropriate temporary fencing, signposting and tree protection measures.
- Hydrological and erosion / sediment controls should be implemented during construction, to maintain the quality and quantity of pre-development water flows into downstream areas.
- Constructions works should include appropriate protocols and procedures to prevent spread of weeds and disease (e.g. all weeds removed from a site should be transported in a sealed container or bag and disposed of at a licenced waste disposal facility).
- All rubbish is to be removed from the site.
- Materials, plant and equipment must not be stored within the drip-lines of any retained trees.

7 BIBLIOGRAPHY

Bell, S.A.J. (2016) Volume 2: Vegetation Community Profiles, Lake Macquarie Local Government Area. Working Draft v2. Unpublished Report to Lake Macquarie City Council. March 2016. Eastcoast Flora Survey.

Bell, S.A.J. & Driscoll, C. (2016) Volume 1: Vegetation Mapping Report, Lake Macquarie Local Government Area. Stages 1 - 6. Unpublished Report to Lake Macquarie City Council. March 2016. Eastcoast Flora Survey.

Cropper, S. (1993). *Management of Endangered Plants*. CSIRO Publications, East Melbourne, Victoria.

DEC (2004) *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities. Working Draft.* NSW Department of Environment and Conservation 2004.

DEC (2006) *Recovery Plan for Large Forest Owls: Powerful Owl) Ninox strenua, Sooty Owl (Tyto tenbricosa) and Masked Owl (Tyto novaehollandiae).* October 2006.

DECCW (2011) *Lower Hunter and Central Coast Regional Vegetation Survey VIS_ID 2225. Lower_hunter_REMS_VISmap_2225.* DECCW, Sydney.

DECC (2007) *Threatened species assessment guidelines: The assessment of significance.* Department of Environment and Climate Change (NSW), Sydney.

DEE (2017) *EPBC Act Protected Matters Search Tool*. Accessed June 2019.

GeoLINK (2013) *Grey-headed Flying Fox Management Strategy for the Lower Hunter*. Prepared for Department of Sustainability, Environment, Water, Population and Communities. GeoLINK, Coffs Harbour.

House, S (2003) *Lower Hunter & Central Coast Regional Biodiversity Conservation Strategy, Technical Report, Digital Aerial Photo Interpretation & Updated Extant Vegetation Community Map*. Report to Lower Hunter & Central Coast Regional Environmental Management Strategy, Callaghan, NSW, May 2003.

Matthei L.E. (1995) *Soil Landscapes of the Newcastle 1:100,000 Sheet*, NSW Department of Land and Water Conservation, Sydney.

Murray, M., Bell, S., Hoye, G. (2002) *Flora and fauna survey Guidelines: Lower Hunter Central Coast Region 2002.* Lower Hunter & Central Coast Regional Environmental Management Strategy, NSW.

NSW Office of Water (2012) *Guidelines for Riparian Corridors on Waterfront Land.* NSW Department of Primary Industries.

NSW Rural Fire Service (2006) *Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.*

NSW Scientific Committee (2012) *Listing guidelines version 1.3, January 2012. Guidelines for interpreting listing criteria for species, populations and ecological communities under the NSW Threatened Species Conservation Act*.

Office of Environment and Heritage (2016) *NSW Guide to Surveying Threatened Plants.* February 2016.

OEH (2017a) *Saving our Species*, accessed July 2019. <http://www.environment.nsw.gov.au/threatenedspecies/>.

OEH (2017b) *Atlas of NSW Wildlife (NSW BioNet)*, accessed July 2019. <http://www.bionet.nsw.gov.au/>.

OEH (2017c) *Six Maps*, accessed July 2019. <http://maps.six.nsw.gov.au>.

Pennay, M., Law, B. & Leinhold, L. (2004) *Bat Calls of NSW. Region based guide to the echolocation calls of microchiropteran bats*. Department of Environment and Conservation, NSW.

Scotts, D. (2003) *Key habitats and corridors for forest fauna: A landscape framework for conservation in north-east New South Wales*. NSW NPWS Occasional Paper 32, NSW National Parks and Wildlife Service, Sydney.

Thackway R, Cresswell ID (1995) *An interim biogeographic regionalisation for Australia: a framework for setting priorities in the National Reserve System Cooperative Program.* (Version 4.0. ANCA: Canberra).

Triggs, B. (2004) *Tracks, Scats and Other Traces: a Field Guide to Australian Mammals.* Oxford University Press, Australia.

Van Dyck, S., Gynther, I. and Baker, A. (2013) *Field Companion to the Mammals of Australia*. New Holland Publishers, Sydney.

APPENDIX A SITE PLANS

MGA

PATERSON

RIVER

GULLY

RODNEYS

CORYS CREEK ROAD

LENNOXTON

ROAD

EXISTING DWELLING (APPROX. LOCATION)

EASEMENT FOR TRANSMISSION LINES (DP788016)

101	1.17 Ha	
102	1.3 Ha	
103	1.06 Ha	
104	1.06 Ha	
105	1.07 Ha	
106	2.08 Ha	
107	1.56 Ha	
108	1.59 Ha	
109	1.64 Ha	
201	3.25 Ha	
202	1.86 Ha	
203	2.55 Ha	
204	(15.66 Ha) TOTAL 17.83 Ha	
205	1.17 Ha	
206	2.05 Ha	
207	1.59 Ha	
208	1.31 Ha	
209	1.38 Ha	
210	1.02 Ha	
211	1.14 Ha	
212	1.79 Ha	
213	3.8 Ha	
214	1.92 Ha	
215	2.19 Ha	
	(2.17 Ha)	

LEGEND

- PROPOSED BOUNDARY LINE
- ADJACENT BOUNDARY
- INDICATIVE BUILDING SITE
- MAPPED WATERCOURSE
- 40m WATERCOURSE BUFFER

REV.	DATE	AMENDMENT(S)	SUR	DFT	CHK
A	22.04.20	ISSUED FOR COMMENT	--	TC	TC
B	9.02.22	ISSUED FOR COMMENT	--	TC	TC
C	2.02.24	CONVERTED TO MGA2020, PATERSON RIVER BOUNDARY AMENDED	--	TC	TC
D	24.06.24	STAGING PLAN ADDED, LOT NUMBERING AMENDED	--	TC	TC

DELFS LASCELLES
CONSULTING SURVEYORS
260 MAITLAND ROAD, MAYFIELD NSW 2304
ABN: 28 164 260 100
T: (02) 4964 4886
E: admin@delacs.com.au
delacs.com.au

PROPOSED SUBDIVISION OF LOT 8 DP739338 AND LOT 94 DP788016

SITE ADDRESS:
256 LENNOXTON ROAD
VACY

CLIENT:
PETER EVANS

CAD REF: 20186_Site Plan_Rev D

POSITION DATUM:	CORSNET
ORIENTATION:	MGA (GROUND)
EASTING:	--
NORTHING:	--
CLASS: --	ORDER: --
HEIGHT DATUM:	CORSNET
CLASS: --	ORDER: --
RL: (AHD)	DATE: --

SURVEYED	DRAFTED	CHECKED
--	TC	TC
SCALE	PAGE SIZE	DATE
1:2500	A1	22.04.20
SHEET	REV.	PROJECT No.
2 of 3	D	20186

APPENDIX B QUALIFICATIONS

Curriculum Vitae

Sarah Jones
Ecologist / Bushfire Consultant
B.Env.Sc, G.Dip.DBPA
BPAD-A Certified Practitioner (BPD-PA-26512)

Qualifications / Licences

- Bachelor of Environmental Science (The University of Newcastle)
- Graduate Diploma in Design for Bush Fire Prone Areas (University of Western Sydney)
- *BAAS18020 Accredited Assessor, as required by the Biodiversity Conservation Regulation 2017 and accredited to apply the BAM*
- NSW Scientific Licence SL100533
- Fire Protection Authority of Australia (FPAA) Member
- BPAD- A (Alternate Solutions) Bushfire Planning and Design Certified Practitioner – Certification No: PBD-PA-26512
- RFS / PIA NSW Consulting Planners Bushfire Training Course
- WorkCover NSW OHS General Induction for Construction Work in NSW

Areas of Expertise

Sarah Jones is an ecologist and bushfire planning specialist with over 18 years ecological experience within both the consulting, and the government sector. Sarah is ab Accredited Biodiversity Assessor and has an extensive range of Ecological Assessment reporting experience and ecological field experience. Experience within the consulting industry has primarily included a wide range of flora and fauna assessment disciplines as required by a wide range of public and private clients. Sarah has a strong grounding in threatened flora and fauna species, endangered ecological communities and populations. She has experience in the preparation of environment impact assessments in terrestrial environments, constraints and opportunities reporting, flora and fauna monitoring and survey, vegetation and conservation management plans. Sarah Jones is accredited to Biodiversity Development Assessment Reports (BDAR) and Tests of Significance (5-part test) to assess biodiversity / flora and fauna / ecological impacts when undertaking Development Applications (DA) and Major Projects / State Significant Developments (SSD) in New South Wales.

Sarah Jones is a (Bushfire Planning and Design) BPAD-A Certified Practitioner through Fire Protection Australia (FPA). BPAD Accredited Practitioners are recognised by industry, regulators, fire agencies, end-users and the community as providers of professional bushfire assessment, planning, design and advice services. The Scheme provides an enhanced level of confidence for government and the community that practitioners are accredited by a suitably robust scheme that is administered by the peak national body for fire safety.

Sarah Jones has qualifications and experience in Bushfire Planning and Design, Bushfire Attack Level (BAL) assessments, Complying and Development Application

assessments) in accordance with Planning for Bush Fire Protection (PBP), the Building Code of Australia (BCA) and Australian Standards AS3959-2018.

Employment History

Bushfire Consultant & Ecologist
Firebird ecoSultants Pty Ltd
Jan 2011 to present

Consultant Role Development Planner – (Flora and Fauna)
Lake Macquarie City Council
June 2013 –February 2015
Previous temporary role August - October 2012

Senior Bushfire Consultant / Ecologist
RPS Group plc.
June 2006 to Jan 2011

Development Planner (Flora & Fauna)
Lake Macquarie City Council
Jan 2005 to Sept 2005

Ecologist / Bushfire Consultant
Harper Somers O'Sullivan
Nov 2001 to Jan 2005

Ecologist
Ecotone Environmental Consultants, Waratah, NSW
Jan 2001 – Nov 2001

Volunteer Environmental Educator
Community Partnership Newcastle City Council
Sept 2000 – Dec 2000

APPENDIX C EPBC PROTECTED MATTERS SEARCH

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: 03-Jul-2024

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:	16

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:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	24
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:	7
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	20 - 30km 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
Lowland Rainforest of Subtropical Australia	Critically 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 likely to occur within area	In buffer area only
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	Community likely to 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 [Resource Information]

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 likely to 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 likely to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Erythrotriorchis 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 likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to 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
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 may occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat known to 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 known 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			
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Mixophyes balbus Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			

Scientific Name	Threatened Category	Presence Text	Buffer Status
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
Notamacropus parma			
Parma Wallaby [89289]	Vulnerable	Species or species habitat may occur within area	In feature area
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area	In feature area
Petrogale penicillata			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat likely to 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
Potorous tridactylus tridactylus			
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat may 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	Roosting known to occur within area	In feature area
PLANT			
Arthraxon hispidus			
Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area	In feature area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat known to occur within area	In feature area
Dichanthium setosum bluegrass [14159]	Vulnerable	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
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area	In feature area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In feature area
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Pterostylis gibbosa Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood [4562]	Endangered	Species or species habitat may occur within area	In buffer area only
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 known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhodomyrtus psidioides			
Native Guava [19162]	Critically Endangered	Species or species habitat may 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 known to occur within area	In feature area
Tetratheca juncea			
Black-eyed Susan [21407]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thesium australe			
Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
Aprasia parapulchella			
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area	In feature area
Delma impar			
Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area	In buffer area only

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 known to 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
Monarcha melanopsis			
Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
[Symposiachrus trivirgatus as Monarcha trivirgatus](#) Spectacled Monarch [83946]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
[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 likely to 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
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Pandion haliaetus](#) Osprey [952]		Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
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

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [11601]	NSW	In buffer area only

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
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Breeding likely to occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely 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
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 buffer area only
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
Sterna striata White-fronted Tern [799]		Migration route may occur within area	In buffer area only
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known 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
Columbey	National Park	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
North East NSW RFA	New South Wales	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Martins Creek Quarry Expansion Project, NSW	2016/7725	Controlled Action	Assessment Approach	In buffer area only
Queensland Hunter Gas Pipeline, approximately 825 km in length	2008/4483	Controlled Action	Completed	In buffer area only
Not controlled action				
Hunter Natural Gas Pipeline	2004/1902	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Queensland Hunter Gas Pipeline, approximately 833 km in length	2008/4620	Not Controlled Action	Completed	In buffer area only
Rural Subdivision Lambs Valley Rd	2002/776	Not Controlled Action	Completed	In buffer area only
Weed and Native Vegetation Clearing, Cintra Estate Rural Residential Subdivision	2003/1219	Not Controlled Action	Completed	In buffer area only

Bioregional Assessments [Resource Information]

SubRegion	BioRegion	Website	Buffer Status
Hunter	Northern Sydney Basin	BA website	In buffer area only

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 are 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

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

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

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
- 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.

Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

APPENDIX D RECORDED SPECIES LIST

List of Flora Species recorded

(*Denoted Exotic Species)

Eucalyptus saligna (Sydney Blue Gum)
Eucalyptus paniculata (Grey Ironbark)
Corymbia maculata (Spotted Gum)
Eucalyptus robusta (Swamp Mahogany) (Koala Feed Tree)
Lophostemon confertus (Brush box)
Melaleuca styphelioides (Prickly-leaved paperbark)
Syzygium smithii (Lily pilly)
Glochidion ferdinandi (Cheese tree)
Commelina cyanea (Scurvy weed)
**Andropogon virginicus* (Whiskey grass)
**Ageratina adenophora* (Crofton Weed)
**Digitaria didactyla* (Blue Couch)
**Verbena bonariensis* (Purpletop vervain)
**Hypochaeris radicata* (Cats ear)
**Plantago lanceolata* (Ribwort plantain)
**Bidens Pilosa* (Farmer's friend)
Oplismenus aemulus (Creeping shade grass)
**Cenchrus clandestinus* (Kikuyu)
Pellaea falcata (Sickle fern)
**Paspalum dilatatum* (Dallisgrass)
**Axonopus fissifolius* (Common carpet grass)
Geranium homeanum (Australian geranium)
**Onopordum acanthium* (Scotch thistle)
**Cortaderia selloana* (Pampas grass)
Christella dentata
Juncus spp.

List of Fauna Species recorded

Cracticus tibicen (Australian Magpie)
Trichoglossus moluccanus (Rainbow Lorikeet)
Cracticus nigrogularis (Pied Butcherbird)
Trichoglossus moluccanus (Rainbow Lorikeet)
Dacelo novaeguineae (Laughing Kookaburra)
Manorina melanophrys (Bell Miner)
Cacatua galerita (Sulphur Crested Cockatoo)
Eulamprus quoyii (Eastern water skink)
Haliastur sphenurus (Whistling Kite)

APPENDIX E BIODIVERSITY VALUES MAP AND THRESHOLD REPORT

Department of Planning and Environment

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		31/05/2024 9:48 AM
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 ALL BV Mapping within the development footprinted 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**	608,290.6 sqm
2.2	**Native Vegetation Area Clearing Estimate (NVACE)** (within development/clearing footprint)	389,217.2 sqm
2.3	**Method for determining Minimum Lot Size**	LEP
2.4	**Minimum Lot Size** (10,000sqm = 1ha)	8,000 sqm
2.5	**Area Clearing Threshold** (10,000sqm = 1ha)	2,500 sqm
2.6	**Does the estimate exceed the Area Clearing Threshold?** (NVACE results are an estimate and can be reviewed using the Guidance)	yes

REPORT RESULT: Is the Biodiversity Offset Scheme (BOS) Threshold exceeded for the proposed development footprint area? (Your local council will determine if a BDAR is required)	**yes**

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: _____ Date: _____

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

31/05/2024 09:48 AM

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.

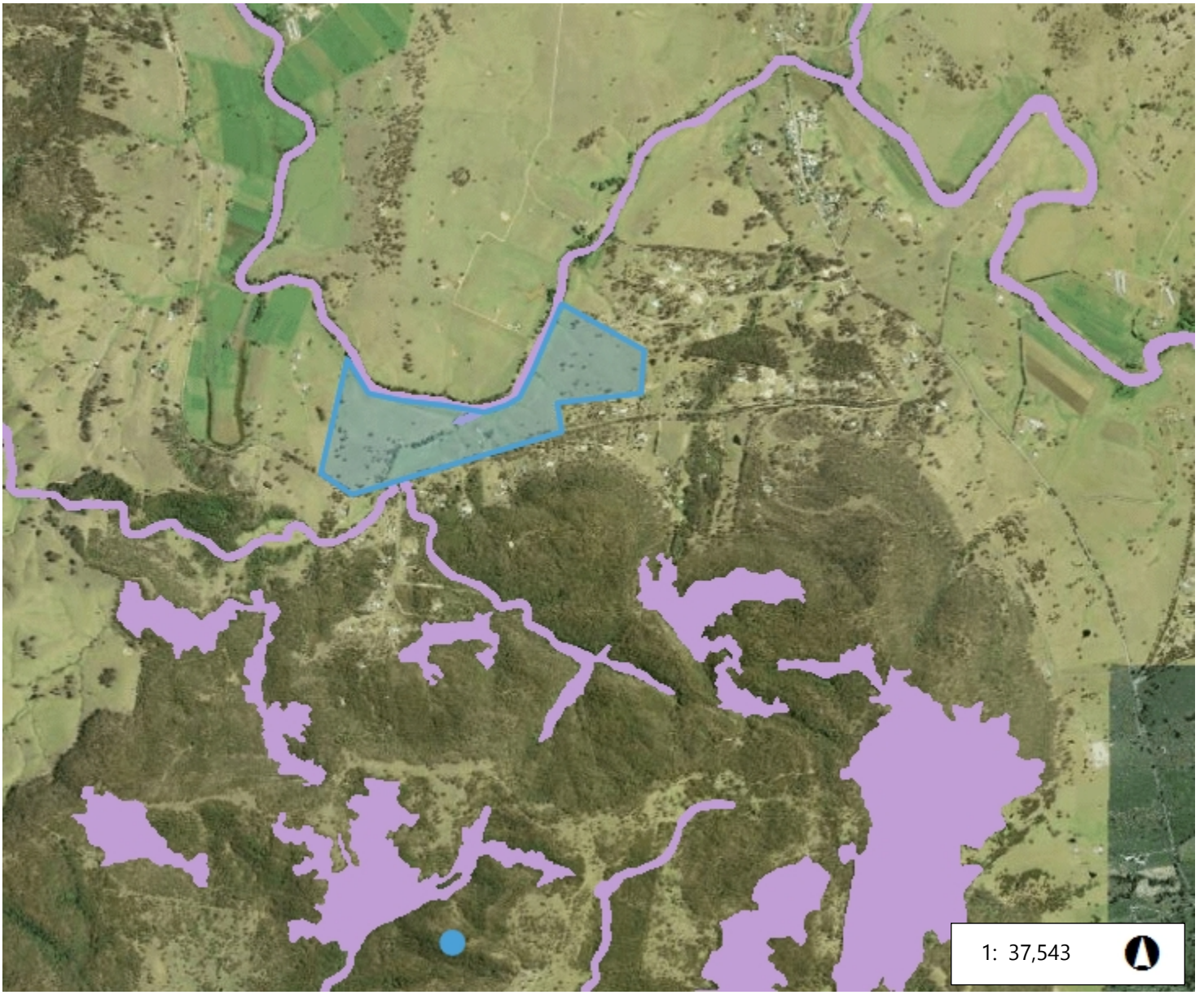
This report may be used as evidence for development applications submitted to councils. You may also use this report when considering native vegetation clearing under the State Environmental Planning Policy (Biodiversity and Conservation) 2021 - Chapter 2 vegetation in non-rural areas.

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



1,907.2 0 953.58 1,907.2 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

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

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

31/05/2024 09:48 AM

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 G BAM PLOT DATA

Plot 1

	10/08/2022	*Andrew & Kurtis*	Disturbed Ironbark/Redgum Forest							
pct	area	patchsize	conditionclass	zone	easting	northing	bearing	compTree	compShrub	compGrass
		101						1	0	3

OR type/paste Scientific Name here

Class	Family	Scientific Name	Common Name	BC Act	EPBC Act	GrowthForm	N or E	HTE	Cover	Abundance
Flora	Myrtaceae	eucalyptus siderophloia	Grey Ironbark	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		15	5
Flora	Oxalidaceae	Oxalis perennans		Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	5
Flora	Juncaceae	Juncus usitatus		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.1	2
Flora	Poaceae	Eragrostis brownii	Brown's Lovegrass	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		6	400
Flora	Polygonaceae	Rumex brownii	Swamp Dock	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	1
Flora	Poaceae	Cynodon dactylon	Common Couch	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		50	800
Flora	Poaceae	Poa annua	Winter Grass	Not Listed	Not Listed	0	Introduced		0.2	10
Flora	Malvaceae	Modiola caroliniana	Red-flowered Mallow	Not Listed	Not Listed	0	Introduced		0.1	1
Flora	Verbenaceae	Verbena rigida	Veined Verbena	Not Listed	Not Listed	0	Introduced		0.1	1
Flora	Apocynaceae	Gomphocarpus fruticosus	Narrow-leaved Cotton Bush	Not Listed	Not Listed	0	Introduced		0.1	1
Flora	Asteraceae	Sonchus asper	Prickly Sowthistle	Not Listed	Not Listed	0	Introduced		0.1	1
Flora	Asteraceae	Cirsium vulgare	Spear Thistle	Not Listed	Not Listed	0	Introduced		0.1	1
Flora	Caryophyllaceae	Cerastium vulgare	Mouse-ear Chickweed	Not Listed	Not Listed	0	Introduced		0.1	10
Flora	Iridaceae	Romulea rosea		Not Listed	Not Listed	0	Introduced		0.1	10
Flora	Asteraceae	Sonchus oleraceus	Common Sowthistle	Not Listed	Not Listed	0	Introduced	YES	0.1	1
Flora	Verbenaceae	Verbena bonariensis	Purpletop	Not Listed	Not Listed	0	Introduced		0.2	20
Flora	Poaceae	Paspalum dilatatum	Paspalum	Not Listed	Not Listed	0	Introduced		5	200
Flora	Poaceae	Cenchrus clandestinus	Kikuyu Grass	Not Listed	Not Listed	0	Introduced		2	100
Flora	Primulaceae	Lysimachia arvensis	Scarlet Pimpernel	Not Listed	Not Listed	0	Introduced		0.1	10
Flora	Malvaceae	Sida rhombifolia	Paddy's Lucerne	Not Listed	Not Listed	0	Introduced		0.2	50
Flora	Plantaginaceae	Plantago lanceolata	Lamb's Tongues	Not Listed	Not Listed	0	Introduced		5	400
Flora	Poaceae	Setaria gracilis	Slender Pigeon Grass	Not Listed	Not Listed	0	Introduced		5	200
Flora	Poaceae	Sporobolus africanus	Parramatta Grass	Not Listed	Not Listed	0	Introduced		25	500
Flora	Asteraceae	Senecio madagascariensis	Fireweed	Not Listed	Not Listed	0	Introduced		1	100

compForbs	compFerns	compOther	strucTree	Shrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollow	funLitterCover	funLenFallenLogs	funTreeStem5to9	funTreeStem10to1	funTreeStem20t	funTreeStem30to49	
2	0	0	15.0	0.0	56.1	0.2	0	0	1	2	8.4	0.0	0	0	0	2	

Tree Count	Absent=0,Present =1
80cm +	1
50-79 cm	7
30-49 cm	2
20-29 cm	0
10-19 cm	0
5-9 cm	0
<5 cm	0

Logs	<sum of longs on ground >10cm
0	

Hollows	<Number of hollow bearing trees
2	

1 x 1 m Plots	Subplot	Average
	Leaf Litter	
5	15	8.4
15	7	
25	10	
35	5	
45	10	
	Bare Ground	
5	5	1.8
15	1	
25	1	
35	0	
45	2	
	Cryptogram	
5	1	0.2
15	0	
25	0	
35	0	
45	0	
5	0	0.0
15	0	
25	0	
35	0	
45	0	

Plot 2

	10/08/2022	*Andrew & Kurtis*	Disturbed Ironbark/Redgum Forest

pct	area	patchsize	conditionclass	zone	easting	northing	bearing	compTree	compShrub	compGrass
		101						1	1	10

OR type/paste Scientific Name here

Class	Family	Scientific Name	Common Name	BC Act	EPBC Act	GrowthForm	N or E	HTE	Cover	Abundance
Flora	Myrtaceae	Eucalyptus tereticornis	Forest Red Gum	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		15	3
Flora	Casuarinaceae	Casuarina cunninghamiana	River Oak	Not Listed	Not Listed	0	Alive in NSW, Native		8	1
Flora	Vitaceae	Cissus antarctica	Water Vine	Not Listed	Not Listed	Other (OG)	Alive in NSW, Native		1	1
Flora	Poaceae	Imperata cylindrica	Blady Grass	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		6	200
Flora	Poaceae	Microlaena stipoides	Weeping Grass	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		25	1000
Flora	Poaceae	Oplismenus aemulus		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		10	500
Flora	Convolvulaceae	Dichondra repens	Kidney Weed	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.4	200
Flora	Bignoniaceae	Pandorea pandorana	Wonga Wonga Vine	Not Listed	Not Listed	Other (OG)	Alive in NSW, Native		0.2	10
Flora	Oleaceae	Jasminum volubile		Not Listed	Not Listed	Other (OG)	Alive in NSW, Native		0.1	3
Flora	Menispermaceae	Sarcopetalum harveyanum	Pearl Vine	Not Listed	Not Listed	Other (OG)	Alive in NSW, Native		0.2	2
Flora	Polygonaceae	Rumex brownii	Swamp Dock	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	5
Flora	Cyperaceae	Gahnia aspera	Rough Saw-sedge	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.4	2
Flora	Poaceae	Cynodon dactylon	Common Couch	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		21	500
Flora	Rosaceae	Rubus parvifolius	Native Raspberry	Not Listed	Not Listed	Shrub (SG)	Alive in NSW, Native		0.2	10
Flora	Pteridaceae	Cheilanthes sieberi	Rock Fern	Not Listed	Not Listed	Fern (EG)	Alive in NSW, Native		0.1	10
Flora	Luzuriagaceae	Eustrephus latifolius	Wombat Berry	Not Listed	Not Listed	Other (OG)	Alive in NSW, Native		0.1	1
Flora	Pteridaceae	Adiantum hispidulum	Rough Maidenhair	Not Listed	Not Listed	Fern (EG)	Alive in NSW, Native		0.2	10
Flora	Campanulaceae	Pratia pedunculata	Matted Pratia	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	10
Flora	Primulaceae	Lysimachia arvensis	Scarlet Pimpernel	Not Listed	Not Listed	0	Introduced		0.1	10
Flora	Poaceae	Sporobolus africanus	Parramatta Grass	Not Listed	Not Listed	0	Introduced		4	200
Flora	Asteraceae	Sonchus oleraceus	Common Sowthistle	Not Listed	Not Listed	0	Introduced		0.1	10
Flora	Asteraceae	Senecio madagascariensis	Fireweed	Not Listed	Not Listed	0	Introduced		0.2	10
Flora	Caryophyllaceae	Stellaria media	Common Chickweed	Not Listed	Not Listed	0	Introduced		0.1	10
Flora	Poaceae	Ehrharta erecta	Panic Veldtgrass	Not Listed	Not Listed	0	Introduced		6	400
Flora	Polygonaceae	Rumex sagittatus		Not Listed	Not Listed	0	Introduced		0.4	10
Flora	Asteraceae	Conyza spp.		Not Listed	Not Listed	0	Introduced		0.2	10
Flora	Malvaceae	Sida rhombifolia	Paddy's Lucerne	Not Listed	Not Listed	0	Introduced		0.2	10
Flora	Asteraceae	Cirsium vulgare	Spear Thistle	Not Listed	Not Listed	0	Introduced		0.2	10
Flora	Oleaceae	Olea europaea	Common Olive	Not Listed	Not Listed	0	Introduced		0.4	3
Flora	Verbenaceae	Lantana camara	Lantana	Not Listed	Not Listed	0	Introduced		0.3	1
Flora	Cyperaceae	Cyperus laevigatus		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.1	10
Flora	Luzuriagaceae	Geitonoplesium cymosum	Scrambling Lily	Not Listed	Not Listed	Other (OG)	Alive in NSW, Native		0.1	1
Flora	Pteridaceae	Adiantum aethiopicum	Common Maidenhair	Not Listed	Not Listed	Fern (EG)	Alive in NSW, Native		0.2	30
Flora	Fabaceae (Faboideae)	Glycine clandestina species complex		Not Listed	Not Listed	0	Alive in NSW, Native		0.1	10
Flora	Lomandraceae	Lomandra longifolia 'Tanika'		Not Listed	Not Listed	0	Alive in NSW, Native		0.8	60
Flora	Juncaceae	Juncus spp.		Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.2	20
Flora	Poaceae	Entolasia marginata	Bordered Panic	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.1	1
Flora	Lamiaceae	Plectranthus parviflorus		Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	1
Flora	Apiaceae	Daucus glochidiatus	Native Carrot	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	10
Flora	Commelinaceae	Commelina cyanea	Native Wandering Jew	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.1	10
Flora	Rubiaceae	Galium leiocarpum		Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.2	20
Flora	Cyperaceae	Carex appressa	Tall Sedge	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.2	4
Flora	Campanulaceae	Pratia purpurascens	Whiteroot	Not Listed	Not Listed	Forb (FG)	Alive in NSW, Native		0.4	100
Flora	Poaceae	Capillipedium spicigerum	Scented-top Grass	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		0.2	10
Flora	Fabaceae (Faboideae)	Glycine microphylla	Small-leaf Glycine	Not Listed	Not Listed	Other (OG)	Alive in NSW, Native		0.1	10
Flora	Polygonaceae	Rumex crispus	Curled Dock	Not Listed	Not Listed	0	Introduced		0.1	1
Flora	Poaceae	Setaria gracilis	Slender Pigeon Grass	Not Listed	Not Listed	0	Introduced		1	100
Flora	Juncaceae	Juncus acutiflorus		Not Listed	Not Listed	0	Introduced		0.3	1
Flora	Malvaceae	Modiola caroliniana	Red-flowered Mallow	Not Listed	Not Listed	0	Introduced		0.1	10
Flora	Asteraceae	Bidens pilosa	Cobbler's Pegs	Not Listed	Not Listed	0	Introduced		0.1	10
Flora	Cyperaceae	Cyperus eragrostis	Umbrella Sedge	Not Listed	Not Listed	0	Introduced		0.2	10
Flora	Asparagaceae	Asparagus asparagoides	Bridal Creeper	Not Listed	Not Listed	0	Introduced		0.1	2
Flora	Verbenaceae	Verbena bonariensis	Purpletop	Not Listed	Not Listed	0	Introduced		0.1	10
Flora	Plantaginaceae	Plantago lanceolata	Lamb's Tongues	Not Listed	Not Listed	0	Introduced		0.5	100
Flora	Asteraceae	Hypochoeris radicata	Catsear	Not Listed	Not Listed	0	Introduced		0.1	10
		Not Found						YES		

compForbs	compFerns	compOther	strucTree	Shrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollow	funLitterCover	funLenFallenLogs	funTreeStemSto9	funTreeStem10to1	funTreeStem20to	funTreeStem30to49	funTreeStem50	funTreeRegen
8	3	7	15.0	0.2	63.2	1.5	0.5	1.8	1	2	8.4	0.0	0	0	0	2	7	0

Tree Count	Absent=0,Present =1
80cm +	1
50-79 cm	7
30-49 cm	2
20-29 cm	0
10-19 cm	0
5-9 cm	0
<5 cm	0

Logs	<sum of longs on ground >10cm
0	

Hollows	<Number of hollow bearing trees
2	

1 x 1 m Plots	Subplot	Average
	Leaf Litter	
5	15	8.4
15	0	
25	10	
35	5	
45	10	
	Bare Ground	
5	0	1.8
15	1	
25	1	
35	0	
45	2	
	Cryptogram	
5	1	0.2
15	0	
25	0	
35	0	
45	0	
5	0	0.0
15	0	
25	0	
35	0	
45	0	

Plot 3

	10/08/2022	*Andrew & Kurtis*	Disturbed Ironbark/Redgum Forest								
pct	area	patchsize	conditionclass	zone	easting	northing	bearing	compTree	compShrub	compGrass	c
		101						1	0	1	
		OR type/paste Scientific Name here									

Class	Family	Scientific Name	Common Name	BC Act	EPBC Act	GrowthForm	N or E	HTE	Cover	Abundance
Flora	Myrtaceae	eucalyptus siderophloia	Grey Ironbark	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		1	500
Flora	Verbenaceae	Verbena bonariensis	Purpletop	Not Listed	Not Listed	0	Introduced		35	500
Flora	Poaceae	Sporobolus africanus	Parramatta Grass	Not Listed	Not Listed	0	Introduced		55	800
Flora	Poaceae	Paspalum dilatatum	Paspalum	Not Listed	Not Listed	0	Introduced	YES	0.5	200
Flora	Fabaceae (Faboideae	Trifolium repens	White Clover	Not Listed	Not Listed	0	Introduced		0.5	200
Flora	Cyperaceae	Cyperus eragrostis	Umbrella Sedge	Not Listed	Not Listed	0	Introduced	YES	0.1	1
Flora	Fabaceae (Faboideae	Vicia sativa	Common vetch	Not Listed	Not Listed	0	Introduced		0.1	2
Flora	Asteraceae	Taraxacum officinale	Dandelion	Not Listed	Not Listed	0	Introduced		0.1	1
Flora	Poaceae	Poa annua	Winter Grass	Not Listed	Not Listed	0	Introduced		0.2	20
Flora	Asteraceae	Hypochaeris glabra	Smooth Catsear	Not Listed	Not Listed	0	Introduced		0.2	20
Flora	Fabaceae (Faboideae	Ornithopus sativus	French Serradella	Not Listed	Not Listed	0	Introduced		0.1	10
Flora	Poaceae	Cynodon dactylon	Common Couch	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		1	100
		Not Found								

Plot 4

	10/08/2022	*Andrew & Kurtis*	Disturbed Ironbark/Redgum Forest								
pct	area	patchsize	conditionclass	zone	easting	northing	bearing	compTree	compShrub	compGrass	c
		101						1	0	1	
		OR type/paste Scientific Name here									

Class	Family	Scientific Name	Common Name	BC Act	EPBC Act	GrowthForm	N or E	HTE	Cover	Abundance
Flora	Myrtaceae	eucalyptus siderophloia	Grey Ironbark	Not Listed	Not Listed	Tree (TG)	Alive in NSW, Native		1	500
Flora	Verbenaceae	Verbena bonariensis	Purpletop	Not Listed	Not Listed	0	Introduced		35	500
Flora	Poaceae	Sporobolus africanus	Parramatta Grass	Not Listed	Not Listed	0	Introduced		55	800
Flora	Poaceae	Paspalum dilatatum	Paspalum	Not Listed	Not Listed	0	Introduced	YES	0.5	200
Flora	Fabaceae (Faboideae	Trifolium repens	White Clover	Not Listed	Not Listed	0	Introduced		0.5	200
Flora	Cyperaceae	Cyperus eragrostis	Umbrella Sedge	Not Listed	Not Listed	0	Introduced	YES	0.1	1
Flora	Fabaceae (Faboideae	Vicia sativa	Common vetch	Not Listed	Not Listed	0	Introduced		0.1	2
Flora	Asteraceae	Taraxacum officinale	Dandelion	Not Listed	Not Listed	0	Introduced		0.1	1
Flora	Poaceae	Poa annua	Winter Grass	Not Listed	Not Listed	0	Introduced		0.2	20
Flora	Asteraceae	Hypochaeris glabra	Smooth Catsear	Not Listed	Not Listed	0	Introduced		0.2	20
Flora	Fabaceae (Faboideae	Ornithopus sativus	French Serradella	Not Listed	Not Listed	0	Introduced		0.1	10
Flora	Poaceae	Cynodon dactylon	Common Couch	Not Listed	Not Listed	Grass & grasslike (GG)	Alive in NSW, Native		1	100
		Not Found								